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MINISTRY OF AGRICULTURE

Ethiopia's National Agriculture Investment Plan (NAIP) 2013-2022 EFY (2021-2030 GC)

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EXECUTIVE SUMMARY

Agriculture is at the heart of Ethiopian economy, accounting for 34% of the country's GDP, 75% of export earnings, 73% of the employment opportunities, major source of 70% of raw materials for agro-processing industries and market for industrial outputs. The sector is also important for addressing food and nutrition security needs to more than 110 million citizens. Thus, the country's aspiration for overall economic growth and development is highly linked to sound agriculture sector performance.

Knowing the importance of agriculture for national development, the Government of Ethiopia (GoE) has formulated and consistently implemented a set of policies and strategies for agriculture and rural development, prioritizing the promotion of food security and poverty eradication. Some of the key policies of the sector since the mid-1990s include Agricultural Development-Led Industrialization (ADLI) which is a comprehensive long-term national development road map. As part of ADLI, the Poverty Reduction Strategy Program (PRSP) (2000 and 2001); and the Sustainable Development and Poverty Reduction Program (SDPRP) (2002-2004) and the Plan for Accelerated and Sustainable Development to End Poverty (PASDEP) (2005-2010) were formulated and implemented. The Agricultural Sector Policy and Investment Framework (PIF) was also launched in 2010. The PIF was aligned with the Maputo-CAADP declaration's strategic objectives and provided a ten-year strategic framework (2010-2020) for priority areas of investment. Parallel to PIF, the Government formulated Growth and Transformation Plan I and II (GTP I & II), which were multi-sectoral national Development Plan for 2010-2015 and 2016-2020, respectively. The Government identified and implemented flagship investment programs including Agricultural Growth Program (AGP), Sustainable Land Management Program (SLMP), Productive Safety Net Program (PSNP), and many others to enhance agricultural productivity, marketing, natural resource management, and food and nutrition security. The policies between 2010 to 2020 were focused on growth and structural transformation and aimed at transforming the country into a low middle-income country by 2025.

The aforementioned policy interventions enabled the agricultural sector 6.6 percent annual average growth rate between 2004 and 2015 before it dropping to an average of 4 percent between 2016 and 2020. This have partly contributed for the country's double-digit real GDP growth, six-fold increase in per capita income, and decline in national poverty level from 44.2% in 2000 to 23% in 2019. The total grain production grew from 11.9 to 34.15 million ton between 2004 and 2020 (CSA, 2020). The foreign exchange earnings also witnessed substantial increase from less than 0.6 billion USD in 2004 to 3.2 billion USD in 2020/21 out of this agricultural commodities account for 76 percent.

Despite considerable efforts to transform, the sector still suffers from low productivity, innovation, value addition, and diversification (i.e., dominated by cereal production). It is still heavily dependent on rain-fed subsistence production, leading to high dependence on humanitarian aid, and large amount of annual food import. The situation is exacerbated by the

frequent reorganization of the Ministry of Agriculture and changes in the leadership of Government and DPs that weakened institutional memory and affected contribution of the REDFS platforms. Besides, the success of the sector questioned as a significant number of citizens are living under extreme poverty, and food and nutritional insecurity, skyrocketing domestic food prices that partly explain inadequate supply side response for growing food needs. All in all, the agricultural system is not well equipped to support the envisaged broad-based economic transformation of the country. This necessitates the development of National Agricultural Investment Plan (NAIP) (2021-2030) which is embedded within Ethiopia's national system and reflective of and responsive to the goals of the Ten-year Perspective Plan of MoA (2021-2030) for the agriculture sector. The investment plan is comprehensive in terms of combining national, regional Comprehensive African Agriculture Development Program (CAADP), and global Sustainable Development Goals (SDG) and commitments.

The NAIP sets priorities on impactful priority investment areas based on lessons drawn from previous interventions and provides a road map for structured and coordinated investments for rapid transformation. Thus, the overall objective of NAIP (2021-2030) is to align MoA sector plans with the CAADP framework. The specific objectives are: i) to prioritize the sectoral investment plan across the broad scope of the Ministry, ii) to contribute to Sustainable Development Goals (SDGs) of ending hunger and halving poverty in Ethiopia by 2030 through sustainable and inclusive agricultural growth and transformation, iii) to align the sector priorities to CAADP development agendas, iv) to enhance the rapid and sustainable growth of agriculture sector for employment creation, economic growth and food and nutrition security by identifying priority flagship programs under each Strategic Objective (SO); and v) to estimate the financial requirements, identify possible funding sources and ultimately to provide a framework for implementation governance, coordination, and results tracking and review mechanisms.

Development of the NAIP has benefitted from comprehensive secondary and primary data from multiple sources. Key Informant Interviews (KII) were conducted with key actors in Government, Development Partners (DPs), NGOs and Civil Society Organizations. Econometrics model was used for estimation and projection of required investments costs of the flagship programs. Finally, implementation governance, NAIP result areas, M&E, coordination mechanism, and risks were identified.

The major lessons gathered from national policies and strategies review, stakeholders consultation, and from policy and strategies for future development indicate that factors that have limited sector progress include (1) institutional instability of MoA which is characterized by frequent merging and splitting the Ministry and its tiers; (2) dominance of supply oriented production system instead of market-oriented production and diversification, (3) lack of vibrant R&D and extension systems, (4) insufficient natural resource management (i.e., land and water management and use), resulting in soil nutrient loss, salinity and ultimately contributing to low productivity, (5) insignificant capital investment in agricultural technologies and infrastructure including on mechanization, (6) limited access to agricultural finance, and (7) inadequate private

sector (large scale) engagement in agricultural production, processing and distribution. In light of this, future Government policies and strategies should focus on addressing the above institutional and structural challenges.

In order to address the above challenges, priority investment areas under four broader Strategic Objectives (SOs)¹ were identified. Although there is a need for investment in almost all areas of agriculture, resources are limited and need to be directed to areas where they can create the biggest impact. Prioritization also helps to focus on impactful areas, guide actors to invest more to priority areas and also foster coordination among different stakeholders who have the same interest in the menu of areas.

Consequently, thirteen key commodity-based flagship programs (CBFPs) and Ten Complementary Investment Projects (CIPs) areas were identified. The thirteen CBFPs comprise ten-strategic crop and horticulture commodities (i.e., wheat, rice, coffee, maize, sesame, soybean, tomato, onion, avocado and mango); and three-strategic livestock and fishery products (i.e., poultry, dairy, red and white meat). The ten CIPs cover irrigation development, animal feed, mechanization, agricultural trade/commercialization, research and extension, finance, land management and use, private sector development, coping with climate change, and building implementation capacity. These are found critical enablers or essential investments projects envisaged to accelerate implementation as well as raise benefits from 13 commodity-based flagship programs. The implementation thirteen CBFPs expected to be led by the Minister's Office of the Ministry of Agriculture in order to increase its implementation efficiency, close coordination among key stakeholders within and outside the Ministry, strengthening the organizational structure for implementation, progress review and take remedial actions to reinvigorate its execution.

The estimated budget for the 13-commodity based priority flagship programs and 10 CIPs for the period of 10 years (2021-2030) is USD \$ 21.65 billion. Of this 8.7 billion (40%) from the Government; 8.7 billion (40%) from DPs and NGOs, and the remaining 4.33 billion or 20% expected to be contributed from the private sector. Out of total budget close to 70% allocated for twelve CBFPs and the rest (30%) will be allocated for Ten CIPs. Appropriate implementation plan, governance structure, and risk and mitigation measures are developed for delivery of the plan.

¹ The four SOs are: (1)

OPERATIONAL DEFINITION OF KEY TERMS

CAADP Results Framework: What the continent will continue to do, what will be abandoned, and what it will start doing – with a focus on results and impact (AU, 2015)

Ten-strategic crop and horticulture products: rice, wheat, maize, coffee, sesame, soybean avocado, mango, onion and tomato.

Three-strategic livestock and fisheries products: 1) red or white meat from beef cattle, sheep, goat & fish, 2) poultry products and 3) dairy products from cow, goat, and camel.

Complementary Investment Projects (CIPs) are ten pertinent investment areas found critical enablers or essential investments projects envisaged to accelerate implementation as well as raise benefits from 13 commodity-based flagship programs. The CIPs cover irrigation development, animal feed, mechanization, agricultural trade, research and extension, finance, land management and use, private sector development, climate change, and implementation capacity.

Crops and horticulture or livestock and fisheries development: Enhancements of production and productivity through supplying production inputs, commercialization, financial support, and reduction of post-harvest losses of nine-strategic crops and horticulture commodities.

Value chain development: An approach that takes the strategic commodities towards the integration of small, medium and large-scale processing industries, creation of value addition, strengthen agriculture and industry linkage, and thereby creates employment opportunities in rural areas. Besides, the broader, a food systems approach that looks beyond producing enough food to feed growing population; comprise food and nutrition security, ensuring access to a quality and safe diet with adequate macro-and micronutrients and eradicating malnutrition in various forms both now and in the future is considered as key approach.

Small and large-scale irrigation development: Enhancement of total production and productivity of nine-strategic commodities through wise use of water management practices, proper management of irrigation canals, applying integrated soil management practices, and forest management, thus contributing to employment opportunities in rural areas.

Adaptation and mitigation of climate change: Reduction of climate change and its direct effect in agriculture production.

Alleviate food and-nutrition insecurity and disaster management: Building the resilience of livelihoods of farmers, pastorals and agro-pastoralists to respond promptly and effectively to various shocks and vulnerabilities to achieve food and nutrition security in rural areas.

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ACRONYMS

ADLI	Agricultural Development Led Industrialization
AUC	African Union Commission
AGP	Agricultural Growth Program
PIF	Agricultural Policy and Investment Framework
ASTI	Agricultural Science and Technology Indicator
AU	African Union
CAADP	Comprehensive African Agriculture Development Program
CALM	Climate Action through Landscape Management
CRGE	Climate Resilient Green Economy
CSOs	Civil Society Organizations
DPs	Development Partners
DRM SPIF	Disaster Risk Management Strategic Policy and Investment Framework
DRDIP	Development Response to Displacement Impacts Project
DRSLP	Drought Resilience and Sustainable Livelihood Programs
DRSLP	Drought Resilience and Sustainable Livelihoods Programme
ESIF	Ethiopian Strategic Investment Framework
FTC	Farmers Training Centre
FDRE	Federal Democratic Republic of Ethiopia
MoA	Ministry of Agriculture
MARD	Ministry of Agriculture and Rural Development
MoF	Ministry of Finance
GDP	Gross Domestic Product
GAFSP	Global Agricultural and Food Security Program
GoE	Government of Ethiopia
GTP	Growth and Transformation Plan
HYV	High Yield varieties
IFPRI	International Food and Policy Research Institute
ISVCD	Inclusive and Sustainable Value Chain Development
IAIP	Integrated Agro-Industrial Parks
KII	Key Informant Interview
LMP	Livestock Master Plan
MDGs	Millennium Development Goals
NNP	National Nutrition Programme
NARS	National Agriculture Research System
NAIP	National Agriculture Investment Plan
NGOs	Non-Government Organization
NPDC	National Development and Planning Commission
NSA	Nutrition Sensitive Agriculture
PADETS	Participatory Demonstration and Training Extension System
PASIDP	Participatory Small-Scale Irrigation Development Programme
PASDEP	Plan for Accelerated and Sustainable Development to End Poverty
PSNP	Productive Safety Net Programme

Qt	Quintal (100 Kgs)
R&D	Research and Development
REDFS	Rural Economic Development and Food Security
RPLRP	Regional Pastoral Livelihoods Resilience Project
RLLP	Resilient Livelihood & Landscapes project
SOs	Strategic Objectives
TC	Technical Committee
TF	Task Forces
TVET	Technical, Vocational Education and Training
TYPP	Ten Year Perspective Plan

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1. INTRODUCTION

1.1 Background

Agriculture is the most dominant sector in the Ethiopian economy. It contributes about 36% of the country's GDP, 75% of the export earnings and 73% of the employment opportunities (Anteneh *et al*, 2020). Crops take the highest share of total production and area coverage and contribute 68% of the agricultural GDP. The sector, further, supplies 70% of input to agro-processing industries (NPDC, 2020).

Given that about 85% of the country's population lives in the rural areas and depends on agriculture for livelihood, the role of agriculture in economic growth, and food and nutrition security cannot be over-emphasized. Although agricultural production has increased over time and poverty has declined, about 22% of the population remains food insecure, with dominance of agriculture also dropping from contributing 42.2% of the GDP in 2000 to just 33% in 2020 (NBE, 2020). Crop agriculture contributes to about 60% of the sector GDP, livestock contributes 27% while other areas account for 13%. The sector is dominated by smallholder farmers who predominantly practice rain-fed mixed farming using traditional technologies, characterized by low input and low output production system. These farmers account for 95% of the total land cultivated and 90% of the total agricultural output (Welteji, 2018). Thus, transformation of smallholder agriculture is a viable approach to dealing with poverty alleviation, economic growth, and food and nutrition security. Knowing its importance, both the previous and current government plans and policies have targeted agriculture as a critical component of national and/or rural development.

Even in the imperial era when agriculture was widely ignored in favour of industrial development, better-off and commercial farmers were still targeted (Welteji, 2018). Between 1971 and 1991, there was a slight change although the focus was on collective and State farms instead of individual farmers. Overall, however, unfavorable macroeconomic policies, political unrest and large scale villagization and settlement programs could not allow full realization of the potential of rural development policies. It is the post-1991 period that has witnessed a policy shift in favor of inclusive agricultural transformation through such economy-wide strategies as Agricultural Development-Led Industrialization (ADLI), the Sustainable Development and Poverty Reduction Program (SDPRP), Participatory and Accelerated Sustainable Development to End Poverty (PASDEP) and Growth and Transformation Plans (GTP I&II) were formulated and implemented. The objectives have been to achieve food self-sufficiency by increasing productivity of the smallholders through research-based information and technologies, increase supply of industrial and export crops, and promote better management and use of natural resources.

Parallel to the GTP I&II, the Government formulated agricultural sector Policy and Investment Framework (PIF), launched in 2010. The PIF was aligned with the then Comprehensive African

Agriculture Development Program (CAADP) Strategic Objectives and provided a ten-year strategic framework (2010-2020) for priority areas of investment. The PIF was endorsed by the GoE and Development Partners (DPs) as the guiding document for agricultural sector investment, food security, and poverty reduction.

Formulation and implementation of PIF as part of CAADP initiative has enabled the country to generate various benefits. First, existence of joint Government-Donor forum where both parties discuss and prioritize agricultural investment areas. This has enabled Development Partners to align their investments with agreed priority development agenda of the country and in line with Paris Declaration on Aid Effectiveness principles. Second, the country has managed to mobilize considerable resources from Global Agricultural and Food Security Program (GAFSP). Third, the regular Monitoring and Evaluation and annual progress reviews has enabled stakeholders to understand the implementation milestones and challenges, and to look for alternative remedial actions.

The above sector policies are partly credited for Ethiopia's double-digit real GDP growth and the fast growth in per capita GDP (which by 2018 had grown six-fold). Specifically, this growth is attributed to, at least in part, enhanced public investment in infrastructure, human capital development and agricultural extension. The agriculture sector registered 6.6% average growth rate between 2004 and 2015 before dropping to an average of 4% between 2016 to 2020. These promising performances raised more optimism about the prospect of the country. However, the sector still suffers from low productivity, and low innovation, value addition, and diversification. It is still heavily dependent on rain-fed subsistence production, leading to high dependence on humanitarian aid, and large amount of annual food import. The situation is exacerbated by the frequent reorganization of the Ministry of Agriculture and changes in the leadership of both Government and DPs, weakening institutional memory and contribution of REDFS platform. Existence of more than 23 million citizens below poverty line and skyrocketing domestic food prices aggravates the problem. In all, the agricultural system is not well equipped to support envisaged broad-based economic transformation of the country.

All these coupled with the expiry of Agricultural Sector Policy and Investment Framework (PIF), Growth and Transformation Plan I and II, and also change in the political landscape of the country since April 2018 and related change in development policies and strategies (i.e., Home Grown Economic Reform, Ten Year National Development Plan, and Ten Year Perspective Plan of MoA) necessitate the crafting of National Agricultural Investment Plan (NAIP) 2021-2030 to identify the bottlenecks and provide a road map for structured and coordinated investments in the sector for rapid transformation and more impactful results.

1.2 A brief history of sector policy and trends

As highlighted earlier, agriculture sector in Ethiopia has had a rich history in terms of plans, strategies and policies geared towards transformation. Table 1 provides a summary of the policies which have been implemented over the years which have relevance for the agriculture sector.

Table 1: Key policy interventions in Ethiopia's agriculture sector

1991-1995	Partial liberalization of the fertilizer market - Open the importation, wholesaling, and retailing of fertilizers to private companies. Undertaken by the Transitional Government of Ethiopia (TGE). Fertilizer prices remained pan-territorial and subsidized.
1993-1999	Participatory Demonstration and Training Extension System (PADETS) – implemented with the aim to scale up the PADETES approach to the national level as a means of boosting cereal yields and output. It was implemented as pilot phase to promote improved seed-fertilizer-credit packages (primarily for maize and wheat) through a large-scale demonstration and “training-and-visit” approaches piloted by Sasakawa Global 2000. The result was a doubled maize yield due to use of modern inputs and improved practices although this could not be sustained.
1995-present	National Agricultural Extension Intervention Program (NAEIP) – has been carried out to scale up the PADETES approach to the national level as a means of boosting cereal yields and output. Efforts to scale up the PADETES approach were successful in raising production and productivity. However, its contribution remained below potential level.
1997-1998	Fertilizer price liberalisation - implemented as part of Structural Adjustment Program. The GoE eliminated subsidies on input and deregulated the price of fertilizer at the wholesale and retail levels. However, this did not lead to competitive pricing as the proxy government agencies (i.e., cooperative unions, AISE, regional input supply and extension systems) continued control over marketing and credit system after private companies withdrawn from fertilizer market in 2000.
2002-2005	Sustainable Development and Poverty Reduction (SDPR) (2002-2005), participation of private companies in fertilizer import and distribution was withdrawn and replaced by cooperative unions. The Agricultural Input Supply Enterprise (AISE) and cooperative unions emerged as the only actors engaged in fertilizer importation and distribution, leaving the market to be controlled by public institutions.

2005-2010 Plan for the Accelerated and Sustainable Development to End Poverty Program (PASDEP) which aimed to accelerate rural growth, private sector participation, creation of employment and strengthening service delivery by public institutions. PASDEP, specific to agriculture and food security, focused on improved production and productivity through expansion of agricultural extension services, improved fertilizer supply and tenure security among farmers, improved equity in access to agricultural inputs, technologies and credit, voluntary settlement, promotion of agricultural commodity export and non-farm employment and income generating opportunities in the rural areas. In a situation where many farmers are illiterate, acquiring competence in production, adding value, and marketing presents challenges. To address these, the Government provided extensive TVET in agriculture to train Development Agents and established Farmers Training Centres (FTCs), both of which have been considered as vehicles for agricultural transformation.

2010-2020 At the end of PASDEP period, PIF which is part of AU's *Comprehensive African Agriculture Program (CAADP)* together with GTP I were implemented. CAADP champions reform in the agricultural sector, setting broad targets of at least 10% allocation of public expenditures to the agriculture sector to ensure 6% annual agricultural growth. The Program recognizes that enhanced agricultural performance is key to increased employment opportunities, especially for women and youth, food security and improved nutrition, and strengthening resilience. The program brought together all relevant stakeholders to focus on the development of the agriculture sector and prompted stakeholders to examine the budget allocated to the sector. It has also promoted participation of the private sector, CSOs/NGOs and CBOs in agricultural decision-making and progress review.

The Agricultural Sector Policy and Investment Framework (2010-2020), implemented as CAADP complement, aimed to achieve four Strategic Objectives (SOs): sustainable increase in agricultural productivity and production, accelerated agricultural commercialization and agro-industrial development, reduced degradation and improving productivity of natural resources, and achieving universal food security and protecting vulnerable households from natural calamities.

GTP I and II (2010-2020) - formulated and implemented aimed to transform the sector through raising smallholder production and productivity. During this period, the Government and its Development Partners (DPs) invested in various productivity improvement initiatives. The MoA designed and implemented various agriculture specific programs such as Agriculture Growth Program I&II

(AGP I&II), Livestock and Fish Development Master Plan (LRDP), Productive Safety Net Program (PSNP), Agricultural Growth Program II (AGP II), Drought Resilience and Sustainable Livelihood Programs (DRSLP).

1.2.1 Influence of the policies on crop sub-sector performance

GTP I clearly indicated that the agricultural sector would continue to be the main source of economic growth, with the smallholder farmers being the main focus. Thus, it gave major attention to raising smallholder production and productivity. During this period, the Government and its Development Partners (DPs) invested in technology dissemination, irrigation and rehabilitation and conservation of natural resources, and to transform agriculture from subsistence to market-oriented production. This led to growth of agricultural GDP at an average rate of 6.6% per annum during the period which was impressive though lower than the 8% target.

When we consider performance of the sector during GTP I & II, the sector's contribution to GDP declined although smallholder farmer production and productivity for major cereals increased substantially. For example, wheat productivity has grown by 114% over the last two decades, 63% in the last one decade, and 17% in the last 5 years. Maize productivity has increased by 140% in the last 20 years, 93% in the last 10 years, and 24% in the last 5 years. Similarly, teff productivity has increased by 84% in the last 20 years, 51% in the last 10 years, and 17.5% in the last 5 years. For livestock products, milk production increased from less than a billion to 7.1 billion liters in the last 20 years, and 34% in the last 5 years while beef productivity increased from 9kg to 11 kg. Productivity improvement for some high value crops has been below expectations. For instance, average annual coffee produced by smallholder farmers was 420,000 tons which is 40.4% of the target (i.e., 1,05,000 tons) set in the plan for 2014/15. In terms of agricultural extension services during GTP I, the number of beneficiaries from the agricultural extension system has increased from 5.1 million in the base year (2009) to 13.95 million farmers in 2014/15 and 16.4 million in 2019/20 (MoA, 2020). However, its effectiveness in terms of better outcome as measured by increased productivity gains remains under question as productivity of major food, export and industrial crops, fruits, vegetables and root crops remained low. The supply of fertilizer and improved seeds was 72.2% and 42%, respectively, of targets set for 2014/15. There were also limitations in carrying out multiplication of improved seeds. Despite high policy attention attributed to horticulture sub-sector development, its achievement against plan target stood at 12.7% for flower, 23.7% for vegetables, and 4.3% for fruits by the end of 2014/15. Land supply, concentration of export destination, and limitations in input supply remain major difficulties.

GTP II aimed to enhance agricultural productivity, thereby increasing the contribution of the sector to the economy and stabilizing the macro-economy. Furthermore, it would enable women, the youth, and other stakeholders to participate, in an organized manner, to contribute to and benefit from the development outcomes (NPDC, 2016). To achieve GTP-II plan targets, the

Ministry of Agriculture (MoA) designed and implemented various agriculture specific programs such as Agriculture Growth Program (AGP), Livestock and Fishery Development Master Plan (LRDP), Productive Safety Net Program (PSNP), Agricultural Growth Program II (AGP II), and Drought Resilience and Sustainable Livelihood Programs (DRSLP) (MoA, 2020). As a result, the economy witnessed consistent growth of 8.5% per annum, agriculture growing by 4.1% per annum over the five GTP-II years. Evaluation results of GTP-II performance against key indicators are shown in Table 2. Achievement in crop productivity against the target is promising. However, productivity of coffee, which is most important source of foreign exchange, has declined from 0.74 to 0.65 MT/ha.

Although there are considerable improvements, especially in performance of crop sector, most agriculture indicators still exhibited underperformance against the planned targets. The livestock sector performance during the plan period remained poor. The achievement of the sub-sector against the targets, on average, remained 36.7 %. Target and achievement indicators for natural resource management and food security are also shown in the same table.

The low performances of the sector during GTP II periods were attributed to low access to input and technology, inadequate credit to private investment, poor agricultural marketing system, prevalence of weather hazards (such as El-Nino in 2015/16), poor infrastructure, and limited institutional capacity for policy implementation coupled with social unrests (NPC 2020; MARD 2020). In response to these challenges, the Ten-Year Agriculture Sector Perspective Plan (2021-2030) envisaged to provide a sustainable solution in the upcoming years.

Table 2: Trends of crop and horticulture production and productivity changes (2007 – 2020)

Major crops & horticulture	Average change in area (%)			Average change in production (%)			Average change in productivity (%)		
	2007-2009	2010-2014	2015-2020	2007-2009	2010-2014	2015-2020	2007-2009	2010-2014	2015-2020
Cereals	2.9	1.9	0.6	6.4	8.8	4.2	3.4	6.7	3.6
Teff	2.6	3.2	0.6	9.6	8.5	2.8	6.8	5.1	3
Barley	3.8	-2.3	-0.3	9.2	2.4	4.1	5.5	4.9	4.4
Wheat	4.8	0.1	-0.7	8.3	7	5.4	3.1	7	3.1
Maize	1.5	3.7	2.2	1.1	13.6	6.6	-0.4	9.4	3.4
Sorghum	3.4	3	3.2	8.7	8.8	0.8	5.2	5.4	2.3
Finger Millet	-0.2	4.3	-1.6	2.9	12	4.7	3.1	7.4	3.7
Oats/'Aja'	-9.4	5.4	1	-1.6	12	-2.6	7.8	5.8	1.5
Rice	2.8	1.7	11.9		8.3	14.1		6.6	2
Pulses	4	-1.8	1.3	6.6	7.5	3.1			
Oilseeds	2.5	2.1	-1.6	9.5	3.8	4.3			
Average	1.7	1.9	1.5	6.1	8.4	4.3	4.3	6.5	3.0

Source: CSA (2007-2020)

Crop productivity gap

The main focus was to enhance smallholder farmer production and productivity by ensuring access to agricultural technologies and modern production practices via agricultural extension. However, studies in Ethiopia have shown that crop output growth has been attributed partly to land expansion as well as yield growth². Despite high growth in total output, yield (output/Hectare) remains low. The yield increase over the past 15 years (2003/04-2017/18) is still lower than the potential as recorded in experimental plots,³ possibly illustrating poor agronomic practices and weak extension system.

During the GTP II period, productivity growth on crops showed 14.5%, 9%, 8.7%, 23.7% and 12%, for stalked cereals, non-stalked cereal, pulses, oil seeds and coffee⁴ rate of average growth, respectively. Only about a third to a quarter of the plan for productivity was achieved during the period. This shows that productivity growth is among the key factors dictating growth and, perhaps, the most challenging one to maintain over a longer period.

Yield increases in some crops like maize, wheat, sorghum, soya, chickpea and teff were impressive between 2004 and 2019. However, increase in yield levels was low for indigenous crops like sunflower, neug, linseed, and sesame. Figure 1 shows the yield gaps recorded for the various crops.

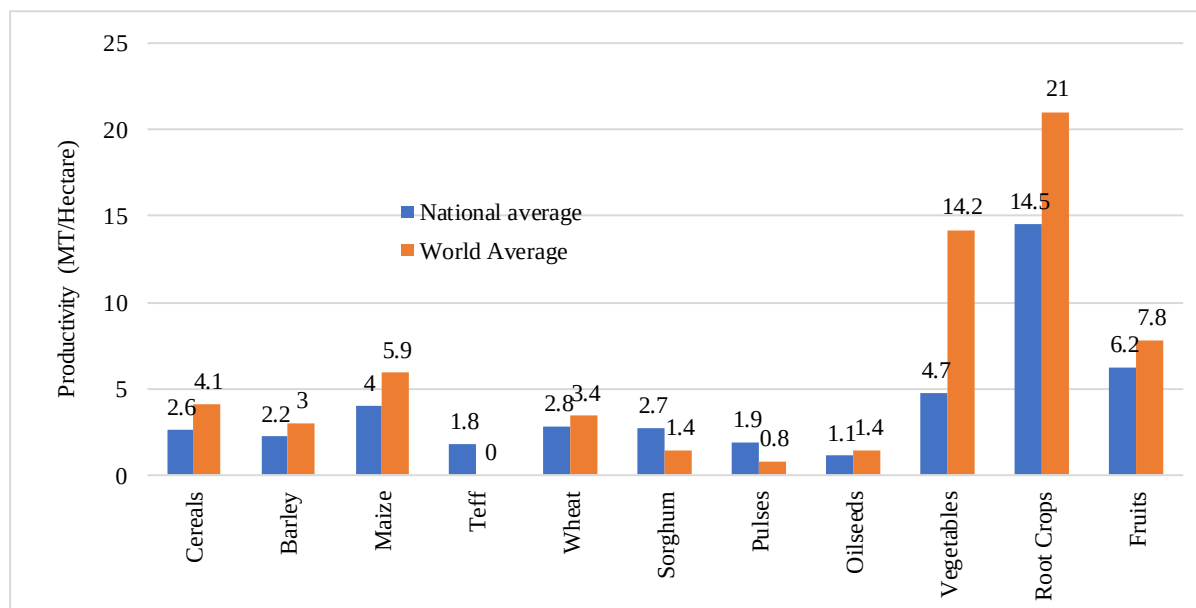


Figure 1: Crop productivity gap: National vs. World average (2018) (Mt/Ha)

Source: Authors' computation using CSA annual reports and World average from FAOSTAT

² Agricultural growth analysis (an ongoing study; PSI)

³ Ibid

⁴ Agricultural growth analysis (an ongoing study; PSI)

The observed increases in production are as a result of expansion of land under crop production, and use of fertilizers and improved seed rather than technological innovation. Thus, the recent progress in Ethiopia can be termed as agricultural growth without structural transformation.

Indeed, attainment of high yield potentials for the different commodities require accelerated rates of genetic gain in yield related traits and more technological inputs such as fertilizer, improved seeds, extension and optimum management operations. It requires advanced techniques and increased understanding of morpho-physiological processes (such as enhanced radiation-use-efficiency, deeper root systems, optimized structural stem dry matter, increased fruiting efficacy, etc.) through the development of high-level science. The demand for advanced research support is more pronounced in indigenous species of crops such as teff, noug, and sesame, and those with potential for improvement such as maize, sorghum, wheat, rice, and soybean.

Obstacles to crop sub-sector productivity transition

Over the last two decades, the country tried to generate and adopt agricultural technologies and improved practices to promote production and productivity of agriculture sector. Crop production grew from about 10 million tons in 2000 to 34.2 million tons in 2020, increasing more than twofold (CSA, 2020). However, this was not without limitation. The technologies released from NARS focused on a few crop varieties, and chemical fertilizer. Private sector was largely ignored despite its critical role in technology multiplication.

The national technology supply, dominated by public and agricultural cooperatives, failed to respond to increasing technology needs. It could not generate and disseminate technologies fit for different agro-ecologies. It also lacked accountability and effectiveness. Besides, it is important to note that almost all crop production technologies applied in the highland and midland areas were affected by poor soil quality due to depletion of soil nutrient because of excessive cultivation over the years. Lowland areas which are relatively fertile, suitable for livestock and crop production, deficiency of appropriate infrastructure and technology packages. Recently the Government launched lowland summer wheat production in Afar which showed promising results. This demonstrates that, with appropriate policy package, technologies, infrastructure, and credit facility, there is room to raise production and productivity. The lessons drawn include the following:

Dwindling farm size in the highland areas: Majority of farmers own less than one hectare of land (Table 3). For instance, close to 50% of 21.4 million holders own below 0.5 hectare. Holders of less than one hectare account for 70% of total holder (CSA, 2018).

Table 3: Number of holders under different land size

	Under 0.10	0.10 – 0.50	0.51 – 1.0	1.01 – 2.0	2.01 – 5.00	5.01- 10.00	Over 10	Total
All land use (000Ha)	149	1930	3393	5813	5917	1066	189	18458
Number of holders (Million)	3.4	7.0	4.7	4.1	2.1	0.2	0.0	21.4
Average holding/holder (ha)	0.0	0.3	0.7	1.4	2.9	6.3	12.9	0.9
% Share of households	16	32.4	21.9	19.3	9.7	0.8	0.7	100

Source: CSA (2018)

Increasing land fragmentation due expansion of rural population mainly in the highland areas is becoming one of critical challenges to agricultural production and productivity. This underscores the need for land management and use policy reform to halt the current unsustainable use. Besides, recent speedy expansion of urban centers and encroachment of fertile farm lands is another threat. This calls for formulation and implementation an Integrated Land Management and Utilisation (ILMU) policy that promote productive and sustainable land utilization together with cluster farming approach which enables consolidation of land.

Between 2004 and 2019, the total cultivated area increased by over 30% while the number of smallholders increased by 43%, an average of 2.8% increase per annum, which is faster than the growth rate of the cultivated land increase. The possibility for area expansion has been diminishing. Thus, agricultural intensification and technological innovation the only options for raising land and labor productivity.

The rural youth born after land redistribution in 1975 (i.e., current generation) have limited access while older generation own land. Land in the pastoral areas is managed by tribe leaders and communally owned. In the recent years, due to increasing demand for land, area enclosure, degradation, and conflict are common incidences in the pastoral as well as in the highland areas. Land transfer to large scale commercial farmers without adequate consultation and compensation has also resulted to conflict and unsustainable land management.

Land in the pastoral areas is managed by tribe leaders; no defined ownership – it is communal (no body's land). In the recent years, due to increasing demand for land, area enclosure of communal lands, frequent conflict and weakening power of traditional governance system for enforcement are common incidences in the pastoral and agropastoral areas. Besides, land transfer without sufficient consultation and compensation to large scale commercial farmers due to lack of clear rule and regulation led to excessive deforestation and unsustainable land management and use. Any alternative use of land should have led communities to be benefited from. In the highland areas, turning forest, grazing, wetlands, hill sides and steep slop to cultivation disruption of sustainable land use exposing to excessive erosion and degradation.

In general, as current reality indicates, at national level, about 96% of cultivated land and 96.2% of production is by smallholder traditional farmers (CSA, 2019). Of these smallholder farmers,

more than 50% own land less than 0.5 hectare to feed an average of 4.5 household members. These small land sizes do not encourage investment in agricultural technologies.

Agricultural research and extension:

Agricultural research: - Technology generation, multiplication and dissemination are the most important interventions for the agricultural sector development. Effectiveness of the National Agricultural Research System (NARS) in terms of suitable technology generation fit for different agro-ecologies is important step for productivity transition. The NARS are given power to generate resources, collaborate with local and international actors to generate, adopt and disseminate improved technologies. But these efforts have not fully met the increasing demand for agricultural technologies (i.e., HYV production).

In Ethiopia, the federal and regional Governments are the major sources of funding for the operational expenses of research institutes and centers in different agro-ecological zones of the country. Additional funding comes from donor agencies. Although it has been volatile from year-to-year, spending in public agricultural research sectors has been increasing over the past two decades. As shown in the Figure 2, Ethiopia's R&D spending increased from USD 25 million in 2005 to close to USD 50 million in 2016 (at 2011 constant price) (ASTI, 2019). However, the countries with similar economic conditions such as Ghana, Kenya and Rwanda spend much higher on R&D compared to Ethiopia. For instance, in 2016, the Rwanda R&D spending was threefold higher than that of Ethiopia, while spending by Kenya and Ghana was twofold higher than Ethiopia.

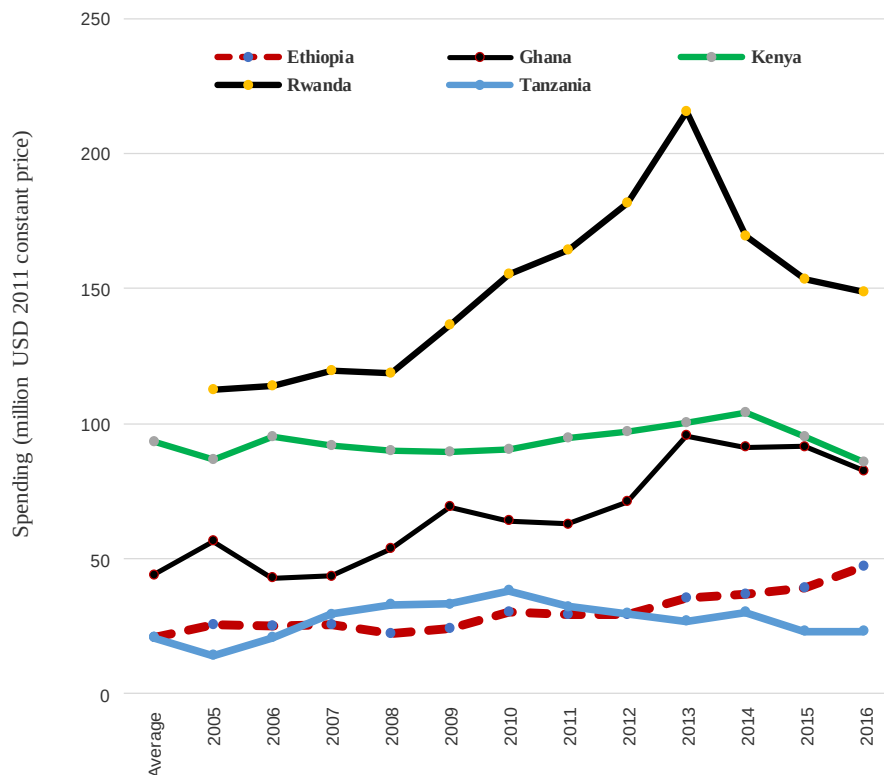


Figure 2: Spending on Research and Development (million 2011 constant price)
Source: ASTI database; International Food Policy Research Institute (IFPRI).

Moreover, investment data on agriculture for Ethiopia shows that the share of agricultural R&D spending as a percentage of agricultural GDP has declined continually from approximately 0.6% in 2002, to 0.19% in 2014, and then slightly increased to 0.3% in 2016. This shows research intensity in Ethiopia is among the lowest even by African standards, placing the country in the bottom 25th percentile (ASTI, 2019). This clearly shows that in Ethiopia, investments in research as a percentage of agricultural GDP is significantly lower than the 1% threshold recommended by the CAADP. As a result, Ethiopia is not generating and supplying appropriate agricultural technologies needed mainly for high value crops including horticultural crops for export; dryland and irrigated agriculture, technologies that reduces pre- and post-harvest loss and labor efficiency enhancement.

Insufficient research funding is among major bottlenecks of research system. For instance, the annual public fund for agricultural research was estimated to be 0.29 % of agricultural GDP (2020) which is insufficient to undertake technology generations for the different agro-ecologies. As a result, it has been difficult to retain highly experienced lead breeders. Retaining, motivating and promoting researchers based on their track records, thus, remains an area of attention. Inadequate coordination among federal, regional, university and international research systems in

the country and system weakness to incentivize technology generators are yet another areas of concern.

Agricultural extension: - Market-oriented agricultural extension service provision is an engine for nurturing sustainable application of improved technologies, practices, widen coverage, skill development, and behavioral change in production decision. The agricultural extension service provision to farmers uses Farmer Training Centers (FTCs), Development Agents (DA's) and Technical and Vocational Training Colleges for training. Towards this end, over the last two decades, the Government established 14,064 FTCs and 20 TVETs. About 69,065 DAs (17,096 Female DAs) were trained and assigned in all the rural Kebeles in the country. These efforts had substantial contribution for the progress registered in the sector. Despite rapid growth in number of farmers having access to extension services, transformation in productivity has been limited. Table 4 provides a summary of households accessing extension services over the years.

Table 4: Number of smallholders, pastoral and agro-pastoral farmers with access to extension

Year	Number of smallholder farmers (million)	Pastorals & agro-pastoral HHs (million)
2010	4.9	0.2
2011	8.8	0.2
2012	12.6	0.5
2013	10.9	0.8
2014	12.1	1.0
2015	13.1	0.9
2016	14.5	1.2
2017	15.3	1.4
2018	15.4	1.6
2019	16.4	1.1

Source: MoA (2019)

The prevailing extension services have a number of limitations: being dominated by public sector instead of being pluralistic. The existing not able to satisfy growing demands for extension services by smallholder farmers; and lack of accountability. Despite wide coverage declared by the MoA (i.e., extension service coverage increased to more than 13 million in 2019), its effect on productivity transition has been limited. Besides, its main focus has been provision of inputs (seed, fertilizer and agro-chemical) for crop production. Thus, effectiveness of the existing extension system in terms of service quality, accountability, comprehensiveness of services and coverage needs more scrutiny.

Agricultural input supply: Agricultural transformation requires agricultural input supply system, access to sustainable water/irrigation services, functional market system, infrastructure and strong institutional arrangement to coordinate public and private interests. However, the country depends on imported chemical fertilizer. The initiatives to substitute imported fertilizers with local fertilizer production have shown limited progress, raising production cost for farmers. Local production and supply of fertilizer for cheaper price will have pivotal role in terms of

raising production and productivity. Thus, promoting public and private investment in local chemical fertilizer production should be one of key national policy area.

Table 5 shows the erratic nature of seed demand and supply. For the last decade, seed supply only meets 62% of the demand. Only maize seed is easily accessible. Pulses production face shortage of improved seed, supply meeting only 22.1 % of demand. For oil crops, seed supply meets only 45.3% of the demand.

Table 5: Seed demand, supply and distribution

All crops	2011	2012	2013	2014	2017	2018	2019	2020	% of S/D
Demand	1,133,951	1,257,315	1,948,243	3,139,498	1,815,677.0	1261500.5	1,261,501	1,421,170.1	
Supply	587,673	1,071,148	1,467,080	1,009,464	979,841.0	882769	882,769	812680.233	
Distribution	540,817	800,672	1,088,138	1,026,579	833,336.0	770334	770,334	745380.505	
(Supply/Demand) (%)	51.8	85.2	75.3	32.2	54	70	70	57.2	62.0
Distribution/Supply (%)	92.03	74.75	74.17	101.70	85.05	87.26	87.26	91.72	86.7

Cereals	2011	2012	2013	2014	2017	2018	2019	2020	
Demand	1,017,136	1,132,029	1,761,533	2,537,355	1586361.41	1120490.5	1049221.65	12,750,221	
Supply	564,043	1,040,548	1,376,138	1,884,755	937238	825549	725345.06	10,753,722	
Distribution	529,689	774,168	1,003,177	1,356,068	795222	742270	699649.03	9,049,623	
Supply/Demand (%)	56	92	78	74	59	74	69	84	73
Distribution/Supply (%)	94	74	73	72	85	90	96	84	84

Pulses	2011	2012	2013	2014	2017	2018	2019	2020	
Demand	109,222	112,389	179,844	589,602	160,346	133574	108637	70622	
Supply	18,978	24,959	88,810	131,086	41,236	53632	21243	21878	
Distribution	11,128	21,212	83,182	111,535	37,529	25445	21083	15967	
Supply/Demand (%)	10	19	46	19	23	19	19	23	22.3
Distribution/Supply (%)	59	85	94	85	91	47	99	73	79.1

Oil crops	2011	2012	2013	2014	2017	2018	2019	2020	
Demand	7593	12897	6866	12541	14410	7436	4953	4387	
Supply	4652.0	5641	2132	20202	1367	1917	945.94	486.3	
Distribution	0	5292	1779	10479.4	585	948	755.31	463.98	
Supply/Demand (%)	61	44	31	161	10	26	19	11	45.3
Distribution/Supply (%)	0	94	83	52	43	49	80	95	62.1

Source: Ministry of Agriculture (2020)

Agricultural mechanization: Level of mechanization remains low in Ethiopia's agriculture. Evidence shows only 0.7% machines employed for production (mostly in wheat); 60 % of tractors are owned by commercial farmers while 40% of the tractors and 90% harvesters are owned by private renting firms. There is little or no ownership of machineries by smallholders. This makes machinery renting very expensive. Hence, affordable mechanization services suitable for different topography are one of key policy areas requiring attention. The country, however, lacks institutional arrangement to guide mechanization expansion through training, financing and technical services.

Commercialization/market-oriented production: Proportion of production marketed of crops such as oil-seeds, coffee, fruits and vegetables is increasing, especially over the past one decade due to increasing urbanization, and expansion of external and internal market opportunities. However, marketable surplus for cereals has remained below 25% of total production. This is mainly explained by low production and productivity, poor price incentives and institutional arrangement.

Agricultural finance: The recent policy reforms such as Home Grown Economic Reform (HGER), Ten Year Development Plan as well as Ten Year Agricultural Sector Plan of Agriculture (2021-2030) give due focus to ensure access to agricultural financing. The HGER (2019), indicates the need to develop a legal framework for agriculture-focused financial services. Agriculture accounted for 10% of the outstanding credit in the past three years, with the bulk reaching the more developed export sub-sector. The under provisioning of credit to agriculture could be a factor behind the low productivity of the sector. The sector is also exposed to diverse risk factors including rainfall variability, droughts, floods, pests and disease outbreaks, which necessitate provision of insurance to farmers.

Improving access to agricultural finance includes both the availability of agriculture suitable products in the formal banking sector as well as formalizing and strengthening the rural savings and credit cooperatives sector. Initial efforts will include formalizing the cooperatives sector, developing liquidity linkages with commercial banks and microfinance institutions, and building a modern management capability & financial control system to appropriately serve the rural population. Further efforts to identify and create agricultural financial institutions including agricultural and cooperative banks should be explored. Tailored efforts to promote agricultural finance products also include enhancing micro-lending and forward contracts through the building of institutional capacity of market actors. Collateralized commodity financing system (Warehouse Receipts System) is some of the areas to be promoted.

Agribusiness and market development: The Agribusiness and Market Development targets to strengthen strategic value chains in agriculture sector enhance access to finance and stimulate innovation and private sector investment. The value chains such as coffee, sesame, chickpea, honey, maize and wheat were identified by USAID/AMDe project for their potential to improve both food security and incomes. The agribusiness initiative usually includes market services, infrastructure, commercial farming, domestic and export market and agricultural cooperatives development. However, such focused policy support to promote rural and urban agribusiness development has not been sufficiently promoted.

Rural-urban linkage: Urban centers cannot be detached from the rural areas. Instead, both areas are interlinked and interdependent. For example, agro-based industries are located mainly in urban areas, closer to markets. They, however, rely on rural areas for supply of inputs. The rural areas also depend on the urban areas for supply of processed products. despite this, prevailing planning system does not consider this interconnectedness. The future policy approach is needs to strengthen the linkage between the two through forward and backward linkages.

1.2.2 Influence of the policies on performance of livestock and fishery sub-sector

The livestock sector is estimated to contribute, directly or indirectly, to the livelihoods of 60-70% of the Ethiopian population. Livestock provides food in the form of meat and milk, non-food contributions and export earnings. Despite its immense potential, contribution of the

livestock sector to the economic growth in the last decade has been insignificant (Bachewe et al., 2019). This has been attributed to inadequate feed and nutrition, widespread diseases, poor genetic potential of local breeds, market problem, and inefficiency of livestock development services with respect to credit, extension, marketing, and infrastructure (Benin et al. 2003; Jabbar et al., 2007; Negassa et al., 2011; Solomon et al., 2003).

GTP I and II recognized the potential of the sector for stimulating growth, reducing poverty and achieving food security, and also acknowledge the need for greater support in the development of the sector to realize its full potential. The focus has been technology expansion on breed improvement (mainly based on extensive implementation of AI techniques), pasture and water development, improving animal health (including mobile service) and establishment of livestock marketing system (animal transporting and market price information).

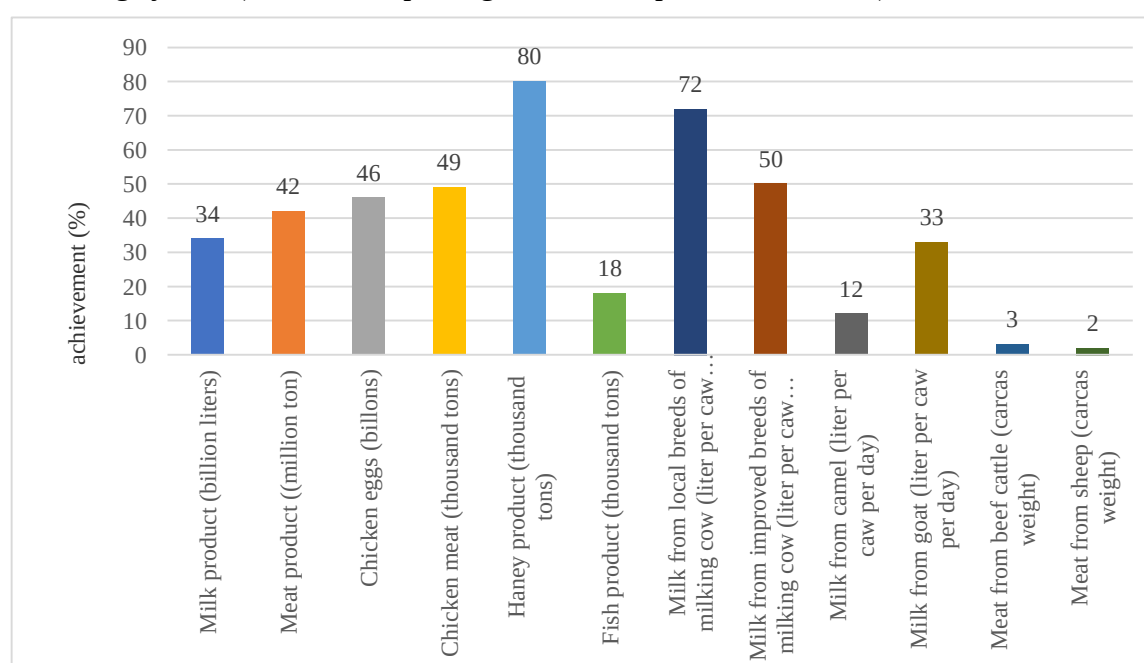


Figure 3: GTP (I&II) livestock sub-sector achievements (%) compared to targets

Source: MOA (2020)

The observed results include an average daily milk yield from local and crossbred cows of 1.45 and 8 liters, respectively and average meat production per a cattle carcass yield of 107 kgs. The average meat yields of sheep, goats, poultry, and camels are 10, 8.5, 0.8, and about 170 kg per animal, respectively (FAO 2018). These results are, however, low compared to productivity in, say, East African countries (LDMP, 2015). The above Figure 3 shows the GTP I&II livestock productivity achievement (%) compared to target.

Major bottlenecks to livestock production

Prevailing challenges in the livestock sector include shortage of feed and water, poor animal husbandry, low genetic potential of indigenous animal, animal health, livestock marketing,

frequent drought incidences and rangeland degradation. Pertinent bottlenecks are discussed below.

Feed and water supply shortage: Skyrocketing price of livestock feed is one of the most important factors affecting competitiveness of the country's livestock production, productivity and export trade. The feed sub-sector is central for all livestock commodities and is a key pillar for livestock growth and transformation. From production point of view, animal production is essentially a conversion of feed into animal product, dictating the level of production and product quality and safety. From economic point of view, about 60% of the cost of animal production is feed. Thus, economic feasibility of animal agriculture is mainly a function of quantity and quality of nutrients and the science of feeding (Dejene et al., 2014). Besides, there are unhealthy practices in the market which further push the prices of feed to abnormally high. Feed prices have risen steeply since 2009 (Figure 4).

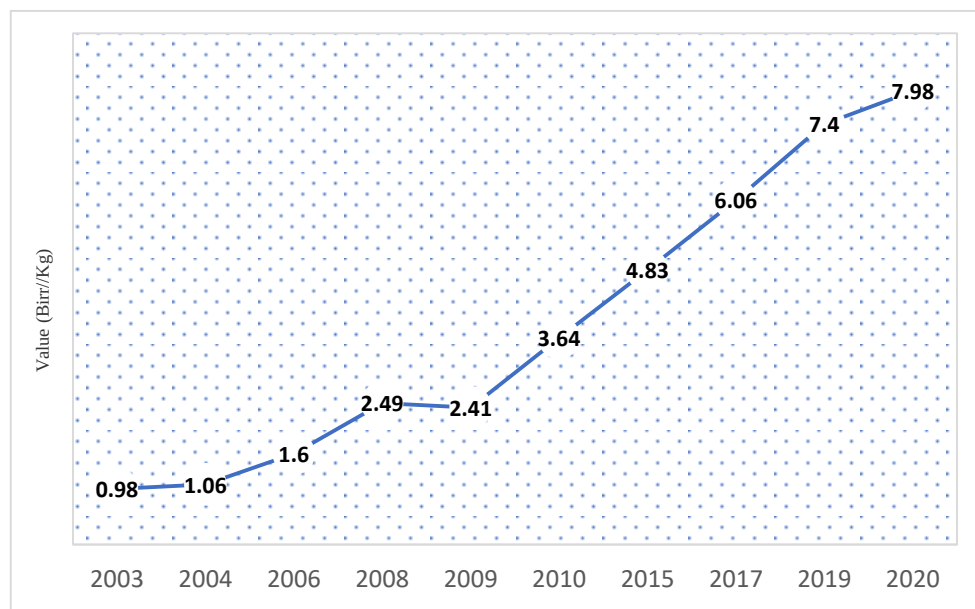


Figure 4: Trends in average feed price (Birr/Kg)

Source: Author's calculation based on feed price data compiled from different sources

Besides the feeds, water is increasingly becoming scarce and a major challenge to livestock production, not only in the pastoral and agro-pastoral regions but also in the highlands which were originally wet but are currently experiencing problems of drying rivers, springs and wetlands due to siltation.

Animal health: Despite the large number of livestock in Ethiopia, endemic diseases threaten its performance and potential. Animal diseases affect livestock through animal mortality and morbidity (MoA and ILRI, 2013). Further, the animal diseases affect the export of livestock and livestock products.

Over the past one and half decades, animal health service provision has improved. But this is not reflected in reducing animal deaths. Despite increase in vaccination services per annum from 11.5 million in 2004 to about 49 million in 2018 and improvements in animal health service, the livestock deaths (cattle, goat and sheep) increased from 8.9 million in 2004 to 19 million in 2019. In 2019, the loss due to livestock deaths amounted to 3.43 billion Birr. Figure 5 shows the trends in livestock diseases and health services as well as deaths.

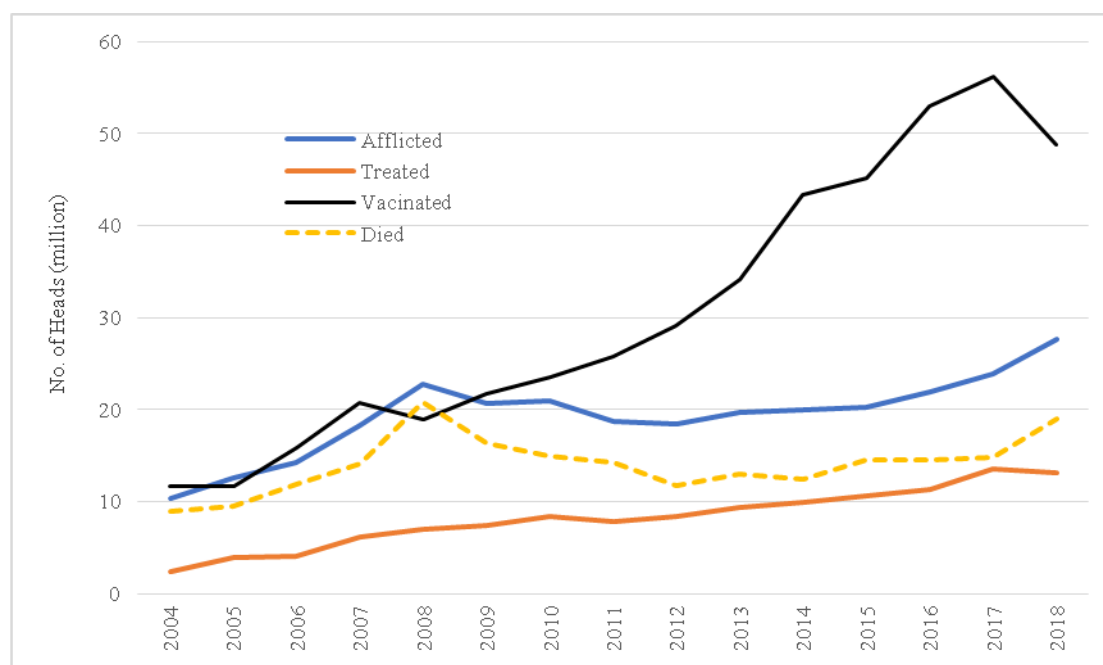


Figure 5: Trends of livestock health services and death (millions) 2004-2018

Source: CSA (year)

Low genetic potentials: Livestock production in the country is largely dominated by local breeds that are known for low productivity. Overall, local breeds account for 96% of the total livestock population while improved and exotic breeds account for 3.7% and 0.3%, respectively. The numbers of improved genotypes are so small, accounting for only 2.08%, 0.28 % and 14% of cattle, sheep and poultry populations, respectively (CSA, 2018/19).

Access to quarantine services: Due to repeated bans, mainly between 1998 to 2008 from Gulf states, major importers of Ethiopia's live animals and meat, because of concerns over transboundary diseases, and actors in the value chain have suffered a lot. To address the problem, the MoA launched construction of five⁵ quarantine stations at a total cost of Birr 230 million since early 2000s in the major export routes to expedite the livestock trade with major importing countries⁶. The highest share of expenses went to Mille station in Afar (99.1 million Birr), QebriAhmed in the Somali (74 million), Metema in Amhara (21 million), Humera in Tigray (28

⁵ Mille at Afar regional state, Qebri-Ahmed, Somali regional state, Metema, Amhara regional state, Humera, Tigray regional state and Al-mehal in the Benishangul Gumuz regional state.

⁶ Fortune, Dec. 18, 2017; Vol. 18, No.9). <https://addisfortune.net/articles/long-overdue-quarantines-make-way-in-ethiopia/>

million) and Al-mehal in Benishangul Gumuz (7 million Birr). The Mille and QebriAhmed quarantine stations are the largest with a capacity of 30,000 livestock each, Metema and Humera can contain 6,000 animals while Al-mehal has a capacity to hold 600 oxen. The Metema and Humera stations are medium-sized quarantines. Mille and Haroressa/QievbriAhmed stations cater for live animal trade with Yemen, Saudi, Djibouti and Somaliland. When fully operational, the quarantine stations have the mandate to control quality and health standards of export animals. The 46 secondary quarantine centers mentioned above segregate live animals and prevent them from direct and indirect contacts with other animals for 21 days to follow up state of health for export animals.

Despite the Government dream, their implementation of Metama and the Humera stations were delayed for over ten years due to water, electricity, and related service. Mille's and QebriAhmed's stations were delayed for 14 years due to the disagreement between the MoA and construction firms. This affected the country's earnings from live cattle export. Currently, none of five stations are operational. Mille, at some point (2003-2004 EC) started receiving a few sheep and goats, and providing services such as observing, isolating, treating, and checking the health of export animals. The station, however, has ill equipped laboratories, water supply, power supply, and poor fencing. None of the remaining stations are operational. As a result, Ethiopia forced to use quarantine service in Djibouti and Somali land. It is astonishing not to have at least one international recognized quarantine center for a country of 110 million population and more than 130 million cattle and shoats.

1.2.3 Influence of the policies on the performance of natural resources sub-sector

Balanced sustainable development and use of natural resources will increase agricultural production and productivity, ensure food and nutrition security, and reduce the risk of climate change, enable to build a green economy and contribute positively to the overall economic transition. Sustainable land management through preserving land fertility, protecting soil erosion, rising vegetation cover, retaining nutrient depilation, balancing interaction between livestock and environment, soil moisture conservation, all together have important contribution for preserving agricultural land and utilization.

In relation to this, the Government with its Development Partners have formulated and implemented water shed management schemes. Community based watershed developments have improved water, soil and biological resources beyond the target set in the Plan. Through area closure, degraded lands have been rehabilitated; community-based watersheds infrastructures have been constructed over and above the targets set. As GTP I end-line report shows, the area of land closed for rehabilitation increased from 3.2 million hectares in 2009/10 to 10.9 million hectares by 2014/15. Community based watershed infrastructure development expanded to 20.2 million hectares during the plan period. Besides, area of denuded lands rehabilitated being covered by multipurpose trees increased from 6.1 million hectares in 2009/10 to 16.2 million hectares by 2014/15.

GTP II set the following major targets: (i) The number of community watersheds with a development plan to be increased from 19,748 in 2014/15 to 93,713 by the end of the plan period; (ii) the area of land rehabilitated through area closure to be increased from 10.86 million hectare in 2014/15 to 22.54 million hectare by the end of the plan period; (iii) the area of watersheds supported with physical soil and water conservation structures to be increased from 8.12 million hectare in 2014/15 to 27.23 million hectare by the end of the plan period; and (iv) 1.5 million jobs to be created for citizens through development works in watershed management. Despite, all targets and efforts, the natural resource management and utilization faced multiple bottlenecks.

In some of the regions, performance of natural resource conservation and development surpassed targets by a significant margin in the area of natural resource conservation and management. Community-based watershed developments that improved water, soil and biological resources surpassed the target set in the Plan. Through area closure, degraded and/or denuded lands rehabilitated, 16.2 million hectares being covered by multipurpose trees in 2014 up from 6.1 million hectares in 2009/10 (MOF, GTP I end year performance review, 2014/15). There are unresolved challenges face the sub-sector.

Bottlenecks to natural resource management

Sustainable natural resources management is important for agricultural productivity improvement and transformation. However, depletion of soil and nutrient loss, degradation of agricultural and pastoral land, and increasing soil acidity have been experienced, resulting in productivity reduction. Annual bill for fertilizer import has increased but yield response is limited despite wider application of chemical fertilizers.

Limited capacity to invest in and manage irrigations schemes has led to slow expansion of land under irrigation. For instance, land under irrigation increased from mere 176105 hectares in 1990 to 1.2 million hectare in 2020. Out of this, large and medium scale fully constructed schemes covered 490,000 hectares although actual operational coverage is below this figure (MoWIE, 2020). In 2020, about 8 % of 15 million hectares cultivated land was under irrigation. This is out of 5.8 to 7.5 million hectares estimated to be high potential for irrigation development.

1.2.4 Influence of the policies on food and nutrition security

Government of Ethiopia has expressed commitment to food and nutrition security through the National Nutrition Program and strategy (NNP-I&II), Seqota Declaration that was launched in 2015 and the national Food and Nutrition Policy (FDRE 2018a), and the formation of a multi-sectoral nutrition governance structure to coordinate program design and implementation (FDRE 2013a; FDRE 2016c). However, the problem of food and nutrition security remains a key health and development concern for the country. The prevalence of stunting among children of 6-59 months old is 34% and the prevalence of wasting and underweight was recorded to be 9% and

27%, respectively in 2018. Micronutrient deficiency is also pervasive and severe in the country. About 44% of under five children, 30% of adolescents, 22% of pregnant women, and 17% of women of reproductive age are anemic. Consumption of minimum acceptable diet by children in Ethiopia is only 4% which is very low compared to other sub-Saharan countries (EDHS, 2014).

Agricultural production is one of the important means of achieving food and nutrition security. Increasing agricultural productivity has the potential to improve household food security and nutrition of the population. Therefore, Ethiopia NSA strategy focuses on, among other things, production of diverse, safe and nutrient dense foods to ensure availability and access to foods. Improving income through on and off-farm agricultural activities are the other pathways to ensure food and nutrition security besides design and delivery of key nutrition messages to households (NSA, 2016).

The Government and its DPs implemented number of important flagship programs to complement household food security and natural resource conservation. The **PSNP** is one of typical program in the country which support poorest of the poor either through Food for the Work or Direct support. The program has evolved through four phases since its introduction in 2005. The government, with support of 11 development partners, is now implementing the fifth PSNP (PNSP 5). Over the last decade, the Program has delivered transfers to 8 million beneficiaries annually and currently the program operates in 408 woredas spread over nine regions of the country. It has made immense contribution towards management of watersheds which is fundamental for poverty alleviation, food security, job creation, green growth, and climate change adaptation and mitigation efforts in Ethiopia, which are critical for meeting the Government's as well as the DPs shared goals. It has currently over 11,000 watersheds which is high compared to any other project. As reviews on its contribution by IFPRI (2017) shows it smoothened household consumption and improved access to input. Hence, coordinated efforts towards effective implementation future PSNP programs would complement realization of NAIP development targets.

Major challenges to delivery of food and nutrition security include: most agriculture sector programs have been focusing on increased production and productivity of high value crops for the market with little emphasis on the nutrition issues; agricultural programs and investment plans failed to include nutrition objectives, indicators, and targets in their work plans; the contribution of livestock and fisheries to nutrition security is very low. Besides, there is weak institutional set up and human resource capacity to fully integrate nutrition into the agriculture sector; there are low levels of awareness in agrarian, agro-pastoral and pastoral communities on optimal dietary practices, storage, food handling, processing, and consumption of nutritious foods from animal and plant sources and also the country is still dependent on rain-fed agriculture, with low access and uptake of agricultural inputs and technologies (NSA, 2016).

1.3 Stakeholder's perception on key challenges to agriculture sector investments

Key informants from Government, Development Partners, Civil society organizations, and NGOs identified various challenges bedeviling efforts to transform the agriculture sector in Ethiopia. The details of the challenges are discussed below.

Institutional challenges

Frequent changes of leaders as well as frequent restructuring of the Ministry⁷ (merging and splitting) occurred over the last two decades, especially between 2018 and 2021. The Ministry itself has changed names from Ministry of Agriculture and Rural Development (MoARD) to Ministry of Livestock and Fishery (MoLF) before it became Ministry of Agriculture (MoA). These changes brought about merging and/or splitting different Directorates, Agencies, and Authorities, and changes in leadership. These instabilities affected performance of the sector. Some of additional institutional weakness includes:

- Shortage of professional leadership at Federal, regional, and woreda levels. For instance, as anecdotal evidences indicate out of total leadership heading Bureaus of Agriculture in the regions namely Oromia, Amhara, Tigray and SNNPR, 42% are trained teachers, 14% were initially businessmen, 11% are trained accountants and 6% were sportsmen. Only 19% of the leaders are professionals training in agriculture.
- Coordination problem: There is weak coordination among the sector stakeholders. This limits effective delivery of agricultural programs and, in some cases, duplication of services. For example, in 2016, there were about 3000 NGOs in Ethiopia engaged in various forms of social and economic activities. About 1000 (or 33%) were engaged in agriculture. Many of these NGO's were concentrated in a few regions, mainly the central part of Ethiopia where agriculture is less important, and were not properly integrated and coordinated.
- Low adoption of agricultural technologies, possibly due to weak agricultural extension system. About 300 technologies have been generated but only 20% of them have been adopted by the farmers.
- Inadequate investment on agriculture: agriculture currently contribute for about 33 % of national income (GDP), but reinvestment into agriculture is low, only between 2-3% of the GDP. Besides, the budget is largely spent for salaries and other consumable expenses; less remains for capital investment in many of the regions, zones and woredas.
- Lack of accountability in the system: Prizing those performed better and pinching those not is not in place in the current system. As a result, those who perform better

⁷ . The restructuring of MOA, based on wrong principles Business Process and Re-engineering (BPR), forced to large number of senior research and technical staff to leave the ministry eroding its implementation capacity.

have less or no incentive to strive. Professional as well as organizational competency, experience, dedication and motivation at all levels is common problem of the sector.

- The Ministry has limited short, medium, and long-term capacity building and succession plan. There is no succession plan yet staff exit is becoming more frequent due to relatively poor pay.

Structural problems

- **Absence of vibrant R&D and extension system:** Top-down approach has been used in the extension system, limiting the contribution of farmers to the process. Moreover, extension coverage is limited, especially in the remote woredas and zones. Furthermore, focus of extension has been on fertilizer and seed, ignoring other equally important elements. The current extension system in Ethiopia depends on three important arrangements: Farmers' Training Centers (FTCs), Development Agent (DAs), and technologies dissemination. The Government envisaged a total of 18000 FTCs in the GTP II (2015-2020) and trained and deployed about 75,000 DAs. Although FTCs are considered the most important in the extension system, many of them face shortage of land for demonstration. The DAs, on their part, lack training and, more often, get engaged in non-extension activities. They are also less motivated due to low pay.
- **Investment in irrigation facilities and utilization:** PIF, GTP I and II identified irrigation as a priority investment area to reduce dependence on rainfed agriculture. Despite this, land under irrigation is barely 5% (CSA, 2019). The poor performance has been attributed to failure to involve communities in decisions and planning for irrigation projects. There is also shortage of skilled personnel to run the irrigation infrastructure. Complementary inputs are also not sufficiently supplied. To improve the situation, agricultural equipment and inputs are now tax-exempt, leading to increased import of agricultural machinery (MoA, 2020).
- **Private sector engagement in agriculture:** there is limited engagement of the private sector in agricultural planning and program implementation. This increases reliance on government for implementation of agricultural programs yet the government itself faces financial constraints. Effective involvement of the private sector could bridge the financing gap.
- **Agricultural mechanization:** During Imperial regime, mechanization focused on large scale commercial farms. The EFRDF regime gave little attention to mechanization in its pursuit for optimum use of abundant land and labor. Currently, labor cost is three times higher than tractor hire costs. For example, preparation of one hectare of land costs Birr 6000 using labor and only 2000 Birr using tractor. As a result, the demand for mechanization service is increasing. Unfortunately, on average, there is only one tractor per 100 Square KM.

- **Horticulture sub-sector development:** As expressed by KI, the sub-sector has got high importance though its progress has been limited. At national level, there is less understanding on potential of the sub-sector as there is limited data and information. For instance, CSA compile data on its production only for major production season while horticulture produced also during *belg* season using irrigation that CSA data does not cover production of horticulture via irrigation that underestimate its production.

Access to horticulture technologies is highly cumbersome as well as expensive as the country import almost all seeds of vegetable from abroad which further exacerbated by foreign exchange shortage. The NARS concentrated in crop research that failed to generate and supply improved horticulture seeds for producers.

Crosscutting issues

- **Climate change** remains one of major concerns. To deal with it, the government has formulated Climate Smart Agriculture Roadmap, Community-based soil and water management, and Agroforestry strategies as part of Climate Resilient Green Economy (CRGE) strategy.
- **Investment in the low land community –**
As expressed by KIs, the low land areas of Ethiopia are extremely potential, when combined with improved water use, technology supply, and natural resource management they can contribute a lot for national food and nutrition security. This can be realized when all DPs and the Government join hands. The flagship programs (AGP, SLMP, PSNP,) have good lessons to be drawn. PSNP has been implemented in the low land areas while SLMP in moisture deficit highland areas with aim of improving land productivity through rehabilitating soil and water management improvement. Indeed, SLMP able to rehabilitate only 20% degraded land. AGP is implemented in the highland areas where sufficient moisture, fertile land and better infrastructure network and market access.

The EGAD project one of typical which launched in 2011. The program initiated Lowland pastoral Training Center (FTCs), Community Animal Health Workers (CAHWs), Mobile Animal health Clinic, market centers, fodder Bank was established, and feed development was also initiated. As expressed by one of KIs, lowland projects expressed to have greater impacts when interventions from multiple sectors are combined than when they are implemented separately. Investment initiatives based on egalitarian principles which spread small resource here and there is don't lead to change in livelihood.

The Ethiopian Strategic Investment Framework (ESIF) by GIZ calls for an alternative approach; building multi-sectoral partnerships in which the different stakeholders

seek to harmonize and align their investments in a collaborative manner with the aim of alleviating rural poverty through restoring, sustaining and enhancing the productive capacity, protective functions and bio-diversity of Ethiopia's natural ecosystem resources.

The recent initiative of summer wheat production in the Afar and Somali regions is one of manifestations for their potential. As anecdotal evidences from NARS indicate, productivity of lowland irrigated agriculture is by far higher than that of irrigated agriculture in the highland area. For instance, in 2020 AGP supported cluster-based Sesame yield was 0.92 MT while it was 1.5 MT at Bako research center.

- **Nurturing rural entrepreneurs** – Transformation of rural economy through enhancing job opportunity for rural youth and women remains one of critical area need attention of the Government and DPs. For instance, promoting Small-Scale Food Processing Rural Enterprise (SSFP), horticulture production and marketing, poultry, horticulture and many others are potential areas can contribute for employment, food nutrition security as well as raising rural income.

Based on the above review, the following intervention areas are identified to enhance sector performance: striving towards boosting productivity of land and labor via technological innovation through strengthening the NARS, solidifying irrigation development and use, promoting cluster farming for land consolidation, supply of improved breeds of crop and livestock, natural resource management, promoting crop and livestock health, nurturing private sector engagement, promoting commercial fodder production (irrigated and non-irrigated areas) and enhancement of fodder Banks.

1.4 Future sector investment priorities by the GoE

The new Government of Ethiopia has taken number of economic and social policy measures to stimulate performance of the economy, ensure food and nutrition security, and improve macroeconomic imbalances. The Home-Grown Economic Reform (2018-2020), the Ten-Year National Development Plan (20201-2030) and Ten-Year Agricultural Sector Plan (2021-203) are the three main measures which have put agriculture at the center of the country's development. In the next sub-sections, we discuss these measures in details.

1.4.1 Home Grown Economic Reform for Agriculture Sector

The reform document identifies land use and administration system, access to high-quality inputs and finance, efficient market systems, and research and extension services as the major constraints to agriculture sector development. The agriculture sector reform focuses on addressing specific issues prioritized under each of the major constraints. Predominantly, it is targeting increasing market-driven agricultural production and productivity, enhancing

agricultural value addition and access to markets. To support this, the government has expressed its commitment to work closely with smallholder farmers, cooperatives and private actors.

Key reform measures include the following:

- Develop legal frameworks to enhance land use and administration and allow farmers to lease land use rights. A national land use policy and integrated land use planning will be developed to transform the agriculture sector. This measure would be coupled with the establishment and strengthening of both urban and rural land administration.
- Enhance productivity of small-holder farmers and pastoralists through provision of modern inputs and services.
- Modernize livestock production through improving veterinary infrastructure and establishing linkages with other industries.
- Establish effective linkage between agriculture producers and commodity markets as well as the commercial value chain. Deficiency in effective market infrastructure, price instability, and limited amount of market linkages between farmers and potential buyers such as cooperative unions and agro-processors, are identified as challenges.
- Accelerated growth in agricultural production with a focus on strategic crops for import substitution and export promotion. In 2017, Ethiopia imported over \$700 million of food and animal products, including wheat and other staple grains, fruit juices, vegetable oils, and raw sugar— goods for which the country has sufficient domestic production capacity.
- Develop a legal framework for agriculture-focused financial services to improve credit access to the sector.

1.4.2 Ten Year National Development Plan

The Ten-Year National Development Plan (TYNDP) has been formulated by National Planning and Development Ministry (NPDM) to guide national development priorities for period 2021 to 2030. It is based on the lessons from GTP I and GTP II, and regional and international commitments. The long-term vision of the TYNDP is to make Ethiopia a model of prosperity for Africa as measured by Human Development Index, Multi-Dimensional Poverty Index and perception of wellbeing.

The development objectives of the TYNDP include: (1) to increase the role of private sector participation through market-led economic system; (2) to register fast and sustainable economic growth and facilitate increased employment opportunities through stable macro-economic situation; (3) to enhance structural economic transformation through improving overall economic productivity, competitiveness and quality assurance; (4) to ensure access to quality social and infrastructural services; (5) to build government implementation capacity, good governance, and public service system; and (6) to ensure the safety of citizens through establishing system that would guarantee peace, human rights and rule of law (NPDC, 2020).

The strategic Pillars of TYNDP comprise enhancing economic productivity and competitiveness; building technological capacity and digital economy; ensuring sustainable growth and development finance; ensuring the leading role of private sector in development; building Climate-Resilient Green Economy; promoting access to development benefits and inclusiveness; ensuring law and orders, good governance, sustainable peace-building and strong regional economic cooperation, and women participation and social inclusiveness (NPDC, 2020).

1.4.3 Ten-Year Agriculture Sector Development Plan by MoA (2021-2030)

Based on critical evaluation of previous strategic plans and programs, the MoA developed a **Ten-Year Agricultural Sector Perspective Plan (TYAPP)** to be implemented from 2021 to 2030. The plan developed taking into account the Home-Grown Economic Reform as well as the Ten-Year National Development Plan. Furthermore, performances from GTP I and GTP II and lessons learnt have been used as critical building blocks.

Key lessons drawn from previous performances of GTP I and GTP II include need to shift from supply driven targeting to demand-based targeting which entails increased production to substitute food imports and meet export demand. This may involve exploring new sources of growth, shift to high value products and market-oriented agriculture and expansion of irrigated agriculture.

Systemic issues and related bottlenecks

The systemic issues identified are summarized in Table 6.

Table 6: Systemic issues and related bottlenecks identified from GTP I & II lessons

	Systemic Issues	Bottlenecks
1	Land & NRM management and governance	unsustainable land use, land fragmentation, limited land transferability and NRM Governance considered while developing the plan
2	Technology and Input	emerging technology need, multiplication and supply limitation, animal health service coverage and efficiency, less responsive extension service, less efficient input supply chain & system considered
3	Finance	absence of legal framework for alternative financing mechanism, limitation in bank credit and insurance considered
4	Irrigation and Water Use	efficient operation and management of irrigation schemes and public finance dominated irrigation development considered
5	Output Markets	inefficiencies of markets, limited capacities of cooperatives, weak linkages with urban areas and rest of economy considered
6	Private Sector participation	limited capital inflow into the sector, limited enabling environment for capital formation of emerging smallholder farmers and pastoralist entrepreneurs considered
7	Infrastructure	limited coverage, less efficient operation and management of existing infrastructure, weak operation and management as well as international accreditation system of the agriculture services considered
8	Implementation Capacity	less responsive civil servant/weak coordination mechanism among the different levels of Government structures and weak research and extension linkage considered

Source: MoA, TYPP (2021-2030)

The vision of Ten-Year Agricultural Sector Perspective Plan is to witness transformed agriculture in 2030. Transformation entails structural transformation within agriculture and the overall economy. Structural transformation within agriculture is envisioned to enhanced productivity, value addition and competitiveness of smallholder agriculture, leading to increased incomes and poverty reduction, and food and nutrition security. Agriculture is expected to contribute to structural transformation of the economy when it is more integrated with the rest of the economy, and when it supplies adequate quality farm products to the industry and export market.

Overall, the strategy envisages raising the sector contribution (agriculture GDP) from 743.6 to 1258.6 billion birr and contributing to 10.2% national growth. Expected contribution of crop, livestock and natural resource sub-sectors are as follows:

- Crop production in general is targeted to increase by 70% from 55.5 to 92.5 million ton. That is, cereals increasing by 83%, horticulture by 45%, coffee by 100% and spices by 83%.
- For livestock products, production is expected to increase as follows: 59 to 152 thousand tons for honey; 2.7 to 5.5 billion for eggs; 4.4 to 10 billion liters for milk and 295 to 1759 thousand tons for meat. The marketable surpluses are expected to rise to 67%, 63% and 79% for cows' milk, beef and honey, respectively.
- With regard to natural resources management there will a shift in capturing results of NRM from area covered to increased biomass, reduced soil loss and improved soil nutrient contents.
- In terms of rural jobs, 10 million permanent jobs will be created in the next ten years which is 1 million annually (50% of new entrants into the market).

The Ten Year Agriculture Sector Development Plan aims at addressing strategic issues pertaining to improving irrigation capacity, expanding mechanization services, supporting smallholder farmers to enable them transform to investors, improving the development of livestock and feed resources and keeping the health of the animals, expanding horticulture development, increasing the participation of private investors in agriculture, improving implementation capacities of institutions, creating jobs and ensuring climate-resilient sustainable development.

Strategic Objectives of TYPP (2021-2030)

The strategic objectives (SOs) as articulated in the Ten-Year Agriculture Perspective Plan are grouped into three:

1. SO1 - Increased Market-Oriented Crop Production and Productivity
2. SO2 - Increased Market-Oriented Livestock and fisheries production and productivity
3. SO3 - Sustainable Management and Utilization of Natural Resources

4. SO4 - Cross cutting themes addressing ensuring of food and nutrition security, gender, environment and climate change interventions and job creation particularly in the rural areas

The envisaged **strategic interventions** towards realizing stated SOs include (a) promoting irrigated agriculture and agriculture water management; (b) enhanced mechanization services; (c) smallholder commercialization and support for emerging large and medium scale commercial farms; (d) livestock and fisheries development (especially in pastoral areas); (e) horticulture development (especially in urban and peri-urban areas); (f) private sector and youth participation; (g) strengthening implementation capacity and (i) building resilience of agriculture to climate change and vulnerabilities. Infrastructural transformation, digitalization of the agricultural sector service deliveries, strengthening Monitoring and Evaluation system and key policy reform measures are envisaged as areas of reform.

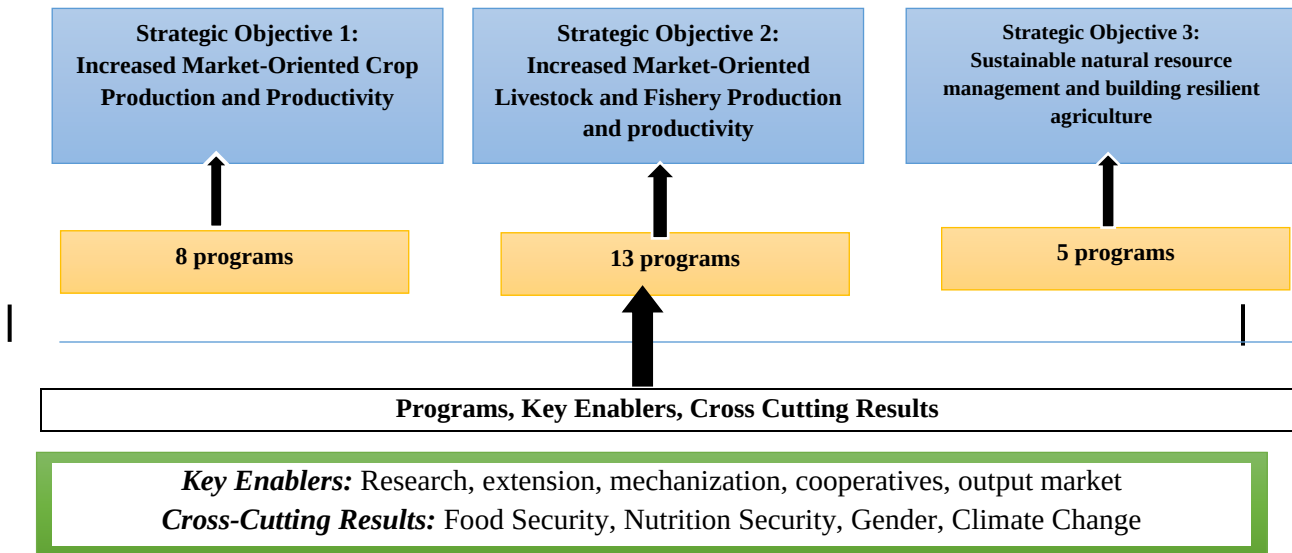


Figure 6: Strategic Objectives (SOs) and programs of TYASDP

The 28 programs fewer than three strategic objectives identified as priority areas of investment are indicated in the Table 7.

Table 7: Programs under each of Strategic Objectives (SOs)

Strategic Objective 1: Increased market-oriented crop production and productivity	Strategic Objective 2: Increased Market-Oriented livestock and fishery production and productivity	Strategic Objective 3: Sustainable natural resource management and building resilient agriculture
1) Smallholder & pastoral farmers food crops development	1) Dairy farm development	1) Watershed and agro-forestry development
2) Smallholder & pastoral farmers horticulture development	2) Red-meat development	2) Sustainable rangeland (feed) management and utilization
3) Coffee and spices development of smallholder farmers	3) Poultry and egg development	3) Sustainable soil health and fertility improvement
4) Medium and largescale commercial farms promotion	4) Fishery development	4) Sustainable rural land management and utilization system
5) Input supply system	5) Honey and sericulture development	5) Expansion of small-scale irrigation
6) Ensuring input quality and safety	6) Medium and large-scale livestock and fishery development	
7) Agricultural marketing	7) Livestock and fishery variety improvement	
8) Output quality and safety improvement	8) Livestock and fishery feed development	
	9) Livestock and fishery health service promotion	
	10) Input supply for livestock and fishery	
	11) Maintaining quality and safety of inputs for livestock and fishery	
	12) Marketing livestock and fishery products	
	13) Improving quality and safety of livestock and fishery products	

Source: MoA, 2020

The ultimate objectives of TYASP is to increase the income of farmers and reducing poverty by making agriculture productive and competitive; contribute significantly to the structural transformation in the economy; fulfil the food and nutrition security needs of the country through modernizing agriculture; supply agricultural produce to industries requiring them as input and provide adequate supply for export with increased value addition; create adequate job opportunities in the rural areas and make agriculture resilient to climate change.

The Ethiopian Food System formulate in July 2021 and serve as one of important strategic document at national level. The Food System as defined by UN high level committee (2017), is one that “gathers all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outputs of these activities, including socio economic and environmental outcomes.” That FS transformation is intrinsically about people, the planet, prosperity, peace and partnerships. The report identified 5 outcome (Action Trucks) of UN food system are: (i) ensure safe and nutritious food for all; (ii) shift to sustainable consumption patterns (iii); boost nature positive production; (iv) advance equitable livelihoods; and (v) build

resilience to vulnerabilities, shocks, and stresses. It envisions to transform the Ethiopian food systems by 2030.

The report also identified six key drivers of food systems changes: (i) biophysical and environmental (including natural resource degradation, climate change, diseases and their vectors); (ii) technology, innovation, and infrastructure (new plant varieties and animal breeds, data-driven innovations and management systems, new plant breeding technologies, post-harvest management and infrastructure); (iii) economic and market drivers (livelihoods and markets, firms, trade, and land tenure); (iv) political and institutional drivers 2 (governance frameworks, institutional support, civil strife and conflict); (v) socio-cultural drivers (social norms and traditions, social stratification, women's empowerment); and (vi) demographic drivers (population growth, youth bulge, urbanization, changing age profile, migration).

Ethiopia as one of UN member country, adopted its outcomes and formulated the Ethiopian Food System (EFS) that follows the footsteps of Ethiopia's Homegrown Economic Reform Agenda, the Ten-year National Development Plan, the Ten-Year Perspective Plan of MoA, the Multisectoral Food and Nutrition Policy, the Disaster Risk Management Policy (DRM), social protection policies such PSNP5 (Productive Safety Net Program) among others. The EFS also incorporates lessons learnt from the Government of Ethiopia's previous plans and programs: agricultural and nutrition plans, including GTP I & II. The NAIP formulation considered its basic concepts and key Action Trucks and challenges.

Planned targets envisaged to attain at 2030

Table 8: Targets for crop production and productivity

Major crops	Planned increase in area			Planned increase in total output (Million MT)			Planned increase in productivity (Mt/Ha)		
	(000 hectare)								
	2021	2030	% Change	2021	2030	% Change	2021	2030	% Change
Teff	3,109	3,172	2	5.8	8.6	50.1	1.9	2.6	41.6
Barely	954	958	0.4	2.4	3.1	31	2.5	3.2	27.2
Wheat	1,895	2,049	8.1	5.7	10.1	77.2	3.0	4.7	56.2
Maize	2,362	2,733	15.7	10.0	20.5	104.9	4.2	7.1	67.0
Sesame	650	1,124	73	0.5	1.2	144.9	0.8	1.0	37.3
Tomato	8	10	36.9	0.2	0.4	152.9	22.4	39.0	73.7
Onion	37	47	26.2	0.7	1.1	71.2	17.7	23.4	32.4
Avocado	21	63	199.1	0.1	0.8	645.5	5.0	11.9	135.7
Banana	69	92	33.4	0.6	2.8	400	8.1	26.7	230.6
Mango	19	64	237.2	0.1	0.5	292.3	6.8	7.8	15.4
Coffee	1	1	34.3	0.6	1.4	150	0.7	1.1	73.8

Source: MoA TYPP (2021-2030)

Table 9: Targets for livestock and fisheries production and productivity

Livestock and fisheries indicators	Units of measurement	2020/2021	2029/30	% of change
1) Cow milk production	Million liters	3,632	9,957	63.52
2) Goat milk production	Thousand liters	91	201	54.73
3) Camel milk production	Million liters	648	1621	60.02
4) Honey production	Thousand tones	59	152	61.18
5) Beeswax production	Thousand tones	6	10	40.00
6) Meat from beef cattle	Thousand tones	108	1,149	90.60
7) Meat from sheep	Thousand tones	66	324	79.63
8) Meat from goat	Thousand tones	48	282	82.98
9) Meat from camel	Thousand tones	1	4	75.00
10) Fish production from regular water body	Thousand tones	57.4	247	76.76
11) Fish production from aquaculture	Thousand tones	-	13	
12) Specialized chicken meat production	Thousand tones	31.3	80.9	61.31
13) Specialized chicken egg production	Thousand tones	2,547.4	5,095.8	50.01
14) Improved chicken meat production	Thousand tones	3.4	8.7	60.92
15) Improved chicken egg production	Thousand tones	199.9	359.1	44.33
16) Indigenous chicken meat production	Thousand tones	13.2	16.2	18.52
17) Indigenous chicken egg production	Thousand tones	106.9	91.4	-16.96
18) Indigenous cow milk yield	Liter/cow/day	1.45	2.02	28.22
19) Cross-breed cow milk yield	Liter/cow/day	6	10.75	44.19
20) Exotic cow milk yield	Liter/cow/day	13.07	16.95	22.89
21) Yield of meat from beef cattle	Kg/ beef cattle	110	120.9	9.02
22) Yield of meat form sheep	Kg/ sheep	10.5	12	12.50
23) Yield of meat from goat	Kg/goat	8.4	10.1	16.83
24) Yield of meat from camel	Kg/camel	250	278	10.07
25) Yield of honey	Kg/hive/collection	5.2	15.4	66.23
26) Yield of beeswax	Kg/hive/collection	0.5	1.2	58.33
27) Meat yield from specialized chicken	Kg/ hive	2	2.3	13.04
28) Meat yield from improved chicken	Kg/ hive	1.5	2	25.00
29) Egg yield from Specialized chicken	Kg/ hive	200	340	41.18
30) Egg yield from improved chicken	Kg/ hive	188	213	11.74
31) Meat yield from indigenous chicken	Kg/hive	1.3	2.1	38.10
32) Egg yield from indigenous chicken	Kg/hive	6.5	11.5	43.48

Source: MoA TYPP (2021-2030)

Table 10: Natural resource conservation and use targets

Natural Resource and development indicators	Units of measurement	2020/21	2029/30	% of change
1) Increased biomass	Metric tone	27	75.2	64.10
2) Reduction of soil loss	Tone/hectare/year	20.5	5.84	-251.03
3) Improving soil nutrients by supplying Nitrogen (N)	Metric ton /kg	2029	2237	9.30
4) Improving soil nutrients by supplying phosphors (P)	Metric ton /kg	7.2	19	62.11
5) Improving soil nutrients by supplying potassium (K)	Metric ton /kg	419.5	462.5	9.30
6) Improving soil nutrients by supplying Surpure (S)	Metric ton /kg	29.6	32.7	9.48
7) Increased soil carbon level	Percent	1.8	2.18	17.43
8) Reduction of gas emission to air	Million metric tone	17.55	40	56.13
9) Increased irrigable land	Hectare	790,400	-	
10) Area of land rehabilitated using community-based	Metric hectare	9	17	47.06

Natural Resource and development indicators	Units of measurement	2020/21	2029/30	% of change
integrated watershed development practices				
11) Area of land protected from forest land rehabilitation	Metric hectare	1.5	4.7	68.09
12) Reduction soil acidity through land rehabilitation	Metric hectare	8.2	3.8	-115.79
13) Reduction soil salinity through land rehabilitation	Metric hectare	10	2.3	-334.78
14) Area of land for irrigation use	Thousand hectare	790	1114.7	29.13
15) Number of new irrigation schemes developed at community level	Number	201	1722	88.33
16) Number of irrigation schemes developed at household level	Number	10,353	414,6372	99.75
17) Number of revitalized irrigation schemes at community level	Number	2600	32470	91.99
18) Number of legally registered cooperative irrigation schemes users	Number	1,118	2,841	60.65

Source: TYPP of MOA

Table 11: Nutrition and food security targets by 2020/21 to 2024/25

Food and nutrition security indicators	Unit of measurement	2020/21	2024/25	% of change
1) Proportion of stunted children under five	%	33	13	60.61
2) Proportion of wasted children under five	%	6.5	3	53.85
3) Proportion of underweight children under five	%	19	5	73.68
4) HH dietary diversity score improved (%)	%	22	70	-218.18
5) Amount of imported, fortified food (by type of vehicle- oil, flour, salt)	Metric ton	490,000	150,000	69.39
6) Proportion of commercial farm which produces nutrient-dense crops increase (%)	%	1.8	2.3	-27.78
7) Proportion of processed nutritious foods increased	%	2	50	2400.00
8) Quantity (MT) of fortified food produced (disaggregated by type of vehicle- oil, flour, salt, CSB)	Metric ton	454,008	97492	-78.53
9) Proportion of vulnerable groups received nutritional support	Million	5	3	-40.00
10) Effectiveness of targeted social support (Safety net programme) for vulnerable groups improved	%	80	100	25.00

Source: Food and Nutrition Strategy of MoA, (2020)

Based on above synthesis which covers lessons learnt during GTP I and II periods, national and sectoral strategic plans to be implemented between 2021-2030, the National Agricultural Sector Plan (NAIP) developed. The overall objective of NAIP (2021-2030) is to align the Ministry of Agriculture's Plans with the CAADP framework and SDG commitments. NAIP also expected to guide investment decisions of the Government, DPs, private sector, NGOs and other partners in the agriculture sector to inclined towards priority areas of investment. The specific objectives include: (a) to enhance rapid and sustainable growth of agriculture sector for employment creation, economic growth and food security, by identifying priority flagship programs under each strategic objectives (b) to estimate the financial requirements and identify the possible

funding sources; (c) to provide a framework for sector governance, coordination, and results tracking and review mechanisms, and (d) to match the prioritized flagships with investment requirement. The details of this Plan are discussed in the next section.

1.4 Structure of the document

This NAIP report is structured in 7 parts. The first part provides brief background information on agriculture sector in Ethiopia and the policies which have been implemented over the years and the associated results. It also looks at the current policies which also guide the choice of priority programs and projects for now and the future. Part 2 examines the methodological approach in formulation of the plan. Part 3 discusses the NAIP and flagship priority investments as well as the milestone indicators. Part 4 deals with Result Framework (RA) and discusses key enablers of flagship investment and alignment. Part 5 deals with the Monitoring and evaluation mechanisms while part 6 examines implementation and the associated budget. Lastly, part 7 discusses implementation risks and their mitigation measures.

2. METHODOLOGICAL APPROACH IN FORMULATION OF PLAN

Ethiopia envisions improving food and nutrition security through enhanced agricultural production and productivity. This requires targeted investment by both the public and the private sectors. Boosting production and productivity is necessary but not sufficient. Value chaining agricultural trade, commodity value chain development, maintaining price stability, market linkage, and investment in infrastructure are even more important to alleviate food and nutrition security and ensure sustainable growth and transformation. Thus, NAIP views this as being possible through inclusive and effective policy design and implementation, improved accountability and commitment by sector stakeholders, improved institutional capacity and effective multi-sectoral coordination.

2.1 Methodological approach

In developing this NAIP, both quantitative and qualitative data/approaches were used. The specific approaches used are discussed below.

Documents review

Among the documents reviewed were: agricultural sector flagship programs (AGP, SLMP, PSNP etc.), rural development policy and strategy, the Livestock Development Master Plan (LDMP), the National Nutrition Program (NNP), CRGE strategy, the Disaster Risk Management Strategic Policy and Investment Framework (DRM SPIFD), the Integrated Agro-Industrial Parks and Industrial Parks Initiatives. And also explored regional level development perspectives which included the CAADP, Agenda 2063, Sustainable Development Goals (SDG), Malabo Agenda (2014-2025), Drought Resilience and Sustainable Livelihood Programs (DRSLP), and the Rural Economic Development and Food Security (RED& FS) progress reports.

Secondary data from the Government and Donor sources were used to evaluate the performance of agriculture sector over the last one decade (i.e., GTP I and GTP II periods) and to identify future investment project. To structure the NAIP the theory of change using TYPP of MOA, CAADP result framework and international commitments was adopted.

Key Informant Interview (KII)

Key informants from both the Government and DPs were identified and interviewed using an approved checklist. Their views were sought on the success factors of the previous Plans and the challenges faced, and the planned priority investment areas.

Method of analysis

In order to analyze secondary data, a combination of descriptive, statistical and econometric model estimation techniques was applied. Econometrics model using linear projection technique

applied for the projection and segregation of total budget finance by the source of funding (various development actors).

2.2 Limitations of the approaches used

One of the major limitations is coverage of the study. Ethiopia has diverse agroecology with multiple opportunities and challenges. Thus, formulation of National Agricultural Investment Plan requires visit to major regions, zones, woredas and kebele to understand the success factors and/or challenges. This, however, was not possible due to scarcity of resources and the limited time available for the exercise.

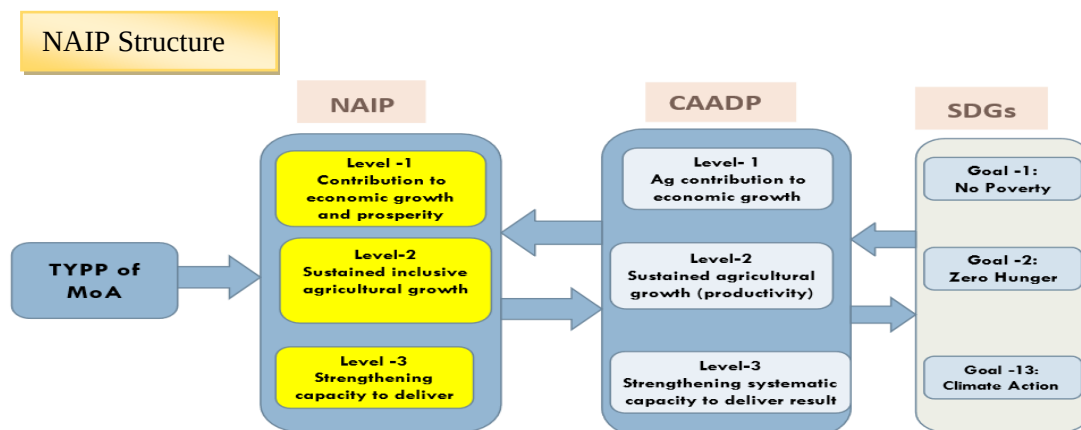
3. NATIONAL AGRICULTURAL INVESTMENT PLAN

3.1. Rationale

Ethiopia has been attempting to respond to emerging development challenges of food and nutrition insecurity, skyrocketing food prices, increasing food import, the prevalence of rural poverty, lower agricultural production and productivity, youth unemployment, lack of value-addition and diversified production system, underdeveloped market system, limited access to irrigation facilities, ever increasing negative effects of climate change, environmental degradation, and periodic natural disasters and shocks. To halt the problem, the government in partnership with the DP, NGOs, and private sector made remarkable progress over the last two decades. However, a lot of issues remain to be addressed towards attaining the national vision of becoming a middle-income country by 2025. It is believed that the National Agricultural Investment Plan (NAIP) is a good response towards the journey. The plan provides a platform for implementing the national Agriculture and Rural Development Policy (ARDP⁸) and TYPP of MoA, thereby strengthening the implementation capacities and sector coordination. It will also complement the recently introduced reforms for stimulating performance of the major economic sectors which include Home-Grown Economic Reform (HGER) and the Ten-Year Development Plan (2021-2030).

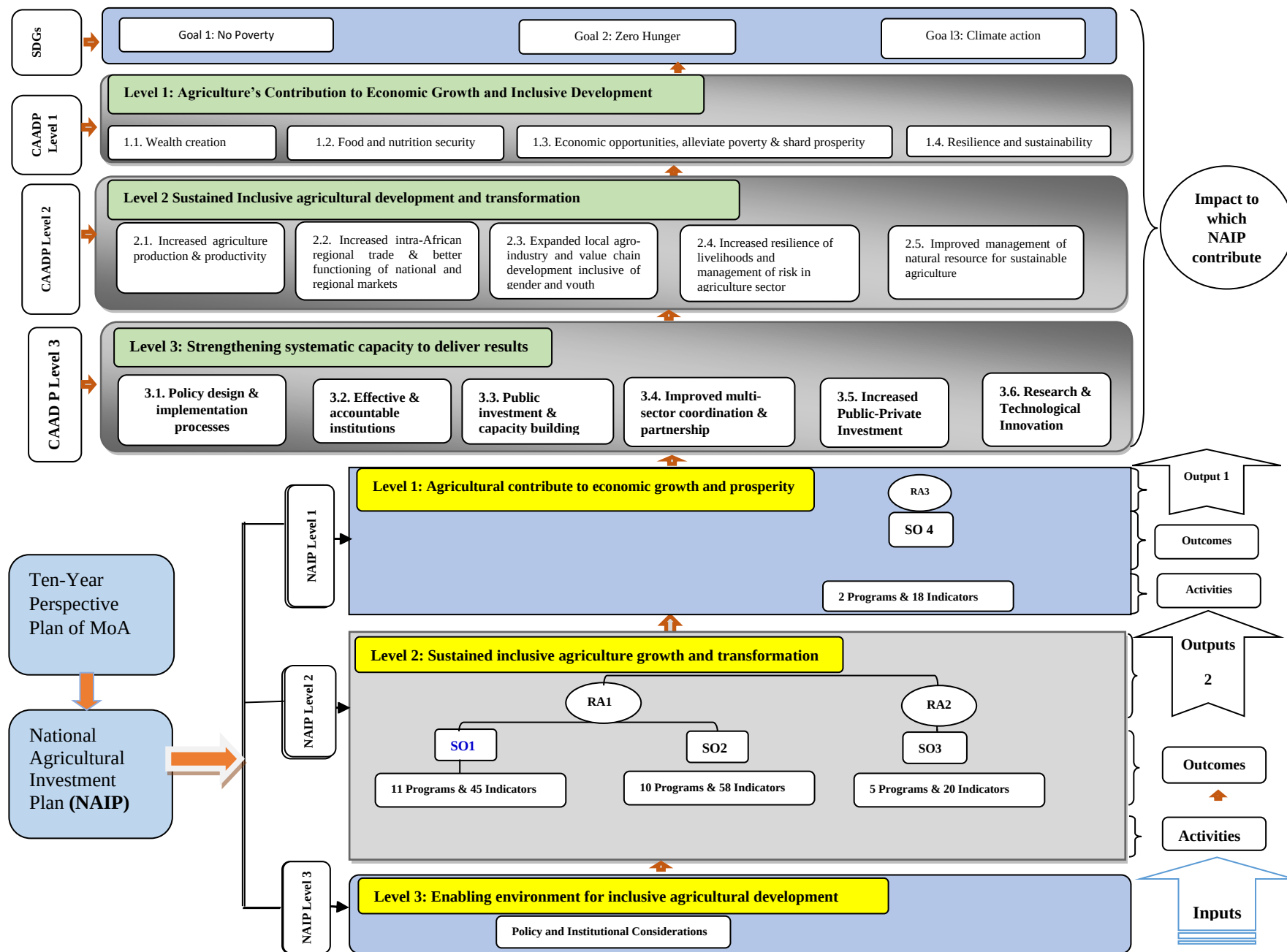
3.2. Structure of NAIP

NAIP is the long-term investment plan for the agriculture sector. It prioritizes investments areas and provides the policy and institutional framework for addressing the core problems related to agriculture and rural development. The envisaged NAIP will be a strategic document, embedded within the Ethiopian national system and reflective of the goals of the TYPP of MoA, CAADP, and SDGs, and will be a guide for inclusive implementation and operationalization of the next ten years. The schematic structure of NAIP is shown in Figure 7.



Source: Compiled by author, 2021

⁸ Agriculture and Rural Development Policy (MoA, 2013)



Note: RA (Result Area) and SO (Strategic Objective)

Figure 7b: National Agriculture Investment Plan conceptual framework

Source: Developed based on the theory of change using TYPP of MOA (2020), CAADP Result Framework 2015-2025, and SDGs

3.3. Overview of Impact Targets

The vision of the NAIP is to “contribute to Ethiopia’s become an African beacon of prosperity by 2030” through agricultural transformation. In terms of impact targets, NAIP is divided into three high-level impact targets: i) to enhance agriculture contribution to economic growth and achieve inclusive agricultural development, ii) to achieve sustained inclusive agriculture development and transformation, and iii) creating enabling environment for inclusive agriculture development. The high-level targets are derived from the TYPP of MoA, regional CAADP and the global SDGs commitments. Further, there are three main result areas for which four strategic objectives and fourteen flagship programs are set: 1) 12 under inclusive crop, horticulture, livestock & fisheries development, 2) two under improved management of natural resources for sustainable agriculture (irrigation and livestock feed), and 3) alleviating food and nutrition insecurity and building resilience of livelihoods. The plan is based on TYPP of MoA for overall result areas, while high levels impact targets developed in line with the CAADP result framework. The envisaged three high-level impact targets of the NAIP as explained below.

The “Sustained Inclusive Agriculture Growth and Transformation” is the first high level impact target of CAADP which broadly consists of two result areas (RAs); envisages to raise market oriented crop and horticulture and livestock and fishery sub-sector growth. These result area comprises the first and second strategic objectives (SO I & II) which constitute nine commodity based flagship programs.

SO1: to achieve market-oriented crops and horticulture output growth

Strategic Objective 1 (SO1) is expected to achieve market-oriented crops and horticulture output growth over the ten-year plan period of the NAIP. Achievements of SO1 require a sustainable and reliable production by accessing quality and affordable production inputs (such as labour, land, improved seeds, and fertilizers) along with appropriate knowledge, information, and skills to farmers by providing recommended agronomic packages (such as weed and pest control, improved harvest and post-harvest management techniques), revitalized agricultural extension and advisory services, uses of suitable, reliable and affordable modern agriculture technologies and mechanization services. In view of the capital-intensive nature of the agriculture technology and mechanization developments, it accounts for the largest share of investment under SO1 of NAIP. Small, medium, and large scale private investment in agro-industries are expected to produce fundamental changes in the structure and functions of the value chains including increases in the amount of agricultural produce entering market channels (including both domestic and export markets); diversification of smallholder production system; increased supply of agriculture products as raw materials to the industrial sector; improved farmer access to agricultural inputs, and enhanced household income, consumption, and expenditure levels of farmers.

Achievement of SO1 also requires boosting trade in agricultural commodities and services by upgrading the existing and/or building new market infrastructure (e.g. cool chain logistics and

warehouses), improving market information services, building new market information provision centers, strengthening the existing institutions like Ethiopian Commodity Exchange (ECX), and enhancing policies and institutional conditions for intra-Africa trade. The plan aims to emphasize diversification into strategic and higher-value export crops and horticulture, coffee, and spices to create wealth and shared prosperity for the welfare of the farmer, pastoralists and agro-pastoralists.

Even though investment in almost all areas of crop and horticulture commodities are important, resources are limited and need to be directed to areas of highest impact. As specified in the Malabo declaration, agriculture budget should be allocated to at least 5 priority agricultural commodity value chains with strong linkage to smallholder agriculture while strengthening inclusive public-private partnerships. Accordingly, the NAIP identified nine strategic crops and horticultures as priority area of investment. (i.e., five strategic crops include wheat, maize, rice, coffee, and sesame) and four strategic horticulture commodities comprise avocado, mango, onion and tomato). The selection of the strategic crops and horticulture commodities are made considering high-level goals of the TYPP of MoA (2020), ARDP (2020), and AU (2015).

A successful achievement of SO1 requires implementation nine commodity-based flagship investment programs (see Table 12 and 13). The SO1 prominently aimed at enhancements of production and productivity through input supply, commercialization of production, credit access and reduction of post-harvest losses in nine-strategic crop and horticultural commodities.

The prioritizations of programs/projects identified for flagship investment are based on clear criteria. Some of the major criteria include its impact on ensuring national food security, import substitution, foreign exchange earnings, creation of employment opportunities, and supplying inputs for agro-processing industries.

The commodity based strategic investment flagship programs were selected from their broader commodity categories (Table 12) implying selection and investment from broader category left as optional for the government and DPs.

Table 12: Twelve Strategic Commodity Based Flagship Programs

	SOs	High level development objectives of MoA	Broader investment categories of crops and horticulture products	Strategic commodities for priority investment
1	SO1: Crop and horticulture development	a) Import substitute crops	Wheat, rice, onion, malt barely	1. Wheat 2. Rice
		b) Export crops	Coffee, sesame, soybean, tropical fruits, haricot bean, mung bean	3. Coffee 4. Sesame 5. Avocado 6. Mango
		c) Food security (domestic) crops	Teff, wheat, maize, onion, tomato, others	7. Maize 8. Tomato 9. Onion
		d) Industrial crops	Cotton, soybean, malt barely	

2	SO2: Livestock and fishery	Import substitute crops	Dairy products (milk powder)	10. Dairy 11. Poultry
		Export commodities	Red meat, fish, live animals, leather and leather products, honey	12. Red and white meat
3	SO3: Priority investment in the SO3 is reflected under Complementary Investment (CI) 1, 2, 7 and 9. SO4 is high level result realized via proper investment of strategic objective 1 to 3.			

Source: Author

As clearly stated in the HGER, TYDP, and TYPP of MoA (2021-2030) accelerated growth in agricultural production with a focus on strategic crops which could contribute for import substitution, export promotion, food and nutrition security, and serve as input for manufacturing and agro-processing industries are priority areas of investment. Accordingly, Table 13 provides list of nine strategic crop and horticulture commodities and narration on their importance in the national economy.

Table 13: Justification for selection of nine-strategic commodities

	Strategic commodities	Justification
1	Wheat	Wheat is the most important cereal in the Ethiopian economy in terms of household consumption, input for agro processing industries, and cash income for above 6 million holders engaged in its production (CSA 2018). Wheat production is the third most important cereal crop in following maize and teff. Rapid growth in wheat consumption due to urbanization, increasing number of food processing industries, increasing demand for bread, and dietary diversification. It is daily major food for millions as bread. Source of income for millions of actors participate in its production, consumption, value-addition, and marketing. However, domestic production failed to meet increasing demand. As a result, to fill deficit in every year, the country imports more than one-million-ton spending above half billion USD. Hence, it is identified as the most important priority area for investment.
2	Maize	Maize is the most important cereal widely grown in many parts of the country. It plays a central role in Ethiopia's food security; accounts for 20 percent of total area and 30 percent of total cereals production. About 9.8 million households were engaged in maize production (CSA, 2018). It is the lowest cost source of cereal calories, providing 1½ times and 2 times the calories per dollar compared to wheat and teff respectively (Shahid et al, 2010). In terms of productivity, maize is the highest compared any other cereal; in 2020 its average national productivity was about 4.1 tons. As some anecdotal evidence indicates, its minimum achievable potential is 6 tons per hectare (e.g., on-farm trials). In some of maize belts like in Bako, its productivity is much higher than even achieved in the on-farm trials. It also serves as animal feed (for cattle fattening, poultry feed, etc.). Maize varieties with dense carbohydrates are highly important for fortified food preparation. It is also important supplementary ingredients for many processed foods. It is also product that poorer households consume intensively. Hence, investment in maize has considerable implications on rural food security, income, employment, and value-addition.
3	Rice	When we consider trend of rice production in Ethiopia, it increased by nearly 44%, from 71,316 Mt in 2008 to 268,224 Mt in 2019/20 (CSA data). But rice imports also increased by almost 14 times over the same period (from 22,500 Mt to 393,330 Mt) – at a cost of USD 12 mil in 2008

		to close to USD 200 mil in 2019/20. The extent of rice self-sufficiency decreased from 70% in 2008 to 24% in 2019/20. This implies a significant increase in domestic consumption of rice, with demand continuing to rise. Ethiopia has huge potential and comparative advantages in the rice production due to existence of suitable agro-ecologies for increased production and the quest for addressing food insecurity and efficient utilisation of available resources. As estimate shows, there is 5 million ha highly suitable for rice production under rain fed condition in the country; compatibility of rice with local farming systems and traditional food systems, especially injera making; increasing economic incentives of its production, and related to higher productivity in response to high unit price are some of reasons substantiate its investment.
4	Coffee	Coffee has the most important place in Ethiopian economic and social life. It employs more than 20% of the economically active population and contributes more than 25% of the country's foreign exchange earnings and about 5.1 million holders are engaged in its production (CSA, 2018/19). Ethiopia produces the highly prized quality Arabica beans; plays an important role in the global value chain. The country has unexploited potential that could enable the country to double or triple current production. Thus investment in coffee are worthy and comparative advantage of the country.
5	Sesame	Sesame has been and will remain potential registered substantial increase in production and export earnings over the past one and half-decade. Increasing edible oil processing companies and rowing international demand for the made the commodity more its prices more lucrative. As a result, its export earnings grew from about 50 million USD in 2008 to more than 400 million USD in 2020 increasing by seven-folds. Investment on sesame/oil crops high impact foreign exchange earning household income, and employment.
6	Soybean	Soybean production boosting represent the greatest opportunity for domestic market supply and import substitution in Ethiopia. Imported soybean and sunflower oil have a considerable market share on the local market. Though both crops can be grown in many parts of the country, growing conditions for soybean to the west and east are favorable and could not only satisfy the edible oil but also contribute for animal feed market. Its importance is more glorified when we consider prevailing skyrocketing edible oil price in the country. Hence, soybean production justified from three angles: import substitution, satisfy growing domestic demand for edible oil, and contribute to food security and commercialization of small holders.
7	Avocado	Avocado is one of emerging fruits as source of income for millions of smallholders and source of foreign exchange for the nation though it is in an infant stage. Area covered with avocado fruit grew from about 5000 ha between 2005 to 2010 to 18000 between 2016 to 2020. The estimated production also grew from 32 thousand MTs to 77.9 thousand MTs in the same period (CSA, 2005-2020). Hence, area has grown by four folds and production double between 2005 to 2020. Increasing domestic consumption at household and agro-processing industries together with export opportunities opened great prospects. Smallholder farmers in the Southern and South Western parts of the country begin to benefit from it. Hence, it is identified as one of the priority investment areas.
8	Mango	Although Ethiopia has considerable potential for commercial level mango fruit production but not exploited much yet not exploited as compared to its potentials. Yet annual mango juice import account for considerable foreign exchange. The domestic consumption and export opportunities are growing. Over the last one and half decade, area covered with mango plant increased from 6600 hectare to 16300 hectares; total national mango production grew from 51000 tons to 109,000 tons in between 2005 to 2020 (CSA, 2020). Though it is at infant stage, its potential for production and productivity expansion is immense that investment in this sector

		worth.
9	Tomato	Tomato is part of the daily food basket for most Ethiopians', mainly in urban settings. It is also an industrial crop for agro-processing industries. Earnings from its exports to neighboring countries also increased. Its production is dominated by irrigated farming. The country has high potential to expand its production as water and land are available mainly in the low land areas.
10	Onion	Onion is also daily food basket of all Ethiopian's, mainly in the urban settings. Earnings from its exports to neighboring countries also increased. Its production is based on wetlands and irrigated farming. The country has high potential to expand its production and productivity.

The flagship programs outcomes that SO1 where 12 commodity based priority flagship programs are expected to influence and their impact targets (milestone indicators) are summarized in Table 14:

Table 14: Market-oriented crop and horticulture production outcomes and milestone indicators

SO1: Crops and horticulture development	
Outcomes	Milestone indicators for impact targets
<i>i. Production and productivity of nine-strategic crop and horticulture commodities⁹</i>	
• Total productivity of nine-strategic crop and horticulture commodities increased	• 4% annual change in total value productivity (value outputs/value inputs) of crops and horticulture.
• Production and productivity of nine-strategic crop and horticulture product items increased.	1. Wheat: 8% annual increment of production and 6% increment of yield. 2. Maize: 11% annual increment production and 7% increment of yield. 3. Coffee: 15% annual increment of production and 7% increment of yield. 4. Rice: 8% annual increment of production and 4% increment of yield. 5. Sesame: 15% annual increment of production and 4% increment of yield. 6. Soybean: 8% annual increment of production and 5% increment of yield. 7. Avocado: 65% annual increment of production and 14% increment of yield. 8. Mango: 29% annual increment of production and 2% increment of yield. 9. Onion: 7% annual increment of production and 3% increment of yield. 10. Tomato: 15% annual increment of production and 7% increment of yield.
<i>ii. Supply of production inputs</i>	
• Sustainable land use, consolidation and administration system	• 10% annual increment of land consolidation using cluster farming. • 10% annual increment of shareholder farming • 100% of rural households issued with first and second level land certificates.
• Use of improved seed increased	• 10% annual increment of improved seed use.
• Use of fertilizer and other soil fertility enhancement practices increased.	• 10% annual increment of fertilizer use. • 10% annual increment of inorganic soil fertilizer utilization.
• Use of plant diseases & insect-pests prevention and mitigation techniques increased.	• 10% annual increment of pesticide & herbicide use. • 10% annual increment of insect-pests prevention and mitigation techniques.
• Use of agriculture extension and advisory service increased.	• 5% annual increment of farmer's demonstration training center. • 5% annual increment of farmers using extension package for crop and horticulture productions.
<i>iii. Commercialization</i>	
• Use of agriculture mechanization service increased.	• 10% annual increment of agricultural mechanization machineries use • 8% annual increment of mechanized cultivated land using large-scale commercial farms.
<i>iv. Post-harvest loss reduction</i>	
• Qualitative and quantitative post-harvest losses reduced of nine-strategic crop and horticulture.	• 3% annual reduction in post-harvest losses of nine-strategic crop and horticultural crops.
<i>v. Financing production inputs</i>	
• Financial services for crop and horticulture production increased.	• 10% annual increases of financial service provision to crop and horticultural production.

⁹ Nine-strategic crops and horticulture commodities are wheat, maize, coffee, sesame, avocado, and mango.

CIPs: expanding crop and horticulture trade	
<i>i. development of marketing system</i>	
Market-oriented nine-strategic crop and horticulture production (both quality and quantity) increased.	10% increment of crop and horticulture production entering international market channels per annum. 8% annual increases of crops export volume. 15% annual increases of horticulture export volume. 16% annual increase of coffee and species products exports.
Diversification into higher value export commodity increased	10% annual increase of share of high value export products in total agricultural production.
Crop and horticulture marketing system improved.	8% annual increase of primary and secondary markets infrastructure supports across the value chain. 5% annual increases in cool chain logistics and warehouse of horticulture crops across main production areas. 5% annual increment of market information provision centers. 10% annual increment of number of farmers who received market advisory service.
<i>ii. Price stabilization</i>	
Maintain price stability of food	5% annual reduction of crops price volatility.
CIP: Creating linkage	
<i>i. Small, medium & large -scale crops and horticulture -processing industry</i>	
Small-scale crop and horticulture local agro-industry farmers increased.	10% annual increment of small scale local agro-industry farmers.
Medium and large scale crop and horticulture commercial farming increased.	12% annual increment of medium local agribusiness industry commercial farmers. 10% annual increment of large scale local agro-industry commercial farms.
<i>iii. Value addition</i>	
Increased value addition of crop and horticulture production	10% annual increase overall value addition for nine-strategic crop and horticulture. 15% annual increase in primary value addition of nine-strategic crop and horticulture at farm level.
<i>iii. Strengthening agriculture and industry linkage</i>	
Raw material supply to industry	8% annual increase in nine-strategic crop and horticulture as raw material to industry
<i>iv. Employment creation</i>	
Increased rural job opportunities from crops and horticulture	15% annual increase in number of trained labor force in crop and horticulture production. 10% annual increase of job opportunities created from crop and horticulture sub-sector.

SO2: to achieve market-oriented livestock and fisheries output growth

SO2 is expected to achieve market-oriented livestock and fisheries output growth over the ten-year plan period. This can be done by ensuring adequate and sustainable livestock infrastructure, and efficient utilization of production inputs (such as improved breeds, fodders, and veterinary service) that will be supplied through revitalized extension and advisory services. In addition, ensuring livestock health and controlling the prevalence of animal diseases, and conserve important local livestock breeds will contribute to the enhancement of the production and productivity of livestock and fisheries. To supply an adequate number of improved livestock and fisheries breeds, and enhancing the use of modern production technologies, the Government, private sector and farmer cooperatives are expected to play a pivotal role. Achievement of SO2 also requires enhancing the domestic and foreign markets by upgrading the existing market

infrastructure (e.g., building livestock quarantine and export abattoirs inspection centers), building primary and secondary markets, and establishing market information provision centers.

Achievement of SO2 requires implementation of three commodity based flagship program. Livestock and fisheries development project, aimed to attain the increment of production and productivity through strengthening input service delivery systems, financial support, and reduction of post-harvest losses.

In view of the limited resources, the plan mainly focuses on the three commodity-based flagship programs: i) White and red meat program (ii) Poultry product (egg and chicken meat) development program and iii) Dairy products (milk from cow, goat, and camel) development program. The selection of the three strategic livestock and fisheries flagship investment programs are made in line with high-level goals of the TYPP of MoA (2020), ARDP(2020) and AU (2015), and identified through analyzing livestock and fisheries sector performances over the last decade (see Table 15 for justifications).

Table 15: Market-oriented livestock and fisheries flagship programs

	Commodity Based Flagship Programs	Justification
10	Poultry products (Egg and chicken meat)	Keeping poultry is generally the backbone for the rural economy; provides a valuable contribution to household income generation and food security. It is the source of the most versatile and near-perfect foods to fill the need for high-quality protein. Its demand in Ethiopia is sharply rising due to fast growth rate of population, booming urbanization, and changing consumption habit. The price of poultry products grew several folds over the last decade. Accordingly, poultry products development has gained greater emphasis. Critical strategic interventions include increased production, productivity, price competitiveness, processing and marketing. The plan pays much emphasis to supply of improved genetic; ensuring access to quality and affordable poultry feed, designing and implementing coordinated disease control service, strengthening surveillance and diagnostic capacity; ensuring access to quality drug and vaccines; facilitating innovative platforms to create enabling environment to enhance private sector participation are among the forefront enablers for transformation of the sub-sector. Hence, poultry production, processing and marketing are found to be an important area of investment for public, private and thereby create ample employment opportunities.
11	Dairy products (Milk from cow, goat, and camel)	Dairy production is an important component of livestock farming in Ethiopia. However, the productivity of dairy animals is remains low. This resulted in a shortage of supply of dairy products and forced to import dairy products from abroad. Milk production is an integral part of the production system of small-scale, non-commercial subsistence farms. Due to increasing urbanization and population growth and change in consumption habits, the demand for dairy products has been increasing. The production response for increasing demand remained inelastic due to structural bottlenecks. Hence, it is identified as priority area of investment from food and nutrition security, foreign exchange saving, income and employment generation perspectives.
12	Red and white meat	The domestic demand for red meat (beef, mutton) and white meat (fish) has been increasing. Besides, demand from processing industries and red meat exporting

		companies also increase. Domestic price are too high compared to per capita income level that unaffordable for the majority of citizens. Hence, it is found as critical important flagship investment area for national development.
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The successful transformation of livestock and fishery sub-sector (i.e., SO2) cannot be realized without enabling policy environment and complementary investments. The ten Complementary Investments Projects (CIPs) are key enablers for the success. The enablers focus on market development, maintaining price stabilization, integration of small, medium & large -scale processing industries, creation of value addition, strengthen agriculture and industry linkage, and thereby create employment opportunities in rural areas.

The flagship programs outcomes that SO2 is expected to influence and their indicators are summarized in Table 16.

Table 16: Market-oriented livestock and fisheries outcomes and milestone indicators

SO2: Livestock and fisheries development	
Outcomes	Milestone Indicators (impact targets)
<i>i. Production and productivity of three-strategic livestock and fisheries items</i>	
Total production and productivity of three-strategic livestock and fisheries items increased.	4% annual change in total value productivity (value outputs/value inputs) of livestock and fisheries. 10% annual increment of livestock and fisheries production.
Production and productivity of three-strategic livestock and fisheries products increased.	<i>White and red meat</i>-annual increment of red and white-meat supply from beef cattle (9%), sheep (13%), goat (17%), camel (10%) in carcass weight, and fish meat production (8%). <i>Poultry products</i>-annual increment of chicken-meat production (6%), chicken-egg production (5%), and chicken-egg yield (4%). <i>Dairy products</i>-annual increment of dairy product supply from cow milk production (6%), goat milk production (6%), camel milk production (6%), cross-breed milk yield (4%), local-breed milk yield (3%), exotic milk yield (3%), and lactation milk yield (6%)
<i>ii. Supply of production inputs</i>	
Use of improved or new livestock and fisheries technologies increased.	10% annual increment of improved local/cross breeds of livestock and fisheries increased. 5% annual increment of new agricultural technologies generated, tested and released. 5% annual increment of high-grade crossbred dairy cow. 5% annual increment of improved apiculture honey bee technology.
Supply of livestock and new fish-chicks, fodder, and water points increased	10% annual increment of improved seed for livestock feeds production. 10% annual increment of balanced animal feeds. 7% annual increment of fish-chick. 10% annual increment of pastoralist's access to watering points.

• Use of livestock and fisheries diseases prevention and mitigation techniques increased.	• 10% annual increment of livestock and fisheries supply of medicine increased. • 6% annual increment of livestock and fisheries diseases surveillance service supply. • 10% annual increments of livestock vaccination service. • 15% annual reduction of prevalence of livestock diseases. • 15% annual reduction of morbidity and mortality rate of livestock and fisheries. • 15% annual reduction of livestock and fisheries diseases outbreaks. • 15% annual reduction of incidences of zoonotic diseases.
• Use of livestock veterinary services and other related inputs increased.	• 10% annual increment of livestock health access and quality. • 10% annual increment of public veterinary service increased. • 10% annual increment of coverage of vaccination increased. • 10% increase in areas coverage under surveillance for targeted diseases.
• Use of agriculture extension and advisory service increased.	• 5% annual increment of farmers using livestock extension package for livestock and fisheries.
<i>iii. Post-harvest loss reduction of livestock and fisheries</i>	
• Qualitative and quantitative post-harvest losses of livestock and fisheries reduced.	• 3% annual reduction in post-harvest losses of livestock and fisheries. • 8% annual reduction of gas emission from livestock production
<i>iv. Financing production inputs</i>	
• Financial services for livestock and fisheries production increased.	• 10% annual increments of financial service providers to livestock and fisheries production.
CIA: Expanding livestock and fishery product market	
<i>1. Development of marketing system</i>	
• Market-oriented livestock and fisheries production (both quality and quantity) increased.	• 10% increment of livestock and fisheries production entering international market channels per annum. • 14% annual increase in livestock export earnings as a percentage of value added in the agricultural sector. • 10% annual increase in fisheries export earnings as a percentage of value added in the agricultural sector.
• Livestock and fisheries marketing system improved.	• 8% annual increase of primary and secondary markets infrastructure support across the value chain. • 15% annual increase in primary value addition of livestock and fisheries. • 5% annual increment of market information provision centers. • 10% annual increment of number of farmers who receive market advisory service.
• Reduction of illegal cross-border livestock trade	• 15% annual reduction of number of livestock traded in cross border illegally.
• Improved compliance of livestock and fisheries product to international standards	• 15% annual reduction of number of rejected livestock and fishery products traded on international markets. • 5% annual increment of livestock quarantine system and facility centers. • 10% annual increment of livestock identification, recording and history traceability service. • 5% annual increment of export abattoirs inspection and certification.
• Market-oriented livestock and fisheries production (both quality and quantity) increased.	• 10% increment of livestock and fisheries production entering international market channels per annum. • 14% annual increase in livestock export earnings as a percentage of value added in the agricultural sector. • 10% annual increase in fisheries export earnings as a percentage of value added in the agricultural sector.

• Livestock and fisheries marketing system improved.	• 8% annual increase of primary and secondary markets infrastructure support across the value chain. • 15% annual increase in primary value addition of livestock and fisheries. • 5% annual increment of market information provision centers. • 10% annual increment of number of farmers who received market advisory service.
<i>ii. Price stabilization</i>	
• Price stability of livestock and fisheries at local market	• 15% annual reduction of livestock and fisheries price volatility
CIPs: Creating linkage with agro-processing industries	
<i>i. Small, medium & large scale livestock and fisheries -processing industry</i>	
• Small livestock and fisheries production system increased	• 10% increase in small specialized dairy production system per annum. • 10% increase in small specialized cattle feedlots per annum. • 10% increase in small specialized fisheries production system per annum.
• Private medium and large scale commercial livestock & fisheries investment increased.	• 10 % increase in annual level of medium and large scale local industry investment on livestock and fisheries.
<i>ii. Value chain development</i>	
• Increased value addition of livestock and fisheries production	• 10% annual increase in overall value addition for livestock and fisheries. • 15% annual increase in primary value addition of livestock and fisheries at farm level.
• Farmers and pastoralist income from livestock and fisheries increased	• 10% annual increase of farmers and pastoralist per capita income from the sub-sector.
<i>iii. Strengthening agriculture and industry linkage</i>	
• Raw material supply to industry	• 8% annual increase in livestock and fisheries products as raw material to industry
<i>iv. Employment creation</i>	
• Increased rural job employment opportunity from livestock and fisheries	• 15% annual increase in number of new trained labor force on livestock and fisheries production. • 10% annual increase in number of new trained labor force on livestock and fisheries production.

SO3: to achieve a sustainable natural resources development, management, and utilization

The SO3 falls under CAADP Result Area 02 (RA 02) which focus on “Improved Management of Natural Resources for Sustainable Agriculture”. This result area includes the 3rd strategic objective. The SO3 will conserve and utilize Ethiopia’s natural resources in a sustainable and productive way, adapt to and mitigate adverse effect of climate change for sustainable agriculture. SO3 will also reinforce crop and horticulture, livestock, and fisheries production and productivity strategic objectives via creating an enabling framework for sustainable and efficient use of land and water resources. Increasing crops and horticulture, livestock, and fisheries production and productivity are directly related to the utilization of land and water resources. In light of this, implementing efficient and effective water management systems by expanding irrigation development (which may be small, medium, or large-scale irrigation schemes) throughout the country directly contributes to agricultural growth, thereby addressing the problem of food and nutrition insecurity and contributing to building resilience to climate changes and other shocks to sustainable agriculture.

The agriculture growth through expansion of area cultivated is less likely mainly in the highland areas. Thus, intensification of agriculture through adopting improved practices and technologies remains the only plausible option. In the mid-altitude and lowland areas, however, the country is still endowed with suitable lands which are not used for crop production. These areas are largely

found where smallholder crop farming is not attractive due to more capital requirements to cultivate large areas under mechanized systems. In this regard, encouraging domestic and foreign investors, and private sector involvement on medium and large scale commercial farming, through policy support, is needed.

Climate change presents Ethiopian farmers and pastoralists with a new set of challenges. It is the main source of risks and uncertainties, calling for development of more robust and resilient farming systems. In this regard, there are possibilities to increase carbon capture through reforestation and implementation of modern agronomic practices that increase soil organic carbon levels, and which also have beneficial impacts on soil fertility and hydrology and fertilizer response. Achievement of SO3 requires implementation of (1) small, medium and large-scale irrigation development project, aimed at enhancement of total production and productivity of nine-commodity based strategic flagship programs through wise management and used of irrigation and water resources, applying integrated soil management, and effective forest management practices and (2) adaptation and mitigation of climate change project, aimed to reduce climate change by undertaking various adaptation and mitigation measures.

Competing uses of land, as witnessed in recent years, calls for a well thought policy to promote productive and sustainable use of land. Thus, formulating and implementing Integrated Land Management and Use (ILMU) policy at national level is one area that needs urgent attention.

The flagship programs outcomes that SO3 is expected to influence and their indicators are captured in Table 17.

Table 17: Natural resource development, management and use-oriented outcomes

07. Small and large-scale irrigation development	
Outcomes	Milestone Indicators
<i>i. Water use and irrigation canal management</i>	
Water conservation and water use efficiency improved.	5% annual increase of total precipitation conserved. 5% annual increase in crop yield per unit of water use.
Use of irrigation capacity increased.	9% annual increment of new irrigation schemes development at community level. 10% annual increment of revitalized irrigation schemes development at community level. 10% annual increment of new irrigation schemes development at household head level. 6% annual increment of legally registered cooperative irrigation scheme users. 15% per annum coverage of total cultivated land under irrigation.
<i>ii. Integrated soil management</i>	
Soil health index and NPKS supply in agricultural landscapes improved.	2% annual increase in soil organic carbon level. 5% annual soil map use coverage. 1% annual increment of Nitrogen (N) supply 6% annual increment of Phosphorus (P) supply 6% annual increment of Potassium (K) supply 6% annual increment of Sulfur (S) supply
<i>iii. Forestry management</i>	
Arable, rangeland and forest degradation reduced.	3% annual of degraded land rehabilitated using community-base integrated watershed management. 7% annual increase in area under improved land management, including

	forest coverage. • 5% annual increase in Normalized Difference Vegetation Index (NDVI) • 6% annual increment of development of biomass.
<i>iv. Employment creation</i>	
• Increased rural employment opportunities from Natural Resource Management (NRM)	• 15% annual increase in number of new trained labor force in NRM sub-sector. • 10% annual increase of job opportunities created from NRM sub-sector.
CIA: Adaptation and mitigation of climate change	
<i>i. Adaptation and mitigation of climate & weather related risks in agriculture</i>	
• Farmers' resilience to respond to climate and weather-related risks challenges strengthened.	• 5% annual increment of climate-and weather-related forecasting system, adaptation, and mitigation program support.

SO4: to achieve food and nutrition security through building resilience to shocks

SO4 is the high Result Area (RA1) where contribution of agriculture to economic growth and prosperity is gauged. The SO4 is expected to build resilience of livelihoods of people to vulnerabilities, shock and stress, and food and nutrition insecurity over the ten-year life of the NAIP. Food and nutrition security have been at the center of all development policies in Ethiopia. Despite several efforts towards the achievement of food self-sufficiency and building sustainable resilience of livelihoods, the prevalence of poverty, and food and nutrition insecurity remain serious challenges. Attainment of these goals requires collaborative actions of various actors of the economy. To this end, increasing agricultural production and productivity of farmers and supporting vulnerable households through designing appropriate programs have a central role to play. Agriculture-based interventions can also make important contributions to reducing stunting by increasing the availability of diverse and healthy foods in urban and rural areas, improving access to food through reduced food prices, and strategic food and cash reserves to respond to food shortages. Other measures include strengthening early warning systems to facilitate advanced and proactive responses to disasters and emergencies and reduce emergency import of food. Achievement of SO4 requires successful implementation of one flagship project.

Alleviating food and nutrition insecurity and disaster management programs, aimed at building the resilience of livelihoods of farmers, pastoralists and agro-pastoralists to respond promptly and effectively to various shocks, vulnerabilities, and thereby achieve food and nutrition security in rural areas. The PSNP and SLMP projects revised addressed weakness encountered over the past one decades and upscale success cases would play great role SO4 implementation.

SO4 is expected to influence and their impact targets are shown in Table 18.

Table 18: Alleviating food and nutrition security and building resilience outcomes and impact targets

Outcomes	Impact targets
<i>i. Building resilience of livelihoods from various shocks</i>	
Strengthened livelihoods of chronically food insecure households.	5% reduction of households experiencing food gaps of three months or more.
Effectiveness of resilience building to shortage of food improved	5% annual increment of food feeding programs
Effectiveness of resilience building to shocks improved	4% annual increment of adaptation and mitigation to shocks management programs
Farmers and pastoralist income from agriculture increased	10% annual increase of farmers and pastoralist per capita income from each sub-sector of agriculture. 5% annual reduction of headcount ratio of rural poverty.
<i>ii. Alleviate food and nutrition insecurity</i>	
Prevalence of child undernourishment reduced	5% annual reduction in stunted and underweight children in rural areas.
Status of malnutrition improved	5% annual reduction in prevalence of underweight 5% annual reduction in prevalence of stunting 5% annual reduction in prevalence of wasting 5% annual increase in minimum dietary diversity of women. 5% annual increase in minimum acceptable diet for 6-23 months & infants
Effectiveness of targeted Social Safety Net	10% increase in the number of vulnerable households receiving transfers

Programme for vulnerable groups improved.	- to cover basic consumption needs. • 20% annual increase in households graduating from PSNP and other safety net programs annually.
• Reduction of major crop import dependency ratio	• 10% annual reduction of cereals import • 10% annual reduction of rice and oilseeds crops import.
• Imports of food aid reduced.	• 10% annual decline in food aid imports. • 10% annual increase of food reserve stock. • 10% increase in domestic procurement of food aid supplies.

3.4 Complementary Investment Projects (CIPs)

It is important to note that only investment in strategic commodities would not lead to sustainable success unless complemented by policy and enabling factors. The SO1 envisages enhancing crop and livestock productivity which intern depends on quality input supply, access to finance, linking with domestic and export market as well as with industries. Considering this, ten Complementary Investment Projects (CIPs) areas are identified to complement outcome and impacts of 9 CBFs investments. These include:

Table 19: Ten Complementary Investment Projects (CIPs)

Complementary Investment Projects (CIPs)		Alignment with SOs	Justification
CIP1	Irrigation development	SO3	Ethiopia's future agricultural sector development hinges detaching high dependency on rainfall-based production that substantial investment on irrigation facility and raising share area cultivated with irrigated agriculture is mandatory intervention
CIP2	Livestock feed development	SO2	Promoting commercial fodder production, processing and marketing through improved access to land, marketing chain development, and stimulate private sector engagement (both large- and small-scale producers).
CIP3	Mechanization	SO1 & II	Centuries old traditional mode of production and agricultural implements are areas that needs change to improve production and productivity of land and labor with enabling policy environment, institutional set up matters for success.
CIP4	Agricultural marketing/commercialization and augment linkage	SO1 & II	Marketing is an essential ingredient for sustainable development. when it enables producers to gain reasonable benefit. The absence of effective market infrastructure, price instability, and limited amount of market linkages between farmers and potential buyers and producers such as cooperative unions and agro-processing industries are all major challenges. This in turn producers not to gain proper share of market proceeds from market again affecting incentives and additional investment on farm.
CIP5	Research and extension	SO1 & II	Growth in agriculture has been constrained by various external and internal problems which revolves around agricultural research and extension, availability and access to high-quality inputs, access to finance, and market systems. Technological progress that needed for transformation partly emanated from "Innovation in research and

Complementary Investment Projects (CIPs)		Alignment with SOs	Justification
			extension” system. State-led extension service alone cannot guarantee for success that nurturing private extension services remains area for focus. Revisiting the effectiveness of NARS remains an issue.
CIP6	Agricultural finance	for all	The availability and coverage of agricultural finance is limited given the low number and limited capacity of financial institutions render agricultural credit. Currently such as MFIs and RuSACCOs in the country provide credit services but their coverage and effectiveness of services is highly limited. Hence, future development and transformation needs addressing this challenge.
CIP7	Sustainable land management	SO3	Effective utilization of available land resources that optimizes utilization without prejudice of sustainable management is key success factor. Limited bio-physical conservation measures to rehabilitate and maintain land resource together with overexploitation of land resulted in nutrient depletion. Agricultural land encroachment for urban housing and marginal land cultivation are unresolved challenges. Limited access to land by the young generation expected to be more productive is another bottleneck.
CIP8	Private sector development	for all	Private sector development is an engine for success. Actively engaging in public Private Partnership (PPPs) arrangements, addressing constraints to private sector participation (e.g. access to financial services) and putting in place enabling environment will be drivers for successful transformation.
CIP9	Coping with climate change	SO3 & 4	Increasing production shocks due to drought, pest infestation, excessive or rainfall shortages are major risks hence putting in place mitigation measures for weather-related risks are required.
CIP10	Implementation capacity (IC)	for all	Building implementation capacity of implementers at different level is an integral part of success. Thus strengthening institutional capacity to complement requirements of future investments and projects both building human capability, institutional infrastructure and finance fall at the center.

These ten CIPs are found critical complementary investment areas to raise its outcome and impact on higher level development objectives. The CBFPs are also identified based on CAADP indicators, and earlier review sections.

3.5 Overview of Flagship Projects and Programs

The NAIP's consist of 12 commodity-based flagship programs and 10 complementary investment projects (CIPs) and 28 sub-programs (Table 19). The flagships target: increasing

agricultural production and productivity among smallholder farms, expanding large-scale commercial farms, promoting import substitution, developing agricultural infrastructure, strengthening agriculture-industry linkage, expanding agro-processing industries and value chain development, enhancing the competitiveness of agriculture export sector, increasing income of farmers and pastoralist, strengthening the resilience to shocks and stress, and alleviate poverty, food and nutrition insecurity in Ethiopia. The four SOs are to achieve market-oriented crops, horticulture, livestock and fisheries output growth which complemented with sustainable natural resources development, management, and use. These are ultimately expected to lead to high level-results - to achieve food and nutrition security through building resilience to shocks. Table 19 provides a summary of the flagship programs under each area of investment.

Table 20: Overview of Commodity based priority flagship projects (and their programs

SOs	Commodity based flagship programs	Essential enabler for success
SO1: to achieve market-oriented crops and horticulture output growth	I. Crops 1. Wheat 2. Maize 3. Rice 4. Coffee 5. Sesame	Production and productivity improvement of nine FS commodities • Supply of production inputs and technologies • Commercialization of products • Cutting post-harvest loss reduction • Financing production inputs • Market system development • Price stabilization • Value chain development
	II. Horticulture products 6. Mango, 7. Avocado, 8. Tomato and 9. Onion	
SO2: to achieve market-oriented livestock and fisheries output growth	III. Livestock & fishery 10. dairy, 11. poultry, 12. red and white meat	Production and productivity enhancement for three strategic livestock and fisheries programs • Supply of production inputs and technologies • Commercialization of products • Cutting post-harvest loss reduction • Financing production inputs • Market system development • Price stabilization
	CIP2: Animal feed development	Promoting commercial fodder production and marketing • Access to land • Marketing chain development • Stimulate private sector engagement in Commercial fodder processing

SOs	Commodity based flagship programs	Essential enabler for success
SO3: to achieve a sustainable natural resources development	CIP1: Irrigation development	Irrigation development, proper management and use • Integrated soil management • Forestry management • Employment creation
SO4: to achieve food and nutrition security through building resilience to shocks	Alleviate food and-nutrition insecurity	Nutrient dense food production through promoting bio fortified food production (e.g. quality protein maize, ...) • Promoting homestead agriculture • Postharvest management and food safety; Building resilience to various shocks

4. SECTOR RESULT FRAMEWORK

The NAIP result framework summarizes main aspects: 3 result areas, 4 strategic objectives, 14 flagship programs, 56 outcomes, 142 milestone indicators (impact targets), and policy and institutional considerations (see annex 1 table 1). It explains the key elements of the NAIP. The impact targets are estimated based on the envisaged TYPP of MoA (see Table 8-11), and CAADP Malabo Declaration, SDG commitments.

4.1. Key Enablers of Flagship Investments

Enabling environment for inclusive agricultural development

This impact level includes the policy and institutional consideration to strengthen the capacity of the Ministry of Agriculture so as to create enabling environment for inclusive agriculture development. The key enablers are related to the required capacity building and policy, strategy, and institutional considerations. The framework in annex Table 1 clearly describes the required capacity building and identifies the policy and institutional considerations for each milestone indicator. In general, the policy and institutional considerations require a critical evaluation of the implemented strategies and their implementation process which include policy reforms as needed, building effective accountable institutions, increasing public investment in agriculture production inputs (on seed, fertilizer, feed, mechanization, irrigation), and strengthening implementation capacity of institutions (for evidence-based planning, implementation, review and to generate and analyze data), improving multi-sectoral coordination, enhancing partnerships and mutual accountability, and fostering public-private partnership in agriculture, and research and technological development in agriculture.

4.2 Flagship Programs Alignment with Ongoing Projects

The Ethiopian NAIP incorporates regional and international perspectives of agricultural sector development commitments. Table 21 summarizes the alignments of the flagship projects with CAADP Declaration of Maputo, CAADP-Malabo Result Framework, Agenda 2063, and with SDG, and ongoing investment platforms of the Ministry.

4.2.1 Alignment with CAADP-Malabo Principles

CAADP is a Pan African policy framework for achieving sustainable agricultural transformation. It is guided by a set of principles and broadly defined strategies to help African countries critically review their specific situations and identify investment opportunities with optimal impact and returns. CAADP is therefore largely focused on advancing investment to stimulate growth in the agricultural sector. This entails bringing together the public, DPs, Private sectors and civil society, at the continental, regional and national levels, to increase investment, improve coordination and knowledge sharing, and promote joint and separate efforts to engender inclusive economic growth for shared prosperity and improved livelihoods across the continent. To ensure Ethiopia's commitment to the decision of African Heads of State and Government

adopted in Malabo, Equatorial Guinea, in 2014, there is need to align the flagship projects to CAADP Malabo Results Framework.

4.2.2 Alignment with SDG and Agenda 2063

At the United Nations Sustainable Development (UNSD) Summit on 25 September 2015, World Leaders adopted the 2030 Agenda for Sustainable Development, which includes a set of 17 SDGs to end poverty, fight inequality and injustice and tackle climate change by 2030.

Recognizing the interdependence of agriculture and development, the NAIP is aligned with the SDGs 1 (No poverty), SDG 2 (Zero hunger) and SDG 13 (Climate action). Indeed, poverty alleviation and ending hunger require significant contributions of agriculture to attain the intended objectives. Similarly, Agenda 2063 has Seven Aspirations¹⁰ of which Aspiration 1 envisions a prosperous Africa based on inclusive growth and sustainable development. This aspiration has been encapsulated in the following intervention areas under NAIP (2021-2030):

- Modern agriculture for increased production, productivity and value addition, contributing to farmers and national prosperity.
- The environment and ecosystem are healthy and preserved and with climate resilient economies and communities.
- Strategies for inclusive growth, job creation, increasing agricultural production, investments in science, technology, research, innovation, gender equality and youth empowerment.
- Modern and productive agriculture using science, technology, innovation and indigenous knowledge.
- Equitable and sustainable use and management of water resources for socio-economic development, regional cooperation and the environment.

4.2.3 Alignment with ongoing flagship programs

Currently there are about 11 ongoing national flagship programs that are under implementation by the MoA. The programs includes Agricultural Growth Programme (AGP), Inclusive and Sustainable Value Chain Development (ISVCD), Livestock and Fishery Sector Development (LFSD), Climate Action through Landscape Management (CALM), Participatory Small-Scale Irrigation Development Program (PASIDP), Resilient Livelihood & Landscapes Project (RLLP), Drought Resilience and Sustainable Livelihoods Programme (DRSLP), Regional Pastoral Livelihoods Resilience Project (RPLRP), Development Response to Displacement Impacts Project (DRDIP), and Productive Safety Net Program (PSNP), Sustainable Land Management

¹⁰ **The Seven Aspirations** of Agenda 2063 are: (1) want to see prosperous Africa based on inclusive growth and sustainable development (2) an integrated continent politically united and based on the ideals of Pan-Africanism and the vision of African Renaissance, (3) an Africa of good governance, democracy, respect for human rights, justice and the rule of law (4) a peaceful and secure Africa (5) Africa with a strong cultural identity common heritage, values and ethics, (6) an Africa whose development is people-driven, relying on the potential offered by the African people, especially its women and youth, and caring for children and (7) an Africa as a strong, united, resilient and influential global player and partner (AUC, 2016).

Program (SLMP) (see Table 21). In addition to new investment, anchoring the newly identified NAIP priority investment flagship programs would have important contribution.

Table 21: NAIP priority flagship programs alignments with national S)s, regional and international development goals

NAIP SOs & flagship programs		Alignments with CAADP goals and SDG commitments		
		CAADP goals	SDG commitments	Alignment with ongoing Flagship Programs
SO4	Alleviate food and-nutrition insecurity (one FS program)	1.2. Food and nutrition security 1.4. Resilience and sustainability	Goal 2: Zero hunger	DRDIP PSNP RPLRP DRSLP
SO1	Crops and horticulture development (ten strategic commodity-based Flagship Programs)	2.1. Increased agriculture production & productivity 1.1. Wealth creation 2.2. Increased intra-African regional trade & better functioning of national and regional markets	Goal1: No poverty	AGP
SO2	Livestock and fisheries development (three commodity-based flagship programs)	1.3. Economic opportunities, alleviate poverty & shard prosperity 2.3. Expanded local agro-industry and value chain development inclusive of gender and youth		LFSD ISVCD
SO3	Natural Resource Management (two flagship programs: irrigation & fodder)	2.5 Improved management of natural resource for sustainable agriculture 2.4. Increased resilience of livelihoods and risk management in agriculture sector	Goal 13: Climate action	PASID RLLP/SLMP/ PSNP CALM SLMP

5. MONITORING AND EVALUATION MECHANISM

Monitoring and Evaluation (M&E) is important for tracking progress, drawing lessons and modifying and/or improving implementation approaches. In this section, therefore, we discuss the NAIP M&E framework and mechanisms.

5.1. Enabling effective Monitoring and Evaluation Practices

The Planning, Monitoring, and Evaluation Directorate (PMED) of MoA will collect nationally representative data from Ministry of Planning and Development (MoPD) and Central Statistics Agency (CSA). Additional data will be accessed from zones and districts.

To strengthen monitoring, evaluation, and learning, the MoA has put in place a sector-wide digital Agriculture Management Information System to improve efficacy on quality data collection, analysis, and reporting and to support evidence-based decisions for improved agriculture outcomes. The digital system will aggregate district-level data into zone-level, and the zone-level data into national-level performance data for each flagship project. The performance indicators data at the district, zone, and national levels will also be periodically validated by independent evaluators to ensure that information entered into the system by experts reflect the reality. A summary of the NAIP implementation performance management structure of MoA is shown in Table 22.

Table 22: NAIP Implementation Performance Management Structure

Level	Description	Reporting Process	Reviewer and Review Frequency
District	Milestones, operation-level input and output metrics	- District Woreda Operation staff send report to zone monthly, quarterly and annually. - Seasonal data submitted every week. Periodically validated by Zonal Staff and Independent evaluator as deemed necessary	Woreda & Zone Administrations, Regional experts and other implementation partners regularly review progress and address issues raised as needed.
Zone	Milestones, operation-level input and output metrics	Zone operations staff send quarterly and annual reports to Regional Bureaus Periodically validated by Regional Staff and Independent evaluator as deemed necessary	Zonal and Woreda Administrations and other implementation partners regularly review progress and address issues raised as needed.
Region	Milestones, operation-level input and output metrics	Regional Bureaus submitted quarterly and annual reports to the Ministry of Agriculture Periodically validated by Regional Government, Federal Government, MoA technical Staff and	- Regional Officials of Agriculture Bureau reviews monthly. - Regional Governments reviews quarterly - MoA together with regional bureaus of the Agriculture sector reviews biannually

		Independent evaluator as deemed necessary	Regional Governments and Federal Government sponsors to resolve issues,
National	Milestones, operation-level input and output metrics	- Annual report is submitted to National Planning and Development Ministry (NPDM) through the digital tool developed by them. - Quarterly and annual report prepared and submitted to the House of Peoples Representatives, Prime Minister Office, NPDM Validated quarterly by Directors in MoA Periodically validated by independent evaluator	Heads of Regional Agriculture Bureaus, Higher Officials of the Ministry (including the Minister) review progress quarterly PMED together with Planning heads of the Regional Agriculture Bureaus, Advisors of the State Ministers, ATI and other accountable organizations reviews progress biannually through review meetings. The Government sponsors to resolve issues NAIP TF (Gov't and DPs): reviews progress every year through independent consultant. The Government and DPs sponsors to resolve issues through the REDFS platform

5.2 Joint Annual Review (JAR)

This annual review intends engagement of the Government, DPs, private sector, NGOs and CSOs representatives to jointly review implementation progress of the flagship programs identified above and provide timely necessary support required to speed up its execution. This will increase sense of ownership on program implementation mainly by the Government and DPs and to be jointly accountable either for success or failure for accomplishment.

5.3 Monitoring and Evaluation System

The NAIP will have a results-based M&E system that deliberately focuses on higher-level indicators (outcomes and impacts). These are essentials for tracking the intended change and benefits accruing at different levels – inputs, outputs, and outcomes. As mentioned in Chapter 3, three high-level impact target outcome areas will be tracked to determine progress for the overall achievement of NAIP: enhanced agriculture contribution to economic growth and inclusive agricultural development, sustained inclusive agriculture development and transformation, and enabling environment for inclusive agriculture development. These high-level impact target outcome metrics will also be tracked at three broad result areas, four strategic objectives in fourteen flagship programs. The flagship projects tracking will be carried out using 56 outcomes, 141 milestone indicators, and policy and institutional considerations against the intended Results Framework (annex 1 table 1). The detailed information for mapping of the result metrics (inputs, outputs, and outcomes) and their overall NAIP tracking is shown in Table 23.

During the implementation of NAIP, performance data on input and output metrics will be collected from each zone and entered into nation-wide digital Agriculture Management Information System by experts at MoA. Based on the compiled data, annual NAIP

implementation performance analysis will be undertaken through Annual Review meetings (NAIP Review) involving all key stakeholders. This will provide a forum for accessing and exchanging data and creating a common understanding of the status of the implementation process. The subsequent performance review and evaluation result of the TYPP undertaken by the regular MoA will be utilized for reporting in tandem with NAIP performance. The overall implementation of the NAIP will be subject to an independent external evaluation at least twice over its ten-year period. This exercise will be led by NAIP Task Force under Rural Economic Development and Food Security Sector Working Group (REDFS SWG). Moreover, a Memorandum of Understanding (MOU) will be prepared and signed among Government, DPs, Private Sector, and NGOs to allow all parties to clarify and harmonize their goals and objectives. The MoU will also establish and promote a strategic and cooperative partnership among the parties. This can serve as part and parcel of mutual accountability.

Table 23: NAIP results tracking

Result Metrics	Description	Overall NAIP- Level Tracking
Impacts	High-level Impact Metrics Impact-level results to which the NAIP will contribute.	- As per the indicators from National Planning & Development Ministry (NPDM), Ministry of Health(MoH), CSA and others - Independent Consultant will also track impact level results
Outcomes	High-level Outcome Metrics Desired results of agricultural performance, in terms of agriculture (livestock and crop) production, productivity, sustainable management and use of NRM, food and nutrition security as well as effectiveness and efficiency in all related production systems.	- Agriculture Production & productivity – Central Statistics Agency (CSA) - NRM use – Ministry of Agriculture (MoA) - Food and Nutrition Security – MoA, CSA & MoH - Independent Consultant will also track outcome level results annually
Outputs	Operational-level output metrics Priority intermediate-level and immediate level results (tracked by 14 flagship programs) required to make optimal contribution of the agriculture sector to the outcome level results.	- MoA and CSA will track all output metrics - Independent Consultant will also track output level results annually
Inputs	Operational-level impact target metrics A combination of various capabilities needed to accelerate agricultural growth and to achieve its objectives and goals. It presents the key policy, institutional, and capacity outcomes required to	MoA, CSA & Ministry of Finance will track input metrics

	trigger changes in the output and outcome levels; the achievement of results in the defined priority areas will enable the sector to achieve appropriate, effective and efficient performance of NAIP.	
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6. IMPLEMENTATION PLAN AND BUDGET

6.1. Critical steps preceding implementation

The NAIP is an investment plan formulated to guide investment decisions of the Government and its institutions, Development Partners, private sector, Non-State Actors (NSA) and other partners in the agriculture sector. This calls for clear demarcation of responsibilities among the actors, within a well-defined framework for governance, management and coordination.

6.1.1 Overall Governance Structure

NAIP implementation will be carried out by **“Lead” and “collaborate”** implementing bodies. At federal level, the MoA and tiers (i.e., State Ministers, Directorates, Agencies, Authorities, and affiliate) institution engage in its implementation. The Minister for MoA (i.e., Minister’s Office) will be responsible mainly for implementation of 12 commodity-based flagship programs. This is in order to increase its efficiency, increased attention and coordination, as well as increase its outcome and impact on high level result areas. The regional, zonal and Woreda Bureau of Agriculture will be main implementers in collaboration with MoA. The Rural Economic Development and Food Security Sector Working Group (REDFS SWG) platform is key collaborative implementor expected to play an indispensable role in the implementation of 10 Complementary Investment projects (CIPs), financing, M&E, progress tracking, and related activities.

REDFS Platform

REDFS SWG is a platform that operates based on the Paris Declaration on Aid Effectiveness principles. Alignment with Government policies, strategies & programs is the second principle on which development partners base their overall support. Harmonization & coordination is another important principle that guides DPs’ actions in terms of planning, implementing and monitoring, and transparently sharing information to improve effectiveness. Other important guiding principles include managing for results and mutual accountability.

Figure 8 shows REDFS platform. The structure is harmonized with the prevailing sectoral and strategic areas of Ten-Year Agricultural Sector Plan (2021-2030). The expected NAIP governance structure will have three levels: the Executive Committee (EX-COM), Technical Committee (TC) and Task Forces (TFs). The Executive Committee is an oversight body Chaired by the Minister of Agriculture and Co-Chaired by two DP representatives. Each Technical Committee is chaired by the State Minister leading the specific sector and Co-Chaired by two DP representatives. Similarly, the Task Forces (TFs) are chaired by Directors from the Ministry and Co-Chaired by two DP representatives. Regarding accountability, TCs and TFs are accountable to Ex-Com. Therefore, the Task Forces through Chairs and Co-Chairs report to the TCs. TCs, through their Chairs & Co-Chairs, report to Ex-Com based on mutually agreed plan of work.

The REDFS Secretariat has the role of facilitation, communication, networking and program support, and shall play a significant role in supporting the overall implementation of the REDFS structure. Therefore, the REDFS Secretariat is accountable to Ex-Com.

REDFS Secretariat is expected to coordinate horizontally with other sectors through their respective DPs, Agencies, NSAs and private businesses, and vertically with the various Ex-Com, TCs and TFs. Intra-Ministerial coordination will be led by the respective Chairs of the Ex-Com, TCs and TFs. The Secretariat shall handle communication with the respective Chair and Co-Chairs, and facilitate a joint action through organizing different meetings. Overall, the secretariat will be charged with consolidating work plans, liaising with government and DPs, convening meetings of the REDFS SWG, ensuring timely reporting, monitoring progress against the NAIP performance indicators, and coordinating the annual progress reviews.

Better coordination can improve the design and implementation of agricultural policies by allowing more actors to voice their needs and concerns, resulting in more inclusive policies and faster diffusion of knowledge. Stronger interaction and coordination can also induce all actors to be more aware of and responsive to the needs and concerns of other actors, especially resource poor households. Despite such advantages, interaction and coordination have been difficult to achieve for the same reasons that hinder collective action: opportunistic behavior; lack of trust, incentives, and capacity; and difficulties in setting and enforcing rules.

Effective interaction, coordination, and collective action are based on existing capabilities, appropriate incentives, and the empowerment of individuals. Coordination and interaction can emerge spontaneously or be induced by specific public or private programs. Effective coordination requires (1) a committed and capable leadership; (2) appropriate incentives; (3) an enabling environment, in which important stakeholders that coordinate their activities have the mandate, culture, and freedom to participate; (4) stable support programs; (5) efforts to strengthen the capabilities and collective action; and (6) adaptation of public organizations to participate more effectively in innovation processes.

Improving dialogue and coordination with the private sector has emerged as an important issue at national and continental level, as reflected in the Malabo Declaration and the recent AU Initiative to establish CAP-Fs to complement the second-generation NAIPs. This has recognized the importance of the private sector as investor and service provider and the need for more effective and inclusive public-private coordination, including through PPPs (NAIP-Malawi, 2017).

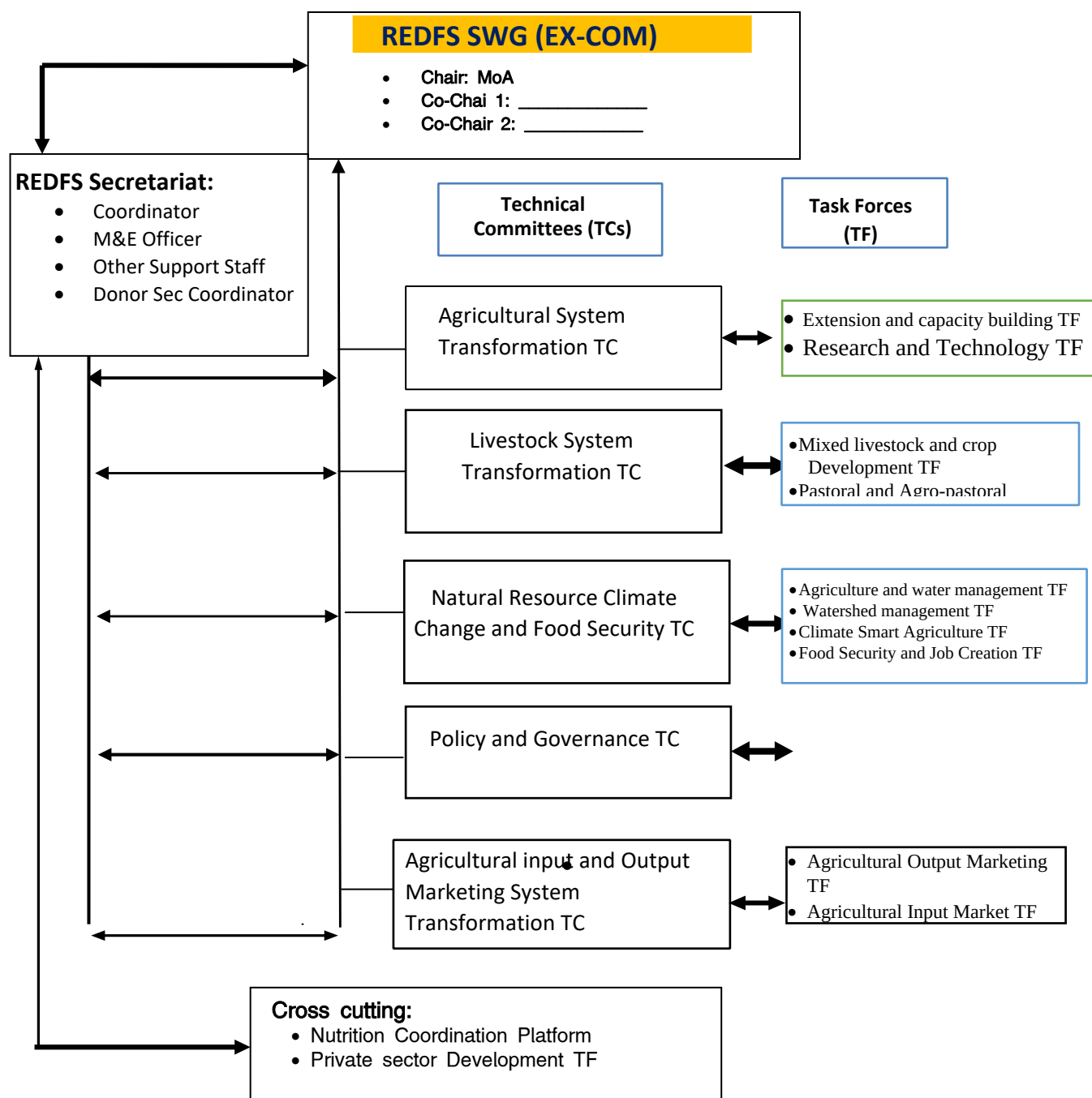


Figure 8: REDFS Structure

6.1.2 Linkages and coordination

Coordination from the perspective of implementation of NAIP is seen from four dimensions:

- a) *Inter- and intra-Ministerial coordination:* That is, coordination across line Ministries and within the Ministry of agriculture itself.
- b) *MoA and DPs coordination:* At present the REDFS platform serves as a joint Government and DPs platform for agricultural sector. As there are quite a number of flagship programs and projects financed by DPs under MoA, apart from their financial contribution there is a strong need to back-up the implementation of flagship programs and projects through joint review and implementation support at field level.
- c) *Intra donor coordination:* It is important to have a framework for coordinating the DPs engaged in the agriculture, food security, resilience, and natural resource management. This is critical for mobilizing additional resources and sharing ideas for agricultural transformation.
- d) *Coordination within regional bureaus:* The federal and regional interface and linkage is not that much strong and smooth. There are frequent gaps in obtaining updated information whenever required. Furthermore, as prevailing evidence indicates there are gaps in coordinating interventions that require joint engagement. Thus, there is need to have clear institutional arrangement for coordination and accountability.

6.2 Implementation Plan

Implementation commitment is base for the success than only policy commitment. The Federal Ministry of Agriculture and Regional Agricultural Bureaus (RAB) are **lead implanters**. The 13-commodity based and 10 complementary priority investment projects should be led by the Minister for MoA and Regional Bureau heads - who will be accountable for success as well as for shortcomings. **The collaborators** will be REDFS structure and private sector. Table 24 provides a detailed implementation plans , with description of pre-requisite activities, timeline and lead responsibility of the technical committees to carry out the activities.

Table 24: NAIP Implementation plan

#	Tasks	Implementer’s responsibility level		Years												
				1				2	3	4	5	6	7	8	9	10
		Lead	Collaborators	Q1	Q2	Q3	Q4									
I	Steps Preceding NAIP Implementation															
1	Government and donors to commit themselves to strengthen MoA	MoA	REDFS platform													
2	Capacity Development (CD) program for Planning and Programming Directorate (PPD) of MOA and regions.	MoA	REDFS platform													
3	Development of the RED&FS database.	REDFS Secretariat	REDFS platform													
4	Development of a program-based budgeting system.	MoA	REDFS platform													
5	Monitor the RED&FS aid effectiveness indicators.	REDFS platform	REDFS platform													
6	Monitor the government, DP, and private sector investments going into the sector against the flagship projects.	>>	REDFS platform													
7	Ensuring strong coordination amongst relevant line ministries	>>	REDFS platform													
8	Annual review of the status of implementation of the implementation plan and make adjustments.	Joint activity	REDFS platform													
II	SO1: To achieve market-oriented crops and horticulture output growth															
SO1: Crops and horticulture development																
1	Develop detailed program design & establish management mechanism	MoA	REDFS platform													
2	Implement the capacity building strategy at region, district and kebele levels	MoA	REDFS platform													
3	Conduct institutional and policy support to flagship programs	MoA	REDFS platform													
3.1	Production and productivity of nine-strategic crop and horticulture Cluster and summer farming required in the potential regions	MOA & RBoAs	REDFS platform													
3.2	Supply of production inputs - As per the land use and administration strategy, and seed policy - Soil fertilizer use policy be implemented - Plant diseases and insect pests management policy - Digitalization of extension system required	>>	>>													
3.3	Commercialization - Agricultural mechanization strategy - Re-establishment of agriculture mechanization agency	>>	>>													

#	Tasks	Implementer’s responsibility level		Years												
				1				2	3	4	5	6	7	8	9	10
		Lead	Collaborators	Q1	Q2	Q3	Q4									
3.4	Post-harvest loss reduction of crops • A comprehensive post-harvest losses strategy required	MOA & RBoAs	REDFS platform													
3.5	Financing production inputs • Agriculture finance should provide foreign currency access • Agriculture finance should be provided by the banks • Rural microfinance, cooperative bank, and agriculture insurance be re-strengthened	MoA, DPS, PS	REDFS platform													
4	Conduct quarterly evaluation of implemented flagship programs against NAIP indicators	>>	>>													
III	SO2 : to achieve market-oriented livestock and fisheries output growth															
Livestock and fisheries development																
1	Develop detailed program design & establish management mechanism	MOA & RBoAs	REDFS platform													
2	Implement the capacity building strategy at region, district and kebele levels	>>	>>													
3	Conduct institutional and policy support to flagship programs	>>	>>													
3.1	Production and productivity of three-strategic livestock and fisheries items • Livestock road map be implemented.	>>	>>													
3.2	Supply of production inputs • Preserve animal genetic resources and strengthening pastoral research • Livestock fodder and nutrition strategy be implemented. • Strengthening private sector and farmer cooperatives. • Progressive disease control strategy, Livestock veterinary services strategy be implanted, • Veterinary statutory body required	>>	>>													
3.3	Post-harvest loss reduction of livestock and fisheries • As per the Post-harvest livestock and fisheries loss strategy.	>>	>>													
3.4	Financing production inputs • Agriculture finance and foreign currency policy be improved • Rural microfinance, cooperative bank, and agriculture insurance be re-strengthened	>>	>>													
4	Conduct quarterly evaluation of implemented flagship programs against NAIP indicators	MOA & RBoAs	REDFS platform													

#	Tasks	Implementer’s responsibility level		Years												
				1				2	3	4	5	6	7	8	9	10
		Lead	Collaborators	Q1	Q2	Q3	Q4									
IV	SO3: to achieve a sustainable natural resources development, use, adaptation and mitigation of climate change															
1	Develop detailed program design & establish management mechanism	MOA & RBoAs	REDFS platform													
2	Implement the capacity building strategy at region, district and kebele levels	>>	>>													
3	Conduct institutional and policy support to flagship programs	>>	>>													
3.1	Ensure efficient water-use and better function of irrigation canals • Irrigation development strategy • Integrated land use management policy. • Private sector and farmer cooperatives encouraged • Public Private Partnership(PPP) required	>>	>>													
3.2	Employment creation • Inclusive of women and youth	>>	>>													
3.3	Forestry management • Revision of Natural Resource Management (NRM) policy, agriculture	>>	>>													
4	Conduct quarterly evaluation of implemented flagship programs against NAIP indicators	>>	>>													
V	SO4: to alleviate food and-nutrition security and build resilience to shocks															
	Natural Resource Management and Use															
1	Develop detailed program design & establish management mechanism	MOA & RBoAs	REDFS platform													
2	Implement the capacity building strategy at region, district and kebele levels	>>	>>													
3	Conduct institutional and policy support to flagship programs	>>	>>													
3.1	Building resilience of livelihoods for various shocks • Requires joint efforts of concerned key actors / institutions. Requires promoting greenhouse and garden level production	>>	>>													

#	Tasks	Implementer’s responsibility level		Years												
				1				2	3	4	5	6	7	8	9	10
		Lead	Collaborators	Q1	Q2	Q3	Q4									
3.2	Alleviate food and nutrition insecurity - Strengthening summer wheat farming - Food aid coordination. Require maintaining strategic food reserve.	MOA & RBoAs	REDFS platform													
4	Conduct quarterly evaluation of implemented flagship programs	MOA & RBoAs	REDFS platform													
II. COMPLEMENTARY INVESTMENT PROJECTS (CIPS)																
(a) Adaptation and mitigation to climate change																
1	Develop detailed program design & establish management mechanism	MOA & RBoAs	REDFS platform													
2	Implement the capacity building strategy at region, district and kebele levels	>>	>>													
3	Conduct institutional and policy support to flagship projects	>>	>>													
3.1	Adaptation and mitigation of climate & weather related risks in agriculture	>>	>>													
	Implementing Climate Resilient Green Economy (CRGE) strategy	>>	>>													
	Needs climate resilient sustainable agricultural development programs.	>>	>>													
4	Conduct quarterly evaluation of implemented flagship programs	>>	>>													
(b) Expanded agricultural marketing and trade																
1	Develop detailed program design & establish management mechanism	MOA & RBoAs	REDFS platform													
2	Implement the capacity building strategy at region,	>>	>>													

#	Tasks	Implementer's responsibility level		Years											
				1				2	3	4	5	6	7	8	9
		Lead	Collaborators	Q ₁	Q ₂	Q ₃	Q ₄								
	district and kebele levels														
3	Identify institutional and policy support needs	MOA & RBoAs	REDFS platform												
3	Development of marketing system - Revision of policy and institutional considerations for fostering intra-Africa trade required - Horticulture strategy, national rice R&D strategy be implemented	>>	>>												
4	Price stabilization Strengthening farmer marketing cooperative and private sector	>>	>>												
5	Strengthen forward and backward market linkage with national agro-processing industries														
6	Conduct quarterly evaluation to know implementation progress against NAIP indicators	>>	>>												
	(c): strengthening utilization of existing irrigation facilities and expansion of the new														
	Develop detailed program design and status review, delineate irrigation potential & establish management mechanism	MOA & RBoAs	REDFS platform												
	Implement the capacity building strategy at region, district and kebele levels	>>	>>												
	Understanding status of implemented and ongoing irrigation project (policy and institutional bottlenecks)	>>	>>												
	Identify institutional and policy support needs	>>	>>												

#	Tasks	Implementer’s responsibility level		Years												
				1				2	3	4	5	6	7	8	9	10
		Lead	Collaborators	Q1	Q2	Q3	Q4									
	• Building capacity to manage irrigation schemes	MOA & RBoAs	REDFS platform													
	• Invest more on strategic irrigation projects	>>	>>													
	NB: Implementation Road map for the remaining CIPs shall be included	MOA & RBoAs	REDFS platform													
	(e) Commercial livestock feed production															
	• Develop detailed program design and status review of prevailing sources of livestock feed and private sector engagement	MoA and its tiers	REDFS platform													
	• Develop policy and strategy, institutional arrangement to promote commercial fodder production	MOA & RBoAs ¹¹	REDFS platform													
	• Strengthen large scale commercial food production via nurturing private sector engagement															
	• Promote production of improved animal fodder in the smallholder backyard															
	• Establish animal feed processing plant(s) in selected agro-ecologies (consider animal population)															
	(f) Strengthen sustainable rural land management and effective utilization															
	• Status review and understanding policy and institutional arrangement and gaps including informal land market and access to land by youth population	MOA & RBoAs	REDFS platform													

¹¹ RBoA – refers to Regional Bureau of Agriculture

#	Tasks	Implementer’s responsibility level		Years												
				1				2	3	4	5	6	7	8	9	10
		Lead	Collaborators	Q1	Q2	Q3	Q4									
	• Strengthening the integrated local level land use planning and implementation	>>	>>													
	• Develop integrated national land use plan	MOA & RBoAs	REDFS platform													
	• Design and support the implementation of an integrated Land Management	MOA & RBoAs	REDFS platform													
	(g) Mechanization															
	• Status review and understanding policy and institutional arrangement for mechanization	MOA & RBoAs	REDFS platform													
	• Design and implement mechanism to ensure sustainable supply, financing, and utilization of agricultural machineries	MOA & RBoAs	REDFS platform													
	• Create an enabling environment for coordinating national mechanization program	MOA & RBoAs	REDFS platform													
	• Strengthening linkage and responsibilities of Ethiopian National Agricultural Research System to support technology identification, adaptation and use	MOA & RBoAs	REDFS platform													
	• Establish maintenance and spare part supply center in every major agricultural areas	MOA & RBoAs	REDFS platform													
	(h) Strengthening agricultural finance ¹² system															
	• Review of status and understanding policy and institutional arrangement for agricultural finance	MOA & RBoAs	REDFS platform													

¹² Movable property security right proclamation number 1148/2019 and its implementation directive number 186/2020 laws enshrined provisions which give the right to movable property owners (including, but not limited to, land use right, livestock, crop, trees, warehouse receipt) to access credit by using these properties as a collateral (pledge).

#	Tasks	Implementer’s responsibility level		Years											
				1				2	3	4	5	6	7	8	9
		Lead	Collaborators	Q1	Q2	Q3	Q4								
	Re-strengthened existing rural microfinance institutions (MFIs), cooperative banks and any innovative rural finance system	MOA & RBoAs	REDFS platform												
	Use the “Movable property security right proclamation and its regulation” to benefit from the government initiative	>>	>>												
	Establish “Agricultural Bank of Ethiopia” from medium- and long-term perspectives	>>	>>												
	(i) Strengthening research and extension														
	Review of status and understanding policy and institutional arrangement for NARS and reform based on agreed remedial actions	MOA & RBoAs	REDFS platform												
	Enhance infrastructure & facility of federal and regional research centers	>>	>>												
	Promote pluralistic extension where private sector plays its role	>>	>>												
	Strengthen agricultural research and extension interface	>>	>>												
	(J) Strengthening implementation capacity														
	Design and implement Human Resource capacity development														
	Put in place complementary infrastructure and facilities needed for effective implementation	MOA & RBoAs	REDFS platform												
	Formulate incentive package for those registered successful rescored	>>	>>												
	Set input-output and M&E system	>>	>>												

6.3. Financing Plan and Funding Sources

6.3.1. Assumption behind budget estimation and aggregate results

The Ethiopian Government will still be the main financier to agriculture and rural development during the entire NAIP period. Detailed financial projections are provided in Annex 2 Table 1 and Table 2. Projections are based on secondary data from NBE and MoA, using Econometrics. The estimates are based on the following assumptions.

- i. GDP growth rate of 10% per annum over the ten-year life of the NAIP in line with the TYPP of Ethiopia (PDC, 2020).
- ii. In order to achieve 6% agricultural growth per annum target, the Government must allocate at least 10% of total public spending per year to agriculture sector (AU, 2015).
- iii. Based on historical trends of the Government budget allocation pattern from 2017/18 to 2019/20, a gradual increase in the funds allocated to the national budget from 19.48% of GDP in 2019/20 to 20.87% throughout the NAIP periods. Similarly, the Government maintains the earlier trend and allocates at least 4% of the national budget to agriculture and rural development throughout the NAIP periods. This would see the budget increase from US\$ 1.02 billion in 2020/21 to US\$ 2.41 billion in 2029/30 which totals to US\$ 16.28 billion over the life of the NAIP (Annex 2 in Table 1).
- iv. Based on NBE (2020) the historical trends of general inflation rate pattern from 2015/16 to 2019/20, the projection applies 11% annual growth rate of inflation for the entire NAIP period. In addition, a 22% confidence interval was calibrated to capture uncertainty emanating from the long duration of projections and compatibility of aggregate budget allocation to SOs during the entire NAIP periods. Hence, a year to year incremental budget adjusted for considering the uncertainties that would increase the budget from US\$ 0.34 billion in 2020/21 to US\$ 0.79 billion in 2029/30 which totals to US\$ 5.37 billion over the life of the NAIP. The aggregate NAIP budget is estimated at US\$ 21.65 billion including the incremental budget over a ten-year implementation period of NAIP (Table 25).
- v. According to MOA (2020), there are ten ongoing national flagship projects to be implemented over the coming first six years of NAIP by Development Partners (DPs). This amounts to US\$ 3.9 billion of which 56.79% of the budget is allocated to SO4, 27.1% to SO1, 12.87% to SO3, and 3.24% to SO2. This indicates that DPs are providing funds for some of the SOs of NAIP (Annex 2 in Table 2).
- vi. Based on the indicative TYPP of MoA budget allocation shares of priority investment programs (MOA, 2020), the overall NAIP budget is distributed to each of the four SOs: 43.52% of the budget allocated to SO1, 22.1% to SO2, 23.98% to SO3, and 10.40% to SO4

(Annex 2 table 2). This represents a major departure from the historical pattern of budget allocation where the bulk of expenditure has been directed towards PSNP. In addition, considering the previous experience of budget allocation pattern, the capital budget accounts for 80% of the total budget while the remaining 20% are allocated to recurrent budget. The largest recurrent budget items include human resource costs related to capacity development, training, and coordination. The largest capital budget allocation is directed to irrigation development, agricultural mechanization, agricultural technologies, post-harvest storage equipment, and nutrition-related investments.

- vii. About 40% of NAIP total budget requirements will be financed by the Government and 40% of the budget is expected to be covered by the DPs (including NGOs). The remaining 20% is expected to be covered by private sector (Annex 2 in Table 2).

6.3.2. Indicative Budget Allocation by SOs and Funding Sources

The overall objectives of the market-oriented crops and horticulture output growth strategic objective requires implementing three flagship projects: (1) crops and horticulture development US\$ 0.36 billion; (2) the strategic objective for the market-oriented livestock and fisheries output growth requires three commodity based flagship programs and total budget US\$ 0.18 billion , 0.05, and 0.08 billion over the next ten-years, respectively.

The strategic objective for the sustainable natural resources development, utilization, adaptation, and mitigation of climate change calls for implementing two flagship projects: 1) small and large-scale irrigation development, and 2) Adaptation to and mitigation of climate change projects. The total budget for the next ten years are estimated to be US\$ 0.26 and 0.07 billion, respectively. The specific strategic objective to build resilience to vulnerabilities, shocks, and achieve food and nutrition security demands the implementation of alleviation of food and-nutrition insecurity and disaster management flagship programs which required an estimated amount of US\$ 0.14 billion budget over the next ten years. Moreover, the specific budget requirement for each flagship projects that will be covered by the Government, Development Partners (including NGOs), and private sector are explained in table 25.

Figure 9 shows the overall NAIP budget broken down into four Strategic Objectives (i.e., priority flagship programs) and Complementary Investment Projects (CIPs) areas. About 26% of the total budget is allocated to crops and horticulture development where nine commodity-based flagship programs; 13% of total budget allocated for livestock and fishery development with 3 commodity-based flagship projects. The NRM attract the second largest investment (i.e., 19%) of which irrigation development accounts for lion's share. Alleviation of food and nutrition security and disaster risk management account for 10% of indicative budget. The remaining budget 6.72 billion or 31% of 21.65 billion allocated for nine CIPs (except for irrigation since it is included under SO3).

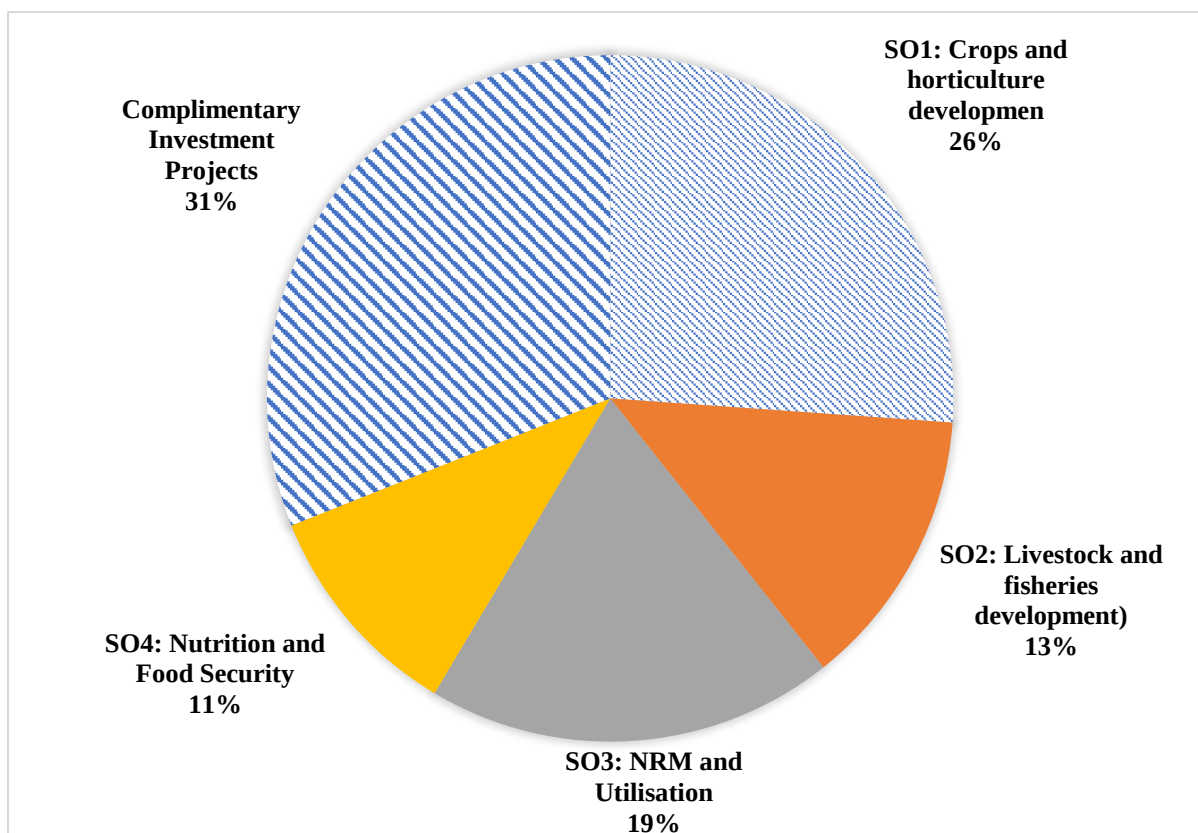


Figure 9: NAIP indicative budget allocation (%) by SOs and complementary investment projects

Table 25: NAIP aggregate budget estimates by flagship projects and funding sources

	Implementation Fiscal Years										Total	Source of funding		
	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/07	2027/28	2028/29	2029/30		Gov't	DP & NGOs	Private sector
Total budget trend (in billion birr)	45.63	50.19	55.21	60.73	66.80	73.48	80.83	88.92	97.81	107.59	727.19	290.9	290.9	145.44
Total budget trend (in US\$ ¹³ mm)	1.02	1.12	1.24	1.36	1.50	1.64	1.81	1.99	2.19	2.41	16.28	6.5	6.5	3.26
Incremental budget (in billion birr)	15.06	16.56	18.22	20.04	22.05	24.25	26.67	29.34	32.28	35.50	239.97	96.0	96.0	47.99
Incremental budget (in billion US\$)	0.34	0.37	0.41	0.45	0.49	0.54	0.60	0.66	0.72	0.79	5.37	2.1	2.1	1.07
Total budget (in billion birr)	60.69	66.75	73.43	80.77	88.85	97.73	107.51	118.26	130.08	143.09	967.16	386.9	386.9	193.43
Flagship budget in billion US\$	1.36	1.49	1.64	1.81	1.99	2.19	2.41	2.65	2.91	3.20	21.65	8.7	8.7	4.33
Total budget distribution by SOs and Flagship Priority investment areas (in billion US\$)														
I. Strategic Objectives	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/07	2027/28	2028/29	2029/30	Total	Annual average (billion USD)		
1. SO1: Crops and horticulture development ()	0.36	0.39	0.43	0.47	0.52	0.57	0.63	0.69	0.76	0.84	5.66 (26.1%)	0.57		
2. SO2: Livestock and fisheries development)	0.18	0.20	0.22	0.24	0.26	0.29	0.32	0.35	0.39	0.42	2.87 (13.2%)	0.29		
3. SO3: Natural Resource Management and Utilization ¹⁴	0.26	0.29	0.31	0.35	0.38	0.42	0.46	0.51	0.56	0.61	4.15 (19.2%)	0.42		
4. SO4: Alleviate food and-nutrition insecurity and disaster risk management	0.14	0.15	0.17	0.19	0.21	0.23	0.25	0.28	0.30	0.33	2.25 (10.4%)	0.23		
Total	0.94	1.03	1.13	1.25	1.37	1.51	1.66	1.83	2.01	0.94	14.93 (68.96%)			
II. CIPs (billion USD)¹⁵														
Aggregate budget for CIPs	0.42	0.46	0.51	0.56	0.62	0.68	0.75	0.82	0.9	1	6.72 (31%)	0.67		

¹³ 1USD= 44.6687-birr August 12, 2021 NBE

¹⁴ Irrigation development & Adaptation and mitigation to climate change part of the SO3

¹⁵ The CIP encompass livestock feed development, mechanization, marketing and linkage, research and extension, agricultural finance, Integrated land management and use, private sector development, coping with climate change, and implementation capacity development (IC). Each of nine CIPs share equal amount of 6.72 billion USD budget allocated for ten years (Table 25). Hence the aggregate budget is total amount apportioned to ten CIPs.

7. IMPLEMENTATIONS RISKS AND MITIGATION MEASURES

The successful implementation of the NAIP is subject to several risks and uncertainties that affect agriculture investment programs and projects in Ethiopia. These include: (i) limited capacity in execution of NAIP planned tasks by MoA; (ii) Lower level of private sector investment (iii) lower financial support from DPs; (iv) market and price related risk, (v) execution risk, (vi) security risk, and (vii) input risks. The achievement of NAIP principally depends on the success of the TYPP of MoA to which the NAIP proposed key investments are aligned. The potential sources of risks are discussed below.

7.1. Financing risks

A successful implementation of the NAIP is dependent on the continued availability of financial resources required for priority investment by the Government and DPs for over its ten-year period. DPs fund allocations can vary from year to year. In addition, there is the risk of allocated budget being insufficient and inconsistent with NAIP priority areas. To mitigate this risk, MoA staff will be trained to design and direct DPs resources in line with the NAIP investment priority areas. In addition, the Ministry is expected to work much more closely with DPs and align the future portfolio with investment priority areas of NAIP.

Active participation of the private sector is a key element of the NAIP. As per the TYPP of the country, the Government aims to empower and stimulate market-led Public-Private Partnership (PPPs) by facilitating access to inputs, technologies, and financial services, and by providing quality infrastructure and creating an enabling environment in the agriculture sector. This partnership is expected to bridge financing gaps and to promote sustainability of programs and projects.

7.2. Market/price risks

The value-generated from agricultural production is severely affected by price fluctuation in domestic and export markets. To mitigate the effects of these fluctuations, access to market information will be improved and farmers will be encouraged to diversify to high-value export commodities, investment on technologies enhances shelf life of commodities, forward marketing instead of spot marketing. It is also important to strengthen agricultural insurance system.

7.3. Execution risks

A potential risk is from the weak coordination and implementation capacity of MoA that matters for the success. Professional capability to implement the NAIP goals may not be adequate due to frequent changes of leaders at the Ministry, DPs and the private sector. The capacity to plan, implement, monitor progress, and evaluate the programs and projects explained in the NAIP requires a continual capacity building program and bridging the human resource shortages.

Implementation capacity is one of the critical challenges facing both the Ministry and Regional Bureaus of Agriculture (RBoA). Resolving this critical gap should be one of the priorities in order to execute the plans effectively and efficiently.

There are a number of challenges with implementation capacity in the agricultural sector.

- **Absence of strategy and road map for HR and especial skill development:** Based on the information from the federal MoA and RBoAs, the Ministry of Agriculture and other agriculture-related line Ministries do not have well defined strategy or roadmap for human resource and special skill development plan.
- **Limited incentives and accountability for agricultural workforce:** The issue of staff motivations, incentives and accountability for the agricultural workers has been repeatedly raised as one of the major concerns by many partners in the different platforms. This leads to low retention of the highly qualified staff.
- Under staffing, especially at the lower tiers where actual implementation takes place.
- Absence of sector wide evidence-based planning & result oriented M&E System.

7.4 Security risks

The current instability in the country mainly in Amhara, Tigray, Benishangul Gumuz and in other parts of the country displaced large number of farming community and their families. Such incidences, if continued, will severely affect production, productivity and overall contribution of agriculture for national economy. The Government is required to strengthening ways for ensuring peace and stability in the country

7.5 Input risks

Timely supply of quality improved seeds, fertilizer and agricultural chemicals in is one of the challenges that hamper sustainable production and productivity growth. Hence, the success of NAIP implementation depends on addressing timely supply of quality inputs.

7.6 Pest and diseases, and flood and drought related risks

Pest and disease are biological risks that directly affect the output and quality of produce. Similarly, sudden flood and drought are hydrological risks that severely affect both quality and quantity of agricultural produce. These factors have direct impact on market value of produce which has a repercussion on the total income and repayment capacity of farmers operating under credit. Incidence of pests and disease is likely to increase due to climate change. For example, cotton is found to be highly prone to pests relative to other crops produced in the lowland areas. To control the pests and diseases, it would be important to ensure timely supply of affordable quality pesticides and herbicides. Whereas, to reduce the adverse effects of flood and drought, it would be crucial to integrate holistic flood, drought and disaster risk reduction strategy in the agriculture system.

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APPENDICES

Annex 1 Table 1: NAIP RESULTS FRAMEWORK

Key Results of NAIP						
Impact level	Result area (RA)	Strategic objectives (SOs)	Investment areas	Outcome	Impact targets showing progress ¹⁶	Policy and Institutional Considerations ¹⁷
II	RA01: Inclusive crop, livestock, and fisheries development	SO1: to achieve market-oriented crop and horticulture output growth.	Crops and horticulture development	Total productivity of nine-strategic crop and horticulture commodities increased	4% annual change in total value productivity (value outputs/value inputs) of crops and horticulture.	- Nine-strategic crop and horticulture product items (namely wheat, coffee, sesame, avocado, and mango) should be given much emphasis and provided all required institutional support. - Cluster and summer farming encouraged in the potential regions.
				Production and productivity of nine-strategic crop and horticulture product items increased.	- Wheat: 8% annual increment of production and 6% increment of yield. - Maize: 11% annual increment production and 7% increment of yield. - Coffee: 15% annual increment of production and 7% increment of yield. - Rice: 8 % annual increment of production and 4% increment of yield. - Sesame: 15% annual increment of production and 4% increment of yield. - Soybean: 8 % annual increment of production and 5% increment of yield - Avocado: 65% annual increment of production and 14% increment of yield. - Mango: 29% annual increment of production and 2% increment of yield. - Onion: 7% annual increment of production and 3% increment of yield. - Tomato: 15% annual increment of production and 7% increment of yield.	
				Sustainable land use, consolidation and administration system	10% annual increment of land consolidation using cluster farming. 10% annual increment of shareholder farming 100% of rural households issued with first and second level land certificates.	Smallholder farm land use and administration strategy should be developed
				Use of improved seed increased	10% annual increment of improved seed.	- As per the seed policy - Private sector and farmer cooperatives should play pivotal role
				Use of fertilizer and	10% annual increment of fertilizer supply.	Soil fertilizer use policy be

¹⁶ All indicators to be gender disaggregated.

¹⁷ NAIP impact level 3 include reform or strengthening of existing policies or further modifications to the policy and strategies as need arises. Besides, effective enhancement of institutional implementation capacity, improved multi-sectoral coordination, and public and privet partnership, and assures mutual accountability.

Key Results of NAIP						
Impact level	Result area (RA)	Strategic objectives (SOs)	Investment areas	Outcome	Impact targets showing progress ¹⁶	Policy and Institutional Considerations ¹⁷
				other soil fertility enhancement practices increased.	• 10% annual increment of inorganic soil fertilizer utilization.	• implemented • Private sector and farmer cooperatives should play pivotal role
				• Use of plant diseases & insect-pests prevention and mitigation techniques increased.	• 10% annual increment of pesticide & herbicide supply. • 10% annual increment of insect-pests prevention and mitigation techniques.	• As per the plant diseases and insect pests management policy
				• Use of agriculture mechanization service increased.	• 10% annual increment of agricultural mechanization machineries supply • 8% annual increment of mechanized cultivated land using large-scale commercial farms.	• As per agriculture mechanization strategy. • Re-establishment of agriculture mechanization agency at national level. • Mechanization service provision preferably for cluster farming areas.
				• Use of agriculture extension and advisory service increased.	• 5% annual increment of farmer's demonstration training center. • 5% annual increment of farmers using extension package for crop and horticulture productions.	• As per the agriculture and extension strategy • Integration of digital system in agriculture extension service. • Extension service should be given separately for horticulture crops.
				• Qualitative and quantitative post-harvest losses reduced of nine-strategic crops.	• 3% annual reduction in post-harvest losses of nine-strategic crop and horticulture crops.	• A comprehensive post-harvest losses strategy within the context of all crop value chain required.
				• Financial services for crop and horticulture production increased.	• 10% annual increases of financial service provision to crop and horticulture production.	• Agriculture finance for accessing foreign currency should be given priority. . • Review and improve implementation of rural microfinance policy. • Agriculture bank should be established • Development Bank and Agriculture insurance should be strengthened.
			CIPs (Marketing)	• Market-oriented nine-strategic crop and horticulture production (both quality and quantity) increased.	• 10% increment of crop and horticulture production entering international market channels per annum. • 8% annual increases of crops export volume. • 15% annual increases of horticulture export volume.	• Create and enhance policies and institutional conditions for fostering intra-Africa trade. • Organic farming should be strengthened.

Key Results of NAIP						
Impact level	Result area (RA)	Strategic objectives (SOs)	Investment areas	Outcome	Impact targets showing progress ¹⁶	Policy and Institutional Considerations ¹⁷
					• 16% annual increase of coffee and species products exports.	
				• Diversification into higher value export commodity increased	• 10% annual increase of share of high value export products in total agricultural production.	• Horticulture strategy be implemented • As per the national rice R&D strategy (2020-2030)
				• Crop and horticulture marketing system improved.	• 8% annual increase of primary and secondary markets infrastructure supports across the value chain. • 5% annual increases in cool chain logistics and warehouse of horticulture crops across main producer areas. • 5% annual increment of market information provision centers. • 10% annual increment of number of farmers who received market advisory service.	• Farmer marketing cooperatives should be strengthened • Marketing of high value commodities should be given priority.
			CIPs	• Small-scale crop and horticulture local agro-industry farmers increased.	• 10% annual increment of small scale local agro-industry farmers.	• Expanded local agro-industry and value chain development inclusive of women and youth. • Maintain transparent system of agribusiness investment incentives.
				• Private medium and large scale crop and horticulture commercial farming increased.	• 12% annual increment of medium local agribusiness industry commercial farmers. • 10% annual increment of large scale local agro-industry commercial farms.	
				• Increased value addition of crop and horticulture production	• 10% annual increase overall value addition for crops and horticulture. • 15% annual increase in primary value addition of crop and horticulture at farm level.	
				• Smallholder household income from off and non-farm income increased	• 10% annual increase in household off and non-farm activities. • 3% rural market oriented small scale agro-processing hubs increased.	• Piloting small scale agro-processing hubs establishing at district level should be started.
				• Raw material supply to industry	• 8% annual increase in nine-strategic crop and horticulture as raw material to industry	
				• Increased rural job employment opportunity from each sub-sectors	• 15% annual increase in number of trained labor force in crop and horticulture production. • 10% annual increase of job opportunities created from crop and horticulture sub-sector.	• Inclusive of women and youth

Key Results of NAIP						
Impact level	Result area (RA)	Strategic objectives (SOs)	Investment areas	Outcome	Impact targets showing progress ¹⁶	Policy and Institutional Considerations ¹⁷
		SO2: to achieve market-oriented livestock and fisheries output growth.	Livestock and fisheries development	• Total production and productivity of three livestock and fisheries product items increased. • Production and productivity of three-strategic livestock and fisheries products increased. • Use of improved or new livestock and fisheries technologies increased. • Supply of livestock and new fish-chicks, fodder, and water points increased • Use of livestock and fisheries diseases prevention and mitigation techniques increased.	• 4% annual change in total value productivity (value outputs/value inputs) of livestock and fisheries. • 10% annual increment of livestock and fisheries production. • Annual increment of red and white-meat supply from beef cattle (9%), sheep (13%), goat (17%), camel (10%) in carcass weight, and fish meat production (8%). • Poultry products-annual increment of chicken-meat production (6%), chicken-egg production (5%), and chicken-egg yield (4%). • Annual increment of dairy products supply from cow milk production (6%), goat milk production (6%), camel milk production (6%), cross-breed milk yield (4%), local-breed milk yield (3%), exotic milk yield (3%), and lactation milk yield (6%) • 10% annual increment of improved local /cross breeds of livestock and fisheries increased. • 5% annual increment of new agricultural technologies generated, tested and released. • 5% annual increment of high-grade crossbred dairy cow. • 5% annual increment of improved apiculture honey bee technology. • 10% annual increment of improved seed for livestock feeds production. • 10% annual increment of balanced animal feeds. • 7% annual increment of fish-chick. • 10% annual increment of pastoralist's access to watering points. • 10% annual increment of livestock and fisheries supply of medicine increased. • 6% annual increment of livestock and fisheries diseases surveillance service supply. • 10% annual increments of livestock vaccination service. • 15% annual reduction of prevalence of	• Three-strategic livestock and fisheries product items should be given much emphasis and provided all required institutional support. • As per the livestock road map.. • Preserve animal genetic resources and increase pastoral research. • As per the livestock fodder and nutrition strategy.. • Private sector and farmer cooperatives should play pivotal role • Need for Progressive Disease Control Strategy.

Key Results of NAIP						
Impact level	Result area (RA)	Strategic objectives (SOs)	Investment areas	Outcome	Impact targets showing progress ¹⁶	Policy and Institutional Considerations ¹⁷
					livestock diseases. • 15% annual reduction of morbidity and mortality rate of livestock and fisheries. • 15% annual reduction of livestock and fisheries diseases outbreaks. • 15% annual reduction of incidences of zoonotic diseases.	
				• Use of livestock veterinary services and other related inputs increased.	• 10% annual increment of livestock health access and quality. • 10% annual increment of public veterinary service increased. • 10% annual increment of coverage of vaccination increased. • 10% increase in areas coverage under surveillance for targeted diseases.	• As per the livestock veterinary services. • Need for establishment of veterinary statutory body.
				• Use of agriculture extension and advisory service increased.	• 5% annual increment of farmers using livestock extension package for livestock and fisheries.	
				• Qualitative and quantitative post-harvest losses of livestock and fisheries reduced.	• 3% annual reduction in post-harvest losses of livestock and fisheries. • 8% annual reduction of gas emission from livestock production	• Needs Post-harvest livestock and fisheries loss strategy
				• Financial services for livestock and fisheries production increased.	• 10% annual increments of financial service providers to livestock and fisheries production.	• Agriculture finance for accessing foreign currency should be given priority. • Review effectiveness of rural microfinance, cooperative bank, and Agriculture insurance for livestock sector • Establishment of Agriculture bank should be made.
			CIP _ LS marketing	• Market-oriented livestock and fisheries production (both quality and quantity) increased.	• 10% increment of livestock and fisheries production entering international market channels per annum. • 14% annual increase in livestock export earnings as a percentage of value added in the agricultural sector. • 10% annual increase in fisheries export earnings as a percentage of value added in the agricultural sector.	• Create and enhance policies and institutional conditions for fostering intra-Africa trade.

Key Results of NAIP						
Impact level	Result area (RA)	Strategic objectives (SOs)	Investment areas	Outcome	Impact targets showing progress ¹⁶	Policy and Institutional Considerations ¹⁷
				Livestock and fisheries marketing system improved.	8% annual increase of primary and secondary markets infrastructure support across the value chain. 15% annual increase in primary value addition of livestock and fisheries. 5% annual increment of market information provision centers. 10% annual increment of number of farmers who received market advisory service.	- Need special attention to hide and skins products. - Business advisory services should be provided
				Reduction of illegal cross-border livestock trade	15% annual reduction of number of livestock traded in cross border illegally.	Requires joint efforts of concerned key actors / institutions.
				Improved compliance of livestock and fisheries product to international standards	15% annual reduction of number of rejected livestock and fishery products traded on international markets. 5% annual increment of livestock quarantine system and facility centers. 10% annual increment of livestock identification, recording and history traceability service. 5% annual increment of export abattoirs inspection and certification.	
			CIPs	Small livestock and fisheries production system increased	10% increase in small specialized dairy production system per annum. 10% increase in small specialized cattle feedlots per annum. 10% increase in small specialized fisheries production system per annum.	Privet sector development
				Private medium and large scale commercial livestock & fisheries investment increased.	10 % increase in annual level of medium and large scale local industry investment on livestock and fisheries.	Expanded local agro-industry and value chain development inclusive of women and youth
				Increased value addition of livestock and fisheries production	10% annual increase in overall value addition for livestock and fisheries. 15% annual increase in primary value addition of livestock and fisheries at farm level.	
				Raw material supply to industry	8% annual increase in livestock and fisheries products as raw material to industry	

Key Results of NAIP						
Impact level	Result area (RA)	Strategic objectives (SOs)	Investment areas	Outcome	Impact targets showing progress ¹⁶	Policy and Institutional Considerations ¹⁷
				Increased rural job employment opportunity from livestock and fisheries	15% annual increase in number of new trained labor force on livestock and fisheries production. 10% annual increase in number of new trained labor force on livestock and fisheries production.	Inclusive of women and youth
II	RA2: Improved management of natural resources for sustainable	SO 3: to achieve a sustainable natural resource development, utilization, adaptation and mitigation to climate change.	Small and large-scale irrigation development.	Arable, rangeland and forest degradation reduced.	3% annual of degraded land rehabilitated using community-base integrated watershed management. 7% annual increase in area under improved land management, including forest coverage. 5% annual increase in Normalized Difference Vegetation Index (NDVI) 6% annual increment of development of biomass.	- Review effectiveness of existing NRM policies and instruments. - Should be supported by the Integrated land use management policy.
				Use of irrigation capacity increased.	9% annual increment of new irrigation schemes development at community level. 10% annual increment of revitalized irrigation schemes development at community level. 10% annual increment of new irrigation schemes development at household head level. 6% annual increment of legally registered cooperative irrigation schemes users. 15% per annum coverage of total cultivated land with irrigation.	- As per the agriculture Irrigation development strategy - Private sector and farmer cooperatives should play pivotal role - Foster Public Private Partnership
				Water conservation and water use efficiency improved.	5% annual increase of total precipitation conserved. 5% annual increase in crop yield per unit of water use increase.	
				Soil health index and NPKS supply in agricultural landscapes improved.	2% annual increase in soil organic carbon level. 5% annual soil map use coverage. 1% annual increment of Nitrogen (N) supply 6% annual increment of Phosphorus (P) supply 6% annual increment of potassium (K) supply 6% annual increment of Sulfur (S) supply	
				Increased rural job employment opportunity from each NRM	15% annual increase in number of trained labor force in NRM 10% annual increase of job opportunities created from NRM sub-sector.	Inclusive of women and youth
			Adaptation and	Farmers' resilience to	5% annual increment of climate and weather	As per Climate Resilient Green

Key Results of NAIP						
Impact level	Result area (RA)	Strategic objectives (SOs)	Investment areas	Outcome	Impact targets showing progress ¹⁶	Policy and Institutional Considerations ¹⁷
			mitigation to climate change	respond to climate and weather related risks challenges strengthened.	forecasting system, adaptation, and mitigation program supports.	Economy (CRGE) strategy • Needs climate resilient sustainable agricultural development programs.
I	RA3: Building resilience of livelihoods, and alleviate insecurity food-and nutrition	SO 4: to build resilience to vulnerabilities, shocks, and achieve food and-nutrition security	alleviate food and-nutrition insecurity and disaster management	• Strengthened livelihoods chronically food insecure households.	• 5% reduction of households experiencing food gaps of three months or more.	
				• Effectiveness of resilience building to shortage of food improved	• 5% annual increment of food feeding programs	
				• Effectiveness of resilience building to shocks improved	• 4% annual increment of adaptation and mitigation to shocks management programs so as farm/pastoral households are resilient to shocks	
				• Farmers and pastoralist income from agriculture increased	• 10% annual increase of farmers and pastoralist per capita income from each sub-sectors of agriculture. • 5% annual reduction of headcount ratio of rural poverty.	
				• Strengthened livelihoods chronically food insecure households.	• 5% reduction of households experiencing food gaps of three months or more.	
				• Strengthened livelihoods chronically food insecure households.	• 5% reduction of households experiencing food gaps of three months or more.	• Enhancement of nutrition sensitive agriculture should be made
				• Prevalence of child undernourishment reduced	• 5% annual reduction in stunted and underweight children in rural areas.	
				• Status of malnutrition improved	• 5% annual prevalence of underweight reduced • 5% annual prevalence of stunting reduced • 5% annual prevalence of wasting reduced • 5% annual minimum dietary diversity of women increased. • 5% annual minimum acceptable diet for 6-23 months & infants increased	• Promoting greenhouse and garden level production • Requires joint efforts of concerned key actors / institutions.
				• Reduction of major crop import dependency ratio	• 10% annual reduction of cereals import • 10% annual reduction of rice and oilseeds crops import.	• Strengthening summer wheat farming
				• Imports of food aid reduced.	• 10% annual decline in food aid imports. • 10% annual increase of food reserve stock.	• Food aid policy coordinated with major donors.

Key Results of NAIP						
Impact level	Result area (RA)	Strategic objectives (SOs)	Investment areas	Outcome	Impact targets showing progress ¹⁶	Policy and Institutional Considerations ¹⁷
					• 10% increase in domestic procurement of food aid supplies.	• Maintain strategic food reserve.
				• Effectiveness of targeted Social Safety Net Programme for vulnerable groups improved.	• 10% number of vulnerable households receiving of transfers to cover basic consumption needs increased. • 20% annual increase in households graduating from PSNP and other safety net programs annually.	• Effective graduation strategy to reduce the investments targeting chronic food insecurity.

Annex 2: Tables 1 and 2

NAIP BUDGET ESTIMATES AND FINANCING PLAN

This Annex presents indicative cost estimates and financing plan for the NAIP based on the following key assumptions and estimates derived from the NBE and MoA (2020) (Annex 2, Tables 1 & 2).

- Annex table 1 shows historical increments of budget allocations patterns for agricultural and rural development from 3.95 % of total national budget in 2017/18 to 3.96% in 2019/20 which is very small increment over the last three years.
- Annex table 1 indicates the historical budget allocated at national level assumed to remain with a gradual increment from 19.48% of national budget share to GDP in 2019/20 to 20.78%% which is an average of previous three consecutive years and assumed throughout of the NAIP periods, of which 10% of the national budget will be allocated for agriculture and rural development. This would see the budget increase from 60.69 billion birr in 2020/21 to 143.09 billion birr in 2029/30 and 967.16 billion birr over the life of the NAIP
- Annex table 2 also shows how these NAIP budget will be allocated amongst identified priority areas of investment programs on the basis of the percentage share allocations estimates of MoA TYPP.

Annex 2 Table 2: Trends of national budget, GDP, Agriculture and Natural Resources budget allocations

	2017/18	2018/19	2019/20
Agriculture & rural development budget (billion birr)	13.98	14.55	15.31
National budget (billion Birr)	354.2	413	387
DPS Disbursement (US\$ in millions)	1230.3	714.2	975.1
DPS Commitment (US\$ in millions)	1122.9	628.6	1472
GDP at current market price (in Mn. Birr)	1,717,127.20	1,834,066.50	1987157.53
Agriculture & rural development share to national budget (%)	3.95	3.52	3.96
National budget share to GDP (%)	20.63	22.52	19.48

Source: (NBE, 2020; MOA, 2020)

Annex 2 Table 3: NAIP financing cost estimates

		NAIP Year/ Fiscal Year										Total NAIP	
		1	2	3	4	5	6	7	8	9	10		
		2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	ETB b	US\$
GDP (in billion birr)	1987.16	2185.87	2404.46	2644.91	2909.40	3200.34	3520.37	3872.41	4259.65	4685.61	5154.17		
Budget share of GDP (%)	19.48	20.87	20.87	20.87	20.87	20.87	20.87	20.87	20.87	20.87	20.87		
Budget trends (billion birr)		45.63	50.19	55.21	60.73	66.80	73.48	80.83	88.92	97.81	107.59	727.19	16.28
Incremental budget ¹⁸ (in billion birr)		15.06	16.56	18.22	20.04	22.05	24.25	26.67	29.34	32.28	35.50	239.97	5.37
Aggregate budget (in billion birr)		60.69	66.75	73.43	80.77	88.85	97.73	107.51	118.26	130.08	143.09	967.16	21.65
Budget allocated to Programs %													
Agricultural crop development	0.63	0.38	0.42	0.46	0.51	0.56	0.62	0.68	0.75	0.82	0.90	6.09	
Mechanization	49.21	29.86	32.85	36.13	39.75	43.72	48.09	52.90	58.19	64.01	70.42	475.94	
Agriculture Horticulture development	2.78	1.69	1.86	2.04	2.25	2.47	2.72	2.99	3.29	3.62	3.98	26.89	
Livestock Resource development	4.9	2.97	3.27	3.60	3.96	4.35	4.79	5.27	5.79	6.37	7.01	47.39	
Input & Product Marketing	0.62	0.38	0.41	0.46	0.50	0.55	0.61	0.67	0.73	0.81	0.89	6.00	
Natural Resource	23.83	14.46	15.91	17.50	19.25	21.17	23.29	25.62	28.18	31.00	34.10	230.48	
Affiliated institutions	4.13	2.51	2.76	3.03	3.34	3.67	4.04	4.44	4.88	5.37	5.91	39.94	
Other cross-cutting areas	13.91	8.44	9.29	10.21	11.24	12.36	13.59	14.95	16.45	18.09	19.90	134.53	
Total	100.00	60.69	66.76	73.44	80.78	88.86	97.74	107.52	118.27	130.10	143.11	967.16	
Ongoing fund committed by development partners in million US\$													
Funds committed to SO1	27.10	526.2	526.2	-	-	-	-	-	-	-	-	1052.4	
Funds committed to SO2	3.24	25.17	25.17	25.17	25.17	25.17	-	-	-	-	-	125.85	
Funds committed to SO3	12.87	141.79	141.78	116.11	100	-	-	-	-	-	-	499.68	
Funds committed to SO4	56.79	144.35	527.68	383.33	383.33	383.33	383.33	-	-	-	-	2205.35	
Budget allocated to SOs of NAIP in billion US\$													
SO1	43.52%	0.59	0.65	0.71	0.79	0.87	0.95	1.05	1.15	1.27	1.39	9.42	
SO2	22.1%	0.30	0.33	0.36	0.40	0.44	0.48	0.53	0.59	0.64	0.71	4.78	
SO3	23.98%	0.33	0.36	0.39	0.43	0.48	0.53	0.58	0.64	0.70	0.77	5.19	
SO4	10.40%	0.14	0.15	0.17	0.19	0.21	0.23	0.25	0.28	0.30	0.33	2.25	

Note: - Agriculture crop development includes seed production and marketing, plant variety release, crop development, crop protection, seed quality, and plant health and production quality programs.

- Mechanization includes feed improvement, pre- and post-harvest technologies, plant protection, and institutional capacity building programs.
- Horticulture development includes plant variety release, horticulture development, and seed production and marketing programs.
- Livestock resource development includes livestock production, breed development, feed production and accessibility, and livestock health programs.
- Input and product marketing includes livestock & fishery input supply & marketing system, agricultural product marketing system, and agricultural marketing infrastructure programs.
- Natural Resource includes watershed management & agro-forestry, small-scale irrigation & drainage, problem soil management, & land use plan programs-Affiliated institutions include research, ATVET, cooperative and Ethiopian tea and coffee.
- Other cross-cutting areas include extension services, food security, job creation, nutrition, climate, and gender program

¹⁸ Incremental budget projected to grow at 33% per annum considering 11% inflation rate considering 5 previous consecutive year average and 22% uncertainty.