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**African Commitments For Agricultural Development
Goals And Milestones For Malawi**

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Abstract

Malawi is a signatory to the Comprehensive Africa Agriculture Development Programme (CAADP) and the 2014 Malabo Declaration on Accelerated Growth and Transformation for Shared Prosperity and Improved Livelihoods that commit the country to achieve a 6% annual agricultural growth rate, 10% agricultural expenditure share, ending hunger and halving poverty. Additionally, Malawi has signed the African Union Agenda 2063 and has committed to achieving the Sustainable Development Goals (SDGs). A Results Framework is applied to address the CAADP/Malabo, SDGs and Agenda 2063 goals to translate Malawi's agricultural development agenda into tangible outcomes. The framework utilizes an economy-wide general equilibrium model and a microsimulation model which are linked in a sequential manner. The modelling results reveal that the Business as Usual (BaU) growth strategy is insufficient to meet the goals of the three agendas. Hence, other paths that might yield better results are investigated. The analysis then investigates the impacts of the prioritization of agriculture sub-sectors and commodities, and agricultural value-chain investment strategies. The results reveal that public investment-led productivity increase in agriculture contributes more to the number of jobs created and poverty headcount reduction, compared to industry and services. These investments are best financed by external financing, which has the highest impact, in terms of economic growth and socioeconomic outcomes, to meet the targets of the three commitments. Results further reveal that public investment-led productivity increase in crops is the most effective in meeting the commitments of the three agendas, followed by livestock, fishery then forestry in that order. This information is then used to design an accelerated agricultural investment strategy. Results from this scenario show that Malawi makes substantial progress in meeting the commitments of the three agendas and this allows to provide recommendations for a successful agricultural investment planning, design and implementation for the country.

Resume

Le Malawi est signataire du Programme Détaillé pour le Développement de l'Agriculture Africaine (PDDAA) et de la Déclaration de Malabo de 2014 sur la croissance et la transformation accélérées pour une prospérité partagée et des moyens de subsistance améliorés qui engagent le pays à atteindre un taux de croissance agricole annuel de 6%, une part des dépenses agricoles de 10%, mettre fin à la faim et réduire de moitié la pauvreté. En outre, le Malawi a signé l'Agenda 2063 de l'Union Africaine et s'est engagé à atteindre les Objectifs de Développement Durable (ODD). Un cadre de résultats est appliqué pour répondre aux objectifs du PDDAA / Malabo, des ODD et de l'Agenda 2063 afin de traduire le programme de développement agricole du Malawi en résultats tangibles. Le cadre utilise un modèle d'équilibre général à l'échelle de l'économie et un modèle de microsimulation qui sont liés de manière séquentielle. Les résultats de la modélisation révèlent que la stratégie de croissance du Business as Usual (BaU) est insuffisante pour atteindre les objectifs des trois programmes. Par conséquent, d'autres voies qui pourraient donner de meilleurs résultats sont étudiées. L'analyse examine ensuite les impacts de la priorisation des sous-secteurs et des produits agricoles, et des stratégies d'investissement dans la chaîne de valeur agricole. Les résultats révèlent que l'augmentation de la productivité tirée par l'investissement public dans l'agriculture contribue davantage au nombre d'emplois créés et à la réduction des effectifs de la pauvreté, par rapport à l'industrie et aux services. Ces investissements sont mieux financés par des financements externes, qui ont le plus fort impact, en termes de croissance économique et de résultats socio-économiques, pour atteindre les objectifs des trois engagements. Les résultats révèlent en outre que l'augmentation de la productivité des cultures tirée par l'investissement public est la plus efficace pour respecter les engagements des trois programmes, suivis par le bétail, la pêche et la foresterie dans cet ordre. Ces informations sont ensuite utilisées pour concevoir une stratégie d'investissement agricole accélérée. Les résultats de ce scénario montrent que le Malawi fait des progrès substantiels dans le respect des engagements des trois programmes et cela permet de fournir des recommandations pour une planification, une conception et une mise en œuvre réussies des investissements agricoles pour le pays.

1. Introduction

Building on the Comprehensive Africa Agriculture Development Programme (CAADP) signed by African Heads of State and Government (AU/NEPAD, 2003), the 2014 Malabo Declaration on Accelerated Growth and Transformation for Shared Prosperity and Improved Livelihoods upheld the original Maputo commitment of achieving a 6% annual agricultural growth rate and a 10% agricultural expenditure as a share of total public expenditure (AU/NEPAD, 2014). The seven priority areas of the 2014 Malabo Declaration marked a strong commitment to the goals of improving investments in agricultural production, ending hunger and halving poverty, boosting intra-African trade in agricultural commodities and services, enhancing resilience to climate variability and other related risks, as well as the goal of creating mutual accountability to actions and results through a review process of the progress made in implementing the provisions of the Declaration. At the same time, countries have signed on to the African Union (AU) Agenda 2063 as well as the United Nations (UN) Sustainable Development Goals (SDGs), both of which are committed to accelerating economic growth and eradicating poverty and inequality, among several other goals.

According to the United Nations Conference on Trade and Development (UNCTAD) (2017), Malawi is identified as a least developed country with low human development. In 2017, its gross national income (GNI) per capita was estimated at \$331 and it ranked 171 out of 189 countries in terms of Human Development Index (HDI) (UNCTAD 2017). The agricultural sector plays an important role in Malawi's economy, where it contributed 26% to gross domestic product (GDP) and 64% to its total employment in 2017. About 72% of Malawi's exports are generated from the agriculture, forestry and fisheries commodities (World Bank, 2018 and ReSAKSS, 2017). The main policy framework guiding Malawi's economy is called the Malawi Growth and Development Strategy (MGDS), which was first implemented between 2006 and 2011, then updated to cover the period between 2012 and 2016, and further revised and updated to now cover the period between 2017 to 2022. Apart from the MGDS, the country has an agricultural sector specific policy called the National Agricultural Policy (NAP). A key challenge to implementing the various commitments is that they involve a large number of obligations and goals. To address the CAADP/Malabo, SDGs and Agenda 2063 goals, a Results Framework has been developed as a key tool for translating Africa's agricultural development agenda into tangible outcomes. This paper applies this Results Framework to Malawi.

The rest of the paper is organised in four sections. Section 2 discusses the coherence of national and international agricultural development policies and builds up an integrated results framework to assist the tracking, monitoring and reporting on progress and facilitates mutual learning and accountability. Section 3 gives an overview of the agricultural investment and growth simulation model. Section 4 presents an

analysis of the prospect for agricultural development. It starts with an 11-year (2015-2025) projection of the pre-Malabo (2011-2014) economic performances and trends, including the agricultural sector. Since the Business as Usual (BaU) growth strategy will miss most of the goals of the three agendas, other paths that might yield better results are investigated. Therefore, the analysis changes focus in section 4 to the understanding of prioritization of agriculture sub-sectors and commodities, and agricultural value-chain investment strategies. Using this information, an accelerated agricultural investment strategy is designed and milestones are defined to inform a different growth path from the BaU. Finally, the conclusion in section 5 summarizes the main findings of the study and provides recommendations for a successful agricultural investment planning, design and implementation.

2. Policy Coherence and Agricultural Development Goals

2.1 Malawi's National Policy Framework

As alluded to earlier, the country has two instrumental policies, the MGDS that focuses on the overall economy as well as the NAP that focuses on agricultural development. The objective of the MGDS is to ensure that Malawi achieves its vision 2020. The Government of Malawi (GOM) states the MDGS vision as follows: “by the year 2020 Malawi will be secure, democratically mature, environmentally sustainable, self-reliant with equal opportunities for and active participation by all, having social services, vibrant cultural and religious values and a technologically driven middle-income economy” (2018:9).

According to GOM (2017:10), the MGDS III has five priority areas, namely, agriculture and climate change management, education and skills development, transport and ICT infrastructure, health and population management and energy as well as industry and tourism development. These five priority areas were selected based on the developmental challenges of Malawi as well as the need to align with the international and regional development policy frameworks, such as the SDGs (United Nations' vision 2030), Africa Agenda 2063, Vienna Programme of Action (VPoA) and Malabo Declaration and the Regional Indicative Strategic Development Plan (RISDP) of the Southern African Development Community (SADC). The RISDP is a regional policy framework that guides the regional integration agenda of the SADC countries. Developmental challenges highlighted by the government (see GOM, 2017:14-18) in compiling the MGDS III are the country's high unemployment and high poverty rates. The employment rate for Malawi is measured at 79.6%, where about 64% of employed persons work in agriculture. Hence, the agricultural sector is a priority. Of the country's total labour force, 20.4% are unemployed. Unemployment is more common among females than males due to lower levels of literacy, a lower urbanization rate, customs and religious values. Agriculture is the main economic activity in rural areas. About 50.7 % of the population live under the poverty line of below \$1 a day and the Gini coefficient was measured at 0.45 in 2016, indicating moderate levels of inequality.

According to the GOM (2017), the development of the economy is largely dependent on the development of its agricultural sector for which a sector specific plan has been developed. The NAP is the main agricultural strategy or plan of five year duration that aims to promote agricultural productivity and sustainable management of land resources to achieve national food security, increased incomes and ensure sustainable socio-economic growth. The initial NAP covered the period between 2010 and 2016 while the latest covers the period between 2017 and 2021 and is aligned with MGDS III. The MGDS III envisages the achievement of a sustainable agricultural transformation and the achievement of water development adapted to climate change which enhances ecosystem services (GOM, 2017:34). The NAP is an operational plan to achieve this medium-term goal in Malawi's agricultural sector. The NAP is aligned with CAADP protocol and international policy frameworks such as SDGs. Furthermore, the NAP is funded through the Agriculture Sector Wide Approach (ASWAp) investment plan. The aim of ASWAp is to harmonize investments in agriculture both from public and private sectors as well as from not-for-profit organizations. According to the Ministry of Agriculture and Food Security (MAFS, 2017), the ASWAp has three focus areas: food security and risk management, commercial agriculture as well as agro-processing and market development and sustainable agricultural land and water management.

The objectives of NAP for the period between 2017 and 2021 under MGDS III period include: attaining an agriculture GDP growth rate of at least 6% per year, doubling the contribution of legume and oilseeds crops to overall agricultural production, doubling the contribution of legume and oilseeds crops to overall agricultural exports, increasing the yields of major crops by 100%, increasing the amount of agricultural land areas under irrigation by 20,000 hectares, increasing the value of agricultural exports by 50% and reducing stunting prevalence among 0-5-year old children to 29% by 2020.

Table 1 provides a summary of countrywide and agricultural sector specific policies in Malawi. This table illustrates the alignments from the country's Vision 2020 to the medium term policy frameworks that aim to attain this vision as well as sector specific policies that aim to enhance investment in agriculture in order to contribute to the attainment of the country's vision 2020.

Table 1- Summary of countrywide and agriculture sector specific policies for Malawi

Policy	Description	Timeframe
Malawi vision 2020	Long term strategy that prioritize agriculture and food security to foster economic growth and development	1998 - 2020
MGDS	Medium term policy frameworks for social and economic development adopted to mitigate poverty through sustained economic growth and infrastructure development	MGDS I: 2006-2011 MGDS II: 2011-2016 MGDS III: 2017-2022
NAP	Overarching policy on agricultural development and growth	2010 – 2016 2017 - 2021
ASWAp	Investment plan in the agricultural sector	2010 – 2016 2017 - 2021

In order to fully conceptualize the discussion, a brief description of the global developmental agenda (i.e. UN SDGs), the broad (i.e. Agenda 2063) and agriculture focused (CAADP/ Malabo Declaration) continental agendas are discussed with emphasis on the goals of interest for this paper. These are then aligned with Malawi’s national priority areas as prescribed in the NAP and ASWAp.

2.2 Comprehensive Africa Agriculture Development Programme

The CAADP is Africa’s policy framework for agricultural transformation, wealth creation, food security and nutrition, economic growth and prosperity for all (AU/NEPAD 2003). It was adopted in Maputo in 2003 by the African heads of state and government. CAADP has four pillars:

- Sustainable land and water management,
- Improved rural infrastructure and trade related capacities for market access,
- Increasing food supply and reducing hunger and
- Agricultural research, technology dissemination and adoption.

In 2014, the AU heads of state and government evaluated the achievements of CAADP in the first 10 years of implementation (2003-2013) and identified areas that needed to be strengthened to realize the aspirations of CAADP. They then adopted the Malabo Declaration on CAADP which is a statement that entails further commitments on pursuing the goals of CAADP. The Malabo Declaration was adopted in 2014 with seven priority areas or commitment areas:

- Retain the principles and values of the CAADP process,
- Enhancing investment finance in agriculture,

- Reducing hunger in Africa by 2025 by accelerating agricultural growth by at least doubling current agricultural productivity levels, by the year 2025 and integrating measures for increased agricultural productivity with social protection initiatives focusing on vulnerable social groups,
- Halving poverty by the year 2025, through inclusive agricultural growth and transformation in order to ensure that the agricultural growth and transformation process is inclusive and contributes at least 50% to the overall poverty reduction target, to sustain annual agricultural GDP growth of at least 6%, to establish and/or strengthen inclusive public-private partnerships for at least five priority agricultural commodity value chains with strong linkages to smallholder agriculture and to create job opportunities for at least 30% of the youth in agricultural value chains,
- Boosting intra-African trade in agricultural commodities and services by tripling intra-Africa trade in agricultural commodities and fast tracking continental free trade area and transition to a continental Common External tariff scheme,
- Enhancing resilience in livelihoods and production systems to climate variability and other shocks and
- Mutual accountability to actions and results.

2.3 Africa Agenda 2063

The Vision for Africa Agenda 2063 was adopted in March 2013 by the African Union Commission (AUC). The first implementation of the plan runs between 2013 and 2023. The Agenda 2063 is a strategic framework for the socio-economic transformation of the continent over the next 50 years. It builds on and seeks to accelerate the implementation of past and existing continental initiatives for growth and sustainable development. Some of the main characteristics and intentions of the Agenda 2063 include, the creation and maintenance of an effective, equitable and people-centered growth and development; the eradication of poverty; and enabling internal coherence and coordination to continental, regional and national frameworks and plans adopted by the AUC, Regional Economic Communities (RECs) and member states. Some of the Africa Agenda 2063 goals which are important for this study are the first, third and fifth, namely:

- A high standard of living, quality of life and well-being for all citizens,
- Healthy and well-nourished citizens and
- Modern agriculture for increased productivity and production.

2.4 United Nations Sustainable Development Goals

Part of the SDGs' vision includes a world free of poverty and hunger where food is sufficient, safe, affordable and nutritious and where every country enjoys sustained, inclusive and sustainable economic growth and decent work for all (UN 2015). It is grounded in the Universal Declaration of Human Rights, international human rights treaties, the Millennium Declaration and the 2005 World Summit Outcome Declaration on the Right to Development. Specific goals of interest for this research are the first, the second, the eighth and the tenth, namely:

- End poverty in all its forms everywhere,
- End hunger, achieve food security and improved nutrition and promote sustainable agriculture,
- Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all and
- Reduce inequality within and among countries.

An important issue is whether Malawi's vision and goals are coherent with its continental agricultural sectorwide commitments and goals as set out in the CAADP/Malabo, SDGs and Agenda 2063 commitments and goals. Table 2 below summarizes the coherence among the three agendas and Malawi's sector specific and county goals. This mapping facilitates the discussion of the results framework in the sections to follow. It should be noted that, given this coherence of goals between the national and the continental and international agendas, the results framework focuses on selected targets for the CAADP/Malabo, Agenda 2063 and the SDGs, which subsume the national goals of interest for this study.

Table 2 - Mapping of Malawi's plans, CAADP, Africa Agenda 2063 and SDG goals

Country: MGDS III	Sector Specific: NAP & ASWAp	CAADP/Malabo	Agenda 2063	UN's SDGs
Agriculture and climate change management	Area I: Food security and risk management	Pillar III: Increasing food supply and reducing hunger.	Goal: 1, 3	SDG: 1, 2, 3 8, 11,
	Area II: Commercial agriculture, agro-processing and market development	Pillar II: Improving rural infrastructure and trade-related capacity for market access	Goal: 4, 5	SDG: 2, 8, 9
	Area III: Sustainable agricultural land and water management	Pillar I: Sustainable land and water management	Goal: 6, 7	SDG: 6, 7, 13, 14, 15
	Area IV: Technology generation and dissemination	Pillar IV: Agriculture research, technology dissemination and adoption	Goal: 2, 10	SDG: 4, 9
	Area V: Institutional strengthening and capacity building	Cross-cutting	Goal: 8, 9, 12	SDG: 16, 17
	Area VI: HIV prevention and AIDS Impact mitigation in agriculture	Cross-cutting	Goal: 3	Goal: 3
	Area VII: Gender equity and empowerment in agriculture	Cross-cutting	Goal: 17, 18	Goal: 5

In some cases, the agendas specify a quantified target, while in others the target is simply an increase or decrease in the value of an indicator. These targets are used in assessing whether the country would be able to attain the goals set out in the different commitments.

3. Agricultural Investment and Growth Simulation Model

An economic modelling framework is built to assess the strategic options available to Malawi to accelerate growth and reduce poverty as envisaged by its different agriculture-related policies and its commitment to the Malabo Agenda, Agenda 2063 and SDGs. The framework consists of an economy-wide general equilibrium model and a microsimulation model. The two models are linked in a sequential manner, that is, the output from one model is used as an input by the other model. Indeed, as suggested by Fofana et al. (2019), a mix of economic models is necessary to properly address multiple goals carried by the agricultural development agendas. Thus, the macroeconomic model addresses the growth and investment goals and targets of Mozambique. However, the latter does not include issues related to inequality and poverty which are better handled in the microeconomic model.

- The macroeconomic model

The macroeconomic model is an agricultural investment focused computable general equilibrium (CGE) model grounded in the Walrasian small open economy framework. The model is built to capture the agricultural sector-wide Malabo commitments and goals, i.e. agricultural output and productivity growth, intra-Africa trade of agricultural commodities, and public agricultural investments. The CGE model is grounded in the Walrasian small open economy framework. That is profit-maximizing producers and utility-maximizing consumers interact under a competitive domestic pricing system which simultaneously determines quantities supplied and demanded. The economy is a price taker in world import and export markets. Although the core setting of the model builds upon the standard CGE framework, the model includes some peculiarities related to the issue of agricultural transformation and investments and discussed by Fofana et al. (2019).

The CGE model is implemented using a Social Accounting Matrix (SAM). A SAM is a square matrix that describes the transaction flows taking place within an economy during a given period of time (Fofana, Diallo, Sarr, and Diouf, 2015). The CGE model is implemented using the 2014 SAM for Malawi (Thurlow, 2017). The SAM describes 70 industries, including 23 agricultural commodities and industries. It has an account for trade margins, 13 accounts for factors and 9 institutional accounts, including 1 account for the rest of the world.

- The microeconomic model

The goals of halving poverty between 2015 and 2025 and ending hunger by 2025 are directly assessed using a microeconomic model. Poverty and hunger are measured at the individual or household level and use micro level information, i.e. nationally representative survey data. A given level of poverty is associated with an income level and its distribution across the population. Thus, income inequality is an important determinant of poverty and hunger results. The microeconomic model captures changes in income distribution and inequality measures across the population. Microeconomic models are designed to predict individuals' reactions to a policy shock when facing different economic and institutional environments or constraints. They are useful in integrating the heterogeneous behavior of economic agents and accounting for the aggregate costs and benefits of an intervention or shock (Bourguignon and Spadaro, 2006). There are multiple approaches to conducting a microsimulation under a CGE framework and the choice among these approaches depends on data availability, the research question and time constraints. The microeconomic model is a statistical economic model built to capture income distribution among the population. The changes in the probabilities associated with individual income levels induced by changes in the mean (per capita) income are assessed through a "generalized entropy" measure (Lee and Judge,

1996). Further details about key characteristics of the microeconomic models are available in Fofana et al. (2019).

The Malawi Household Income and Expenditure Survey 2016 (IHS4) conducted by the National Statistical Office (NSO) is used to implement the microeconomic model. The survey is a representative household-based survey designed to collect data on income and expenditure patterns of households and serves as the sole source of information on income and expenditure in the country. The data from the IHS4, among other insights, provides benchmark poverty, vulnerability, and socio-economic indicators to foster evidence-based policy formulation and monitor the progress of meeting the SDGs as well as the goals listed as part of the MGDS. This data from the survey is used to compute poverty indicators at household and individual levels. A sample of 12,480 households statistically designed to be representative at both national, district, urban and rural levels is used for this survey.

4. Prospects for Agricultural Development

4.1 Business as Usual Scenario

The modelling framework is used to construct the Business as Usual (BaU) scenario. This scenario tracks how the country would perform, if it continued on the current trajectory and no policy is simulated. The BaU scenario is built upon the recent trend of the key macroeconomic and sectoral growth trends. Data from the International Monetary Fund (Table 3) shows an increase of the GDP growth rate at an annual average of around 5.9% between 2020 and 2024. This is driven by growth in private investment which is expected to increase by 13.2% over 2021-2024 compared to 11.8% during 2015-2019. Agricultural GDP growth is the lowest at 0.2% per annum on average during that period (Table 4). The agricultural share in government capital expenditure of 16.9% and 16.1% for the period 2011-2014 and 2015-2018 respectively, are above the CAADP-Malabo target of 10%. This share suggests that the observed decline in agricultural growth to 0.2% in 2015-2018 is not driven by public investment. Table 5 also reports the changes in urban and rural demographic and urbanization patterns. Malawi's total population is estimated to grow at around 3%. The urban population will increase more than the rural population, that is, 4.2% compared to 2.7% over 2015-2018. Overall, for the model to be well-calibrated the BaU results must be able to closely replicate the figures and trends provided in Table 3 and Table 4.

Table 3 - Malawi's Selected Economic Variables, Trend and Outlook 2011-2024 (%)

	2011-2014	2015-2019	2020-2024
Gross domestic product, constant prices	4.1	3.4	5.9
Total investment	12.3	11.8	13.2
Gross national savings	3.6	1.8	5.6
Volume of imports of goods and services	-2.8	2.9	6.0
Volume of exports of goods and services	3.9	5.5	7.1
General government revenue	25.4	24.9	25.7
General government total expenditure	30.1	30.0	27.7
Current account balance	-8.7	-10.0	-7.7

Source: World Economic Outlook (IMF, 2019)

Table 4 - Malawi's Selected Socioeconomic Variables, Trend 2011-2018 (%)

	2011-2014	2015-2018
Population, total	3.0	2.9
Population, urban	4.0	4.2
Population, rural	2.8	2.7
Labor force, total	3.6	3.5
Unemployment rate, total	6.1	5.6
GDP growth rate, national	4.4	3.1
GDP growth rate, agriculture	4.2	0.2
GDP growth rate, industry	2.4	2.7
GDP growth rate, manufacturing	2.3	2.7
GDP growth rate, services	4.9	4.9
Government Capital Expenditure, Ratio-to-GDP*	7.8	4.2
Government Capital Expenditure Share of agriculture**	16.9	16.1

Source: World Development Indicators (World Bank, 2019); * African Statistical Yearbook (AfDB; UNECA and AUC, 2019); ** ReSAKSS Database (ReSAKSS, 2019)

- Progress towards CAADP/Malabo Commitments and Objectives

Table 5 reports the simulation results with respect to the CAADP/Malabo goals, assuming continuation of the BaU. The country is off-track with agricultural GDP growth of 2.3% that is indicative of little progress towards the CAADP/Malabo target of 6%. Agricultural performance is being hampered by negative productivity increases and as a result, Malawi also makes very little progress in extreme poverty reduction projected to fall by only 15.3% against a target of 95%. These outcomes are quite surprising, particularly because under the BaU scenario, the agricultural sector is publicly well funded over the BaU with regards to the 10% CAADP/Malabo target (Table 5). The intra-Africa trade growth is expected to increase only by 20.8% in 2025 against a target of 200%. Thus, the goal of tripling intra-African trade will not be met if the current economic trends, as captured in the BaU scenario, prevail.

Table 5 - Progress towards Selected CAADP/Malabo Commitments and Goals, BaU Scenario

(Cumulative change from 2015-2025, %)

		BaU Progress 2015-2025	CAADP Target 2015-2025
Agriculture Investment	Agricultural public expenses, average share	14.9	10.0
	Agricultural public expenses	38.8	>
	Agricultural private investment	57.5	>
End Hunger	Agricultural total factor productivity	-0.6	100.0
	Agricultural land productivity	23.9	100.0
	Agricultural labor productivity	-8.5	100.0
	Total factor productivity, domestic trade of agricultural commodities	-11.0	50.0
	Total factor productivity, agroindustry	-6.4	50.0
	Locally produced food, ratio total food consumption	0.0	>
	Share poorest quintile in total consumption expenditure	9.0	>
	Poverty headcount index, food poverty line	-15.3	-95.0
Halving Poverty	GDP agriculture, average annual growth rate	2.3	6.0
	Agriculture contribution to GDP growth, average	17.8	50.0
	Poverty headcount index, national poverty line	-9.7	-50.0
Intra-African Trade	Intra-Africa trade of agricultural commodities	20.8	200.0

Source: Simulation Results

Note: Unless otherwise noted, values shown are cumulative growth rates from 2015 to the year stated. Values for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth” denote average annual shares. Values for “GDP Agriculture” refer to average annual growth rates. “BaU, Average Annual Change” denotes annual average growth rates for most indicators and annual shares for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth.” Green indicates that the country is on track to meet the goal (> 90%); yellow indicates that much progress is made toward the goal (>50% and ≤90%); orange indicates that little progress is made toward the goal (>10% and ≤50%); red indicates that very little progress is made toward the goal (10% or less); grey indicates that data are not available to assess the progress towards the target. For directional goals, i.e. goals without a numeric target, the progress is assessed against the initial value.

- Progress towards the SDGs

Table 6 shows progress toward the SDG goals under BaU. If Malawi continues under the BaU path, the country will be off track with most of the goals considered by this study. Although progress will be made in reducing unemployment (SDG8) under BaU, the poverty and hunger outcomes remain weak. The BaU path will, therefore, not contribute to halving poverty, ending hunger and achieving industrialization goals.

Table 6 - Progress towards Selected SDGs, BaU Scenario (Cumulative 2016-2030, %)

			BaU Progress 2016-2030	SDGs Target 2016-2030
Halving poverty (Goal 1)	Eradicate extreme poverty	Proportion of population below the international poverty line of \$1.90 a day PPP	-26.7	-95.0
	Reduce at least by half the proportion of population living in poverty	Proportion of population living below the national poverty line	-13.0	-50.0
End hunger (Goal 2)	Double the agricultural productivity and incomes of small-scale food producers	Volume of agricultural production per labor	4.6	100.0
		Average income of food producers	74.4	100.0
Sustainable economic growth (SDG 8)	Sustain per capita economic growth	Annual growth rate of real GDP per capita	7.0	>
		Annual growth rate of real GDP	3.5	7.0
		Annual growth rate of real GDP per employed person	-1.0	>
	Achieve full and productive employment and decent work	Average hourly earnings	76.2	>
		Unemployment rate, change	5.1	<6
Inclusive and sustainable industrialization (SDG 9)	Promote inclusive and sustainable industrialization	Manufacturing value added as a proportion of GDP and per capita	13.8	100.0
		Manufacturing employment as a proportion of total employment	10.1	100.0
Reduce inequality (SDG 10)	Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality	Share Poorest Quintile to Total Consumption Expenditure	12.4	>
		Labor earning share of GDP	4.0	>

Source: Simulation Results

Note: Unless otherwise noted, values shown are cumulative growth rates from 2015 to the year stated. Values for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth” denote average annual shares. Values for “GDP Agriculture” refer to average annual growth rates. Values for “Unemployment rate” are reported for the specific year, i.e. they are not cumulative. “Agricultural Share Public Investment” “BaU, Average Annual Change” denotes annual average growth rates for most indicators and annual shares for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth.” Green indicates that the country is on track to meet the goal (> 90%); yellow indicates that much progress is made toward the goal (>50% and ≤90%); orange indicates that little progress is made toward the goal (>10% and ≤50%); red indicates that very little progress is made toward the goal (10% or less); grey indicates that data are not available to assess the progress towards the target. For directional goals, i.e. goals without a numeric target, the progress is assessed against the initial value.

- Progress towards the Objectives of Agenda 2063

Table 7 shows progress towards the Agenda 2063 goals under BaU. Malawi is on track to meet inequality reduction as the rural-urban divide narrows. The country also makes some progress on economic growth and per capita income growth. However, although some progress is made on economic and per capita income growth targets, this progress is insufficient to bring about a substantial decline in Malawi’s poverty and extreme poverty. One reason for this shortfall is that the country is off track with respect to its projected

agricultural productivity goal and target. Additionally, there is limited progress made on the intra-Africa trade goal.

Table 7 - Progress towards Selected Objectives of Agenda 2063, BaU Scenario (Cumulative 2014-2035, %)

		BaU Progress 2014-2035	Agenda 2063 Target 2014-2035
Poverty Reduction	Proportion of population below the international poverty line of \$1.90 a day PPP	-36.6	-95.0
	Proportion of population living below the national poverty line	-18.5	-95.0
Hunger Eradication	Food Import Dependency Ratio	3.6	-70.0
Inequality Reduction	Income Urban/Rural	45.3	50.0
Employment and Incomes	Unemployment rate	4.9	<6.0
	Per capita income	10.5	>
Inclusive Economic Growth	Annual GDP growth	3.5	7.0
Productivity Growth	Agricultural TFP	-1.1	500.0
Intra-African Trade	Value of intra-Africa Trade	65.8	120.0

Source: Simulation Results

Note: Unless otherwise noted, values shown are cumulative growth rates from 2015 to the year stated. Values for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth” denote average annual shares. Values for “GDP Agriculture” refer to average annual growth rates. Values for “Unemployment rate” are reported for the specific year, i.e. they are not cumulative. “BaU, Average Annual Change” denotes annual average growth rates for most indicators and annual shares for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth.”

Green indicates that the country is on track to meet the goal (> 90%); yellow indicates that much progress is made toward the goal (>50% and ≤90%); orange indicates that little progress is made toward the goal (>10% and ≤50%); red indicates that very little progress is made toward the goal (10% or less); grey indicates that data are not available to assess the progress towards the target. For directional goals, i.e. goals without a numeric target, the progress is assessed against the initial value.

The BaU growth strategy will miss most of the goals of these three commitments, thus, the task is now to investigate other paths that might yield better results. The first question is to ascertain if, indeed, investment in agriculture, rather than in industry or service sectors would be the best strategy to attain growth, create jobs and to reduce poverty. Simulation results reveal that an agriculture focused growth strategy yields the best overall results. It is important, though, to analyse how the agriculture led strategy would be practically financed, considering both external and internal sources of finances. The following simulations test which financing option yields the best results for agriculture led growth. After gathering this information, the modelling shifts focus to the more detailed understanding of agriculture sub-sectors and commodities, and agricultural value chain investment strategies. This entails deciphering which type of investment would be the most effective and efficient to reach selected goals of each of the three commitments. From this information, an accelerated agricultural investment strategy is designed and milestones are defined to inform a different growth path than the BaU. Finally, these strategies are tested to see how they fare towards improving the results obtained under the BaU scenario.

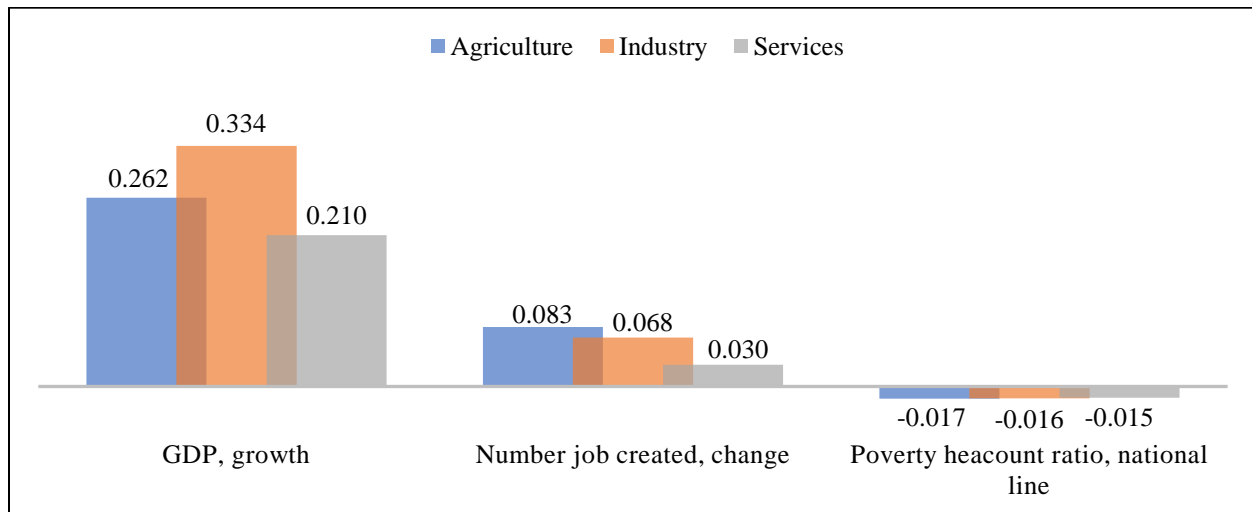
4.2 Agriculture-led Growth Scenario

4.2.1 Investments Prioritization

a) Pro-Poor Growth Investment Strategy

Figure 1 assesses the role of different sectors (agriculture, industry and services) in attaining Malawi's economic growth, employment and poverty reduction goals. A public investment-led productivity increase in agriculture contributes more to the number of jobs created and poverty headcount reduction than it does to increases in industry and services. While industry exhibits the best outcomes in terms of GDP growth, it is worth noting that agricultural investments to GDP growth are also very high and, in fact, higher than services. Thus, an agriculture-led growth strategy can be justified and is further examined below.

Figure 1 - Effect of 1% allocation of public investment budget to agriculture, industry and services (% point change from baseline)

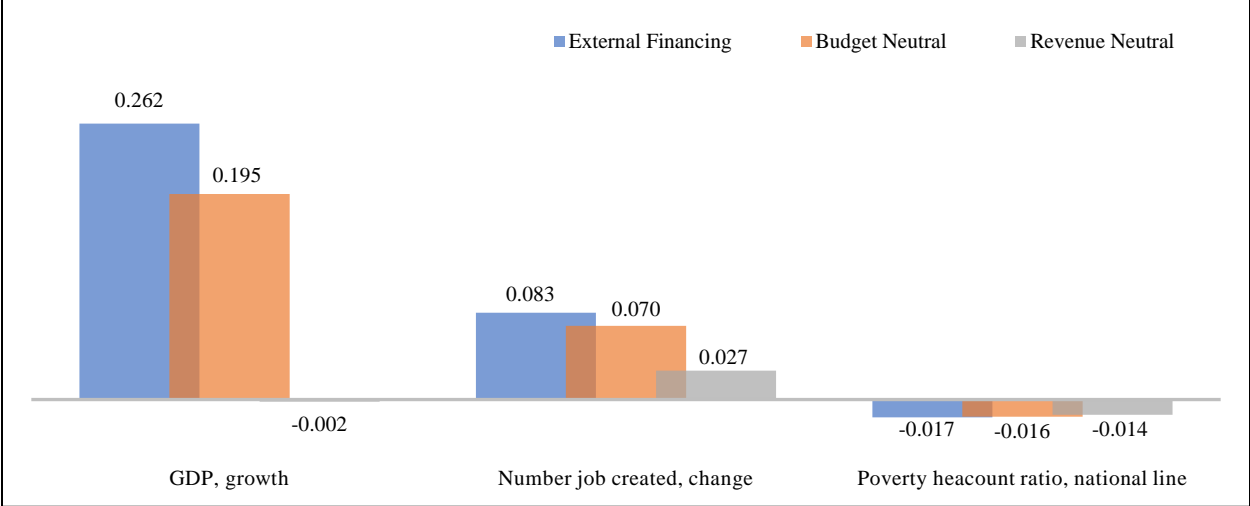


Source: Simulation Results. Note: Under external financing option.

Unlike in the section above, where investment in agriculture is compared to that in industry and services based on external funding; the focus now shifts to a deeper understanding of agricultural investment financing options. Figure 2 compares different investment financing options for agriculture development. The three options are revenue neutral, budget neutral and external financing. Revenue neutral assumes constrained total investment expenditures budget, meaning that an increase in investment in one sector requires a decrease in other sectors. Budget neutral assumes that increases in investment expenditures are funded through increased tax revenues; in this study an increase in households' income and properties tax (direct tax) revenue is compensating the additional investment spending of Government. External financing assumes that increases in investment expenditures are funded externally, i.e. through international borrowing or development assistance.

Irrespective of the financing option, an increase in budget allocation to agriculture brings about positive socioeconomic outcomes compared to BaU. External financing of agricultural investments would generate the highest impact in terms of economic growth and socioeconomic outcomes. Among the internal financing mechanisms tested, the budget neutral option generates the highest returns. The revenue neutral (constrained budget) option also provides a high employment figure and poverty reduction, but its effect is lower compared to the budget neutral option.

Figure 2 - Comparative effects of alternative agricultural investment financing options, under 1% allocation of public investment budget to agricultural investment (% point change from baseline)

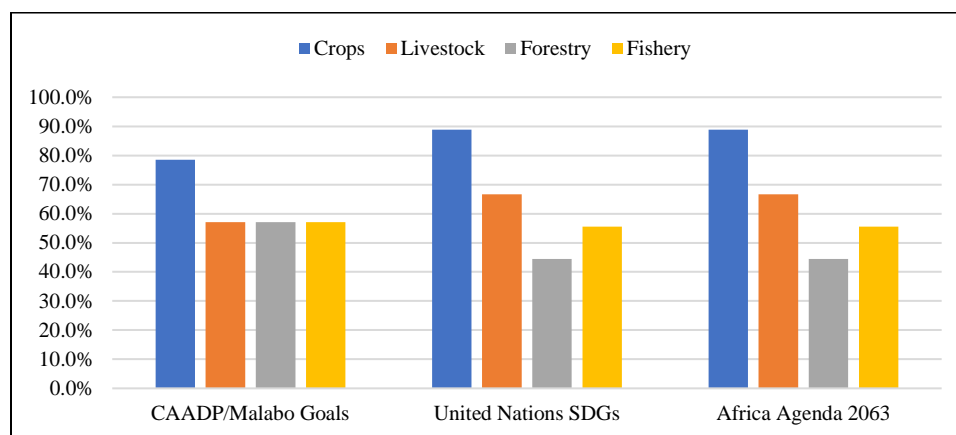


Source: Simulation Results

b) Agricultural Investments Prioritization

The focus now shifts to assessing effectiveness scores by agricultural sub-sectors, i.e. crops, livestock, forestry, and fisheries, as shown in Figure 3. The effectiveness score measures the proportion of CAADP/Malabo, SDGs and Agenda 2063 result areas advanced by a specific public investment increase. For instance, the crops sub-sector effectiveness score is close to 0.8 considering the CAADP/Malabo results framework, indicating that a public investment-led productivity increase in the sub-sector contributes to progress towards nearly 8 out of 10 CAADP/Malabo targets. Generally, the analysis reported in Figure 3 shows higher effectiveness for public investment-led productivity increases in crops in meeting the CAADP/Malabo, SDGs and Agenda 2063 goals in Malawi. This is followed by livestock, fishery and forestry, respectively.

Figure 3 - Effectiveness Score by Agricultural Sub-Sector, 1 percentage point increase in public investment



Source: Simulation Results. Note: Under external financing option.

To assess the effectiveness score by agricultural commodities, we rely on the Computable General Equilibrium (CGE) model to identify priority agricultural commodities based on their contributions across CAADP/Malabo, SDGs and Agenda 2063. The eight commodities with the highest contribution are: sorghum and millet, vegetable, sugar cane, tobacco, rice, cotton, cattle meat and milk (Table 8).

Table 8 - Effectiveness Score by Agricultural Commodities

Commodity	CAADP	SDGs	Agenda 63
Maize	0.64	0.38	0.44
Sorghum and millet	0.79	0.62	0.89
Rice	0.64	0.46	0.78
Wheat and barley	0.57	0.31	0.33
Pulses	0.64	0.23	0.56
Groundnuts	0.64	0.38	0.44
Other oilseeds	0.57	0.31	0.33
Cassava	0.57	0.31	0.56
Other roots	0.64	0.46	0.78
Vegetables	0.64	0.54	0.89
Sugar cane	0.86	0.62	0.78
Tobacco	0.79	0.69	0.78
Cotton	0.64	0.54	0.56
Fruits and nuts	0.57	0.38	0.33
Coffee	0.57	0.38	0.33
Leaf tea	0.57	0.46	0.44
Other crops	0.50	0.23	0.44
Cattle	0.64	0.62	0.89
Raw milk	0.64	0.62	0.89
Small ruminants	0.57	0.31	0.67
Poultry	0.57	0.46	0.67
Other livestock	0.57	0.38	0.67
Forestry	0.57	0.54	0.33
Fishing	0.57	0.38	0.56

Source: Simulation Results

Table 9 presents the effectiveness of agricultural investment across the agricultural value chain in terms of achieving the CAADP/Malabo commitments and goals, SDGs and Agenda 2063 goals. This analysis helps to guide the design of alternative investments for agricultural development. Agricultural productivity (technical efficiency) growth, increase of agricultural input use (through subsidy) and agroindustry productivity (technical efficiency) growth contribute the most to achieving the goals of the three agendas, i.e. CAADP/Malabo, SDGs and Agenda 2063.

Table 9 - Effectiveness Score along the Agricultural Value Chain, 1 percentage point increase in public investment under external financing option

	Investment areas	CAADP	SDGs	Agenda 63
Upstream	Agricultural Total Factor Productivity	0.64	0.46	0.56
	Agricultural Input Subsidy	0.50	0.69	0.67
	Private Investments Support, Agriculture	0.07	0.15	0.22
	Agricultural Production Price Subsidy	0.14	0.23	0.22
Mid-Stream	Agroindustry TFP	0.50	0.69	0.67
	Private Investments Support, Agroindustry	0.07	0.15	0.22
	Agricultural and Food Internal Trading TFP	0.14	0.15	0.22
	Private Investments Support, Domestic Trade of Agricultural Commodities	0.07	0.15	0.22
Downstream	Intra-Africa Exports of Agricultural Commodity	0.14	0.15	0.22
	Food Consumption Price Subsidy	0.07	0.15	0.22
	Cash Transfers to Poor Households	0.14	0.23	0.22
	Foods Consumption Transfers to Poor Households	0.14	0.23	0.22

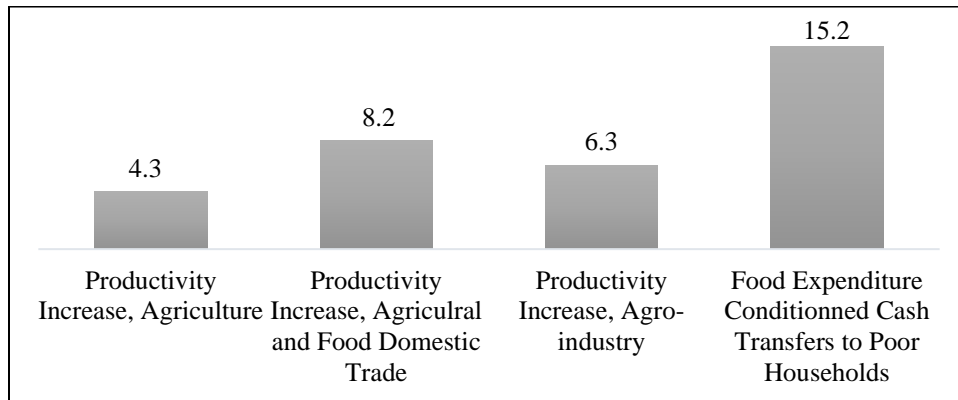
Source: Simulation Results. Note: TFP: Total Factor Productivity.

4.2.2 Milestones for the Agriculture-Led Growth Scenario

In this section, a National Agricultural Investment Strategy (NAIS) scenario is built based on the outcome of the above prioritization exercise. The scenario is used to define milestones that need to be monitored in order to track progress towards achieving the CAADP/Malabo, SDGs and Agenda 2063 targets. The actionable results defined at this level can serve as the basis for the development of the investment logical framework.

Scaling up supply-side investments cannot be sustained without increasing demand, including the mid-stream investments, i.e. agroindustry and internal trading of agriculture commodities. The agricultural post-production, i.e. agroindustry and domestic trading of agriculture commodities, productivity increases are crucial in achieving the development goals of the agricultural sector. Figure 4 shows that a combination of in kind transfers and investments, in and for agriculture, will be required.

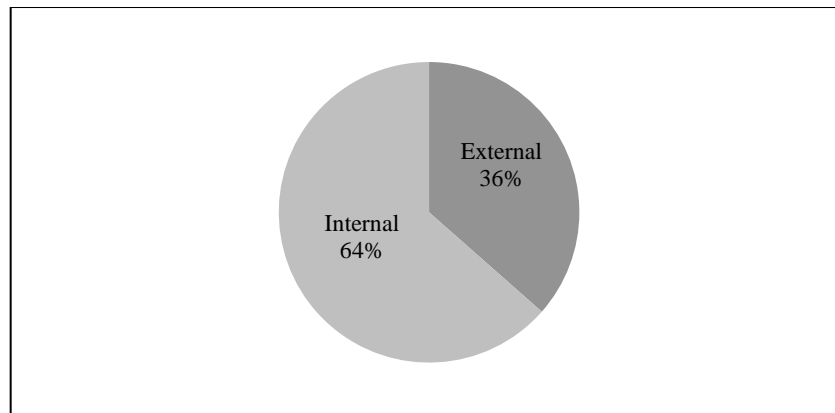
Figure 4 - Strategic Areas of Public Expenditure for Agricultural Development, Percentage Point Increase Compared to the BaU Scenario



Source: Simulation Results

Figure 5 shows that although the external financing option yielded the best results, there are limitations to what proportion of this financing can be utilized. The share of external financing used can only be 36%, meaning the remaining 64% must be distributed between domestic financing.

Figure 5 - Public Agricultural Investment Financing by Source



Source: Simulation Results.

As shown in the Table 10, the agricultural public investment expenditure share will need to increase by 19% under the NAIS scenario. Public investment expenditure will need to grow from 3.7% under the BaU to 19.9% under NAIS. Agricultural private investment growth will also need a doubling of effort along with a higher foreign contribution.

Table 10 - Average annual growth rate of agricultural investments (%)

		BaU	NAIS
Public Investment	Public investment expenditures, growth	3.7	19.9
	Agricultural public investment expenditures, growth	3.0	21.9
	Agricultural public investment expenditures, share	14.9	19.2
Private Investment	Private investment growth, total	2.5	6.8
	Private investment growth, foreign	2.2	8.6
	Private agricultural investment growth	4.2	8.4

Source: Simulation Results

The agricultural production growth rate needs to more than double from 2.4% under BaU to 6.4% under NAIS (Table 11). Agricultural production increase is driven by agricultural productivity growth which grows annually at 4.4% under NAIS compared to the declining trend (-0.1%) under BaU. Agricultural productivity growth is partially driven by an increase in input use, as the intensity of input use grows from 2.1% to 7.2% on average annually.

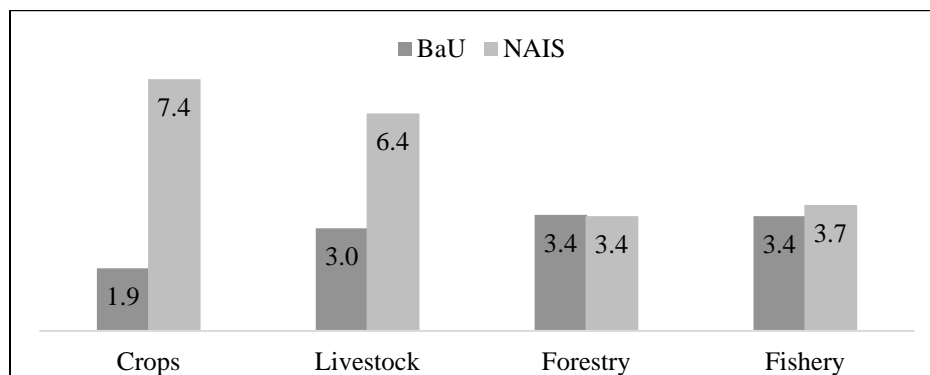
Table 11 - Productivity and agricultural production, average annual growth rate (%)

	BaU	NAIS
Cost of agricultural inputs	1.4	0.5
Intensity of input use	2.1	7.2
Total factor productivity in agriculture	-0.1	4.4
Agricultural land use, growth	0.3	0.4
Agricultural labor-to-land, growth	2.8	2.8
Agricultural private capital-to-land, growth	3.1	3.5
Agricultural Production, growth	2.4	6.4

Source: Simulation Results

Figure 6 depicts the agricultural production growth required by agricultural sub-sectors. Crops and livestock need to shoulder a disproportionately higher burden of the load in comparison to forestry and fishery.

Figure 6 - Agricultural production growth by agricultural sub-sector



Source: Simulation Results

Table 12 summarizes the annual growth of agricultural production and exports by commodity. The strategic agricultural commodities identified earlier will play an important role in driving agricultural productivity and production growth. Sugar, tobacco, vegetables, sorghum and cattle will need to substantially augment production with a large proportion devoted to exports.

Table 12 - Annual Average Growth of Agricultural Production and Exports, NAIS Scenario (%)

Agricultural Commodities	Production growth	Export growth		
		Total	intra-Africa	extra-Africa
Sorghum	14.7	19.3	19.0	42.6
Rice	17.0	27.0	27.0	-
Roots	15.5	53.3	23.4	54.3
Vegetables	16.3	52.3	23.9	55.6
Other Staple Crops	2.3	-2.7	-2.5	-5.8
Sugar	20.3	-	-	-
Tobacco	15.1	9.5	9.4	18.6
Cotton	17.5	17.4	9.6	19.1
Other Cash Crops	2.3	-1.3	-0.5	-1.8
Catt	9.9	-	-	-
Milk	10.1	-	-	-
Other Livestock	4.7	0.4	0.4	
Forest	3.4	-8.5	-3.8	-8.8
Fishing	3.7	-4.9	-2.0	-5.0
Agroindustry	13.0	18.1	9.8	20.1

Source: Simulation Results

Finally, Table 13 and Table 14 present the respective food products' consumer price and consumption expenditure measures to reduce poverty and extreme poverty. The price index of locally produced food declines compared to the BaU scenario but continues rise in real terms (i.e. compared to the general price index) under the NAIS scenario. Consumption expenditure, in particular, rural, will also need to more than double.

Table 13 - Annual Average Change in Food Prices (%)

	BAU	NAIS
Consumer price index of food products	0.9	-0.3
Consumer price index of local food products	0.8	0.2
Consumer price index of imported food products	1.3	-0.8

Source: Simulation Results

Table 14 - Annual Average Increase in Income and Food Consumption Expenditure (%)

	BAU	NAIS
Total Consumption Expenditure, National	3.2	7.1
Total Consumption Expenditure, Rural	3.7	7.3
Food Consumption Expenditure, National	2.8	6.9
Food Consumption Expenditure, Rural	2.9	6.9

Source: Simulation Results

- NAIS Scenario: Progress towards CAADP/Malabo commitments and Objectives

Table 15 shows that if Malawi were to successfully implement the NAIS scenario as designed, the country would place itself in a strong position to achieve some of the CAADP/Malabo goals and make substantial progress on many others. The agricultural GDP growth rate of 6% is met under the NAIS scenario. Increased public investments are expected to crowd-in private investments in agriculture, which increase substantially compared to the BaU scenario. The increase in private investment is also driven by increases in productivity and output in the food processing industry. These respective increases are likely to contribute to decreases in the food import dependency ratio and increase national food expenditure and consumption. The increased public and private investments lead to increases in productivity with strong growth in the agricultural food industry and domestic trade. While labour productivity now increases under the NAIS scenario, it still lags behind land productivity growth. There is strong growth in intra-African trade under the NAIS scenario compared to the BaU scenario but this is still expected to fall short of meeting the CAADP/Malabo goal of tripling intra-African agricultural and food trade by 2025. Similarly, there is sustained substantial improvement in agricultural funding by the government at 19.2% under the NAIS scenario.

Table 15 - Progress towards Selected Malabo Commitments and Goals, BaU Scenario (Cumulative 2015-2025, %)

		BaU Progress 2015-2025	NAIS Progress 2015-2025	CAADP Target 2015-2025
Agriculture Investment	Agricultural public expenses, average share	14.9	19.2	10.0
	Agricultural public expenses	38.8	784.7	>
	Agricultural private investment	57.5	141.6	>
End Hunger	Agricultural total factor productivity	-0.6	61.1	100.0
	Agricultural land productivity	23.9	82.8	100.0
	Agricultural labor productivity	-8.5	35.2	100.0
	Total factor productivity, domestic trade of agricultural commodities	-11.0	211.9	50.0
	Total factor productivity, agroindustry	-6.4	268.7	50.0
	Locally produced food, ratio total food consumption	0.0	-0.4	>
	Share poorest quintile in total consumption expenditure	9.0	15.9	>
	Poverty headcount index, food poverty line	-15.3	-42.8	-95.0
Halving Poverty	GDP agriculture, average annual growth rate	2.3	6.1	6.0
	Agriculture contribution to GDP growth, average	17.8	21.5	50.0
	Poverty headcount index, national poverty line	-9.7	-34.1	-50.0
Intra-African Trade	Intra-Africa trade of agricultural commodities	20.8	90.6	200.0

Source: Simulation Results

Note: Unless otherwise noted, values shown are cumulative growth rates from 2015 to the year stated. Values for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth” denote average annual shares. Values for “GDP Agriculture” refer to average annual growth rates. “BaU, Average Annual Change” denotes annual average growth rates for most indicators and annual shares for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth.”

Green indicates that the goal is met under the BaU scenario; yellow indicates that some progress is made toward the goal; red indicates that very little progress is made toward the goal; grey indicates that data are not available to set targets.

- NAIS Scenario: Progress towards the SDGs

The NAIS scenario is not sufficient to achieve most of the SDGs but allows the country to substantially progress toward meeting these (Table 16). Although accelerated reduction in poverty measured at the national poverty line is expected under the NAIS scenario, Malawi will still be off track in reducing poverty to the international poverty line. Goal 2 on ending hunger, however, shows some good progress. While Malawi will remain off-track in terms of the volume of agricultural production per laborer, the NAIS scenario substantially increases the average income of food producers. This means that the target of increasing growth in the incomes of food producers is (almost) met under both scenarios – with particularly strong increases under the NAIS scenario. Some progress is observed towards Goal 8 on economic growth and Goal 9 on industrialization under the NAIS scenario. Increased investment in agricultural processing under the NAIS scenario increases the manufacturing value added, while still falling short of the

manufacturing employment target. Under Goal 10, the NAIS scenario contributes to improving income distribution and reducing inequality through further increases in the share of the poorest quintile in total consumption expenditure, but fails to meet the target of increasing the share of labor earnings in GDP.

Table 16 - Progress towards Selected SDGs, BAU Scenario (Cumulative 2016-2030, %)

			BaU Progress 2016-2030	NAIS Progress 2016-2030	SDGs Target 2016-2030
Halving poverty (Goal 1)	Eradicate extreme poverty	Proportion of population below the international poverty line of \$1.90 a day PPP	-26.7	-60.4	-95.0
	Reduce at least by half the proportion of population living in poverty	Proportion of population living below the national poverty line	-13.0	-43.4	-50.0
End hunger (Goal 2)	Double the agricultural productivity and incomes of small-scale food producers	Volume of agricultural production per labor	4.6	36.1	100.0
		Average income of food producers	74.4	183.7	100.0
Sustainable economic growth (SDG 8)	Sustain per capita economic growth	Annual growth rate of real GDP per capita	7.0	89.6	>
		Annual growth rate of real GDP	3.5	7.5	7.0
		Annual growth rate of real GDP per employed person	-1.0	60.9	>
	Achieve full and productive employment and decent work	Average hourly earnings	76.2	160.2	>
		Unemployment rate, change	5.1	0.6	<6
Inclusive and sustainable industrialization (SDG 9)	Promote inclusive and sustainable industrialization	Manufacturing value added as a proportion of GDP and per capita	13.8	167.3	100.0
		Manufacturing employment as a proportion of total employment	10.1	5.5	100.0
Reduce inequality (SDG 10)	Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality	Share Poorest Quintile to Total Consumption Expenditure	12.4	22.2	>
		Labor earning share of GDP	4.0	-13.6	>

Source: Simulation Results

Note: Unless otherwise noted, values shown are cumulative growth rates from 2015 to the year stated. Values for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth” denote average annual shares. Values for “GDP Agriculture” refer to average annual growth rates. Values for “Unemployment rate” are reported for the specific year, i.e. they are not cumulative. “Agricultural Share Public Investment” “BaU, Average Annual Change” denotes annual average growth rates for most indicators and annual shares for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth.”

Green indicates that the goal is met under the BaU scenario; yellow indicates that some progress is made toward the goal; red indicates that very little progress is made toward the goal; grey indicates that data are not available to set targets.

- NAIS Scenario: Progress towards the Objectives of Agenda 2063

Table 16 shows that the NAIS scenario places Malawi in a very strong position to achieve Agenda 2063 goals. Crucially, the intra-African trade as well as per capita income growth and targets are met, while some progress is made on poverty reduction. Indeed, the only area where there is a serious lack of progress is ending hunger due to the rising food dependency ratio.

Table 16-Progress towards Selected Objectives of Agenda 2063, BaU Scenario (Cumulative 2014-2035, %)

		BaU Progress 2014-2035	NAIS Progress 2014-2035	Agenda 2063 Target 2014-2035
Poverty Reduction	Proportion of population below the international poverty line of \$1.90 a day PPP	-36.6	-74.3	-95.0
	Proportion of population living below the national poverty line	-18.5	-56.6	-95.0
Hunger Eradication	Food Import Dependency Ratio	3.6	40.4	-70.0
Inequality Reduction	Income, Rural/Urban	45.3	1.5	50.0
Employment and Incomes	Unemployment rate	4.9	0.2	<6
	Per capita income	10.5	155.6	>
Inclusive Economic Growth	Annual GDP growth	3.5	7.5	7.0
Productivity Growth	Agricultural TFP	-1.1	159.4	500.0
Intra-African Trade	Value of intra-Africa Trade	65.8	307.8	120.0

Source: Simulation Results

Note: Unless otherwise noted, values shown are cumulative growth rates from 2015 to the year stated. Values for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth” denote average annual shares. Values for “GDP Agriculture” refer to average annual growth rates. Values for “Unemployment rate” are reported for the specific year, i.e. they are not cumulative. “BaU, Average Annual Change” denotes annual average growth rates for most indicators and annual shares for “Agricultural Share Public Investment” and “Agriculture Contribution to GDP Growth.”

Green indicates that the goal is met under the BaU scenario; yellow indicates that some progress is made toward the goal; red indicates that very little progress is made toward the goal; grey indicates that data are not available to set targets.

5. Conclusion

The 2014 Malabo Declaration on Accelerated Growth and Transformation for Shared Prosperity and Improved Livelihoods upheld the original Maputo commitment of achieving a 6% annual agricultural growth rate and a 10% agricultural expenditure share. In addition to this agenda, Malawi pledged to the Agenda 2063 as well as the SDGs; which are committed to accelerating economic growth as well as eradicating poverty and inequality, among several other goals. However, a key challenge to implementing these commitments is the fact that they involve a large number of obligations and goals.

To address the CAADP/Malabo, the SDGs and the Agenda 2063 goals, Results Frameworks have been developed as key tools for translating Malawi's agricultural agenda into tangible outcomes. An economic modelling framework is built to assess the strategic options available to Malawi to accelerate growth and reduce poverty as envisaged by the MGDS III. Malawi has also committed to the CAADP/Malabo Agenda, Agenda 2063 and SDGs. The framework consists of an economy-wide general equilibrium model and a microsimulation model. The two models are linked in a sequential manner. Thus, using these models, the paper is able to assess both macro- and micro-economic variables of interest.

The BaU scenario shows that Malawi is off-track with agricultural GDP growth of 2.3%, indicative of little progress towards the CAADP/Malabo target of 6%. Agricultural performance is being hampered by negative productivity increases. As a result, Malawi also makes very little progress in extreme poverty reduction, which falls by only 15.3% against a target of 95%. Part of the problem is that agricultural productivity and poor production growth is being solely led by land extension instead of productivity increase.

Concerning the SDGs, if Malawi continues on the BaU path, the country will be completely off track on all goals considered by the study. Although progress will be made in reducing inequality (SDG10) and many parts of the economic growth indicators (SDG8) under BaU, the poverty and hunger outcomes remain weak. Indeed, the BaU path will not contribute to making progress on halving poverty, ending hunger nor to the industrialization goals. Agricultural productivity remains low but agricultural income is expected to increase under BaU and unemployment is reduced.

Under the Agenda 2063, if Malawi continues with BaU, it is on track to meet inequality reduction as the rural-urban divide narrows. The country would also make very good progress on economic growth and per capita income growth. Although some progress is made on economic and per capita income growth targets, these are insufficient to substantially reduce the poverty headcount ratio and end hunger.

Given that the BaU growth strategy will not enable Malawi to achieve goals of these three commitments, we have used simulation models to assess another strategy, the National Agricultural Investment Strategy (NAIS). First, the model tests which would be better, agriculture, industry or service driven growth, for the goals of the three commitments. The results reveal that public investment-led productivity increase in agriculture contributes more to the number of jobs created and poverty headcount reduction compared to industry and services.

The next question thus becomes “What is the best financing option for this agriculture led growth”? Looking at financing options, and comparing three options, revenue neutral, budget neutral and external financing, we tested which option leads to the best results for financing investments in agriculture. Irrespective of financing option, an increase in budget allocation to agriculture brings about positive socioeconomic

outcomes compared to the BaU. External financing of agricultural investments allows for the highest impact in terms of economic growth and socioeconomic outcomes to meet the targets of the three commitments. Public investment-led productivity increase in crops is the most effective in meeting the CAADP/Malabo, SDGs and Agenda 2063 goals. This is followed by livestock, fishery then forestry in that order. The modeling framework is used to assess and identify priority agricultural commodities based on their contributions across CAADP/Malabo, SDGs and Agenda 2063. The analysis reveals that eight commodities with the highest contribution are: sorghum and millet, vegetables, sugar cane, tobacco, rice, cotton, cattle meat and milk.

To guide the design of an alternative financing strategy for agricultural development, alternative financing mechanisms and certain agricultural outputs in the value chain investment were investigated. Productivity increases in the agricultural sector and the agricultural post-production industries, i.e. agroindustry and domestic trade, led to higher outcome to progress towards the CAADP/Malabo, SDGs and Agenda 2063. Milestones were identified to make progress towards the goals and of the three agendas. It is advised that these milestones, which are actionable results, be monitored to track progress towards meeting the CAADP/Malabo, SDGs and Agenda 2063 targets. It is important to note that, scaling up the supply side investments cannot be sustained without increasing the demand side, including mid-stream investments, i.e. agroindustry and internal trading of agriculture commodities. Therefore, a combination of food expenditure conditioned transfers to poor households and investments in agricultural production, processing and domestic trade will be required. Furthermore, although the external financing option yielded the best results, the share of external financing can only be 36%, requiring that the remaining 64% comes from domestic sources.

Most of the growth in agricultural investment will have to come from agricultural public investment, which will require a significant increase in public investment expenditure growth. In addition, agricultural private investment growth will need to double. To increase agricultural productivity and production sufficiently, the intensity of input use needs to grow most strongly as well as agricultural technical efficiency. In order to promote the required agricultural production growth, crops and livestock need to carry a disproportionately higher burden of the load, followed by fishery and then, forestry. Some of the goals that cut across the three commitments are poverty reduction and eradication of hunger. In order to reduce extreme poverty and end hunger, falling local food prices will need to be complemented by substantial increase in income and consumer expenditures, particularly in the rural areas.

If Malawi were to successfully implement these recommendations, the results show considerable improvement in attaining the goals under CAADP/Malabo, SDGs and Agenda 2063. Overall, the picture changes substantially with only a few targets being totally missed, unlike in the case of the BaU.

References

- African Union/New Partnership for Africa's Development (AU/NEPAD). 2003. Comprehensive Africa Agriculture Development Programme. Available online: <http://www.nepad.org/caadp/publication/au-2003-maputo-declaration-agriculture-and-food-security>. Accessed January 2019
- African Union/New Partnership for Africa's Development (AU/NEPAD). 2014. Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods. Available online: <http://www.nepad.org/caadp/publication/malabo-declaration-accelerated-agricultural-growth>. Accessed January 2019
- Bourguignon, F. & Spadaro, A. (2006). Microsimulation as a tool for evaluating redistribution policies, *The Journal of Economic Inequal* 4: 77: <https://doi.org/10.1007/s10888-005-9012-6>
- Fofana, I., Diallo, M.Y., Sarr, O., and Diouf, A., 2015. "2011 Social Accounting Matrix for Senegal." IFPRI Discussion Paper 1417. Washington, DC.: International Food Policy Research Institute (IFPRI). <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/128960>.
- Fofana, I., Omolo, M.W.O., Goundan, A., Domgho, L.V.M., Collins, J., Marti, E., 2019. NAIP toolkit for Malabo domestication: Economic modeling of agricultural growth and investment strategy, case study of Kenya. IFPRI Discussion Paper 01813. Washington DC.
- Food and Agriculture Organization of the United Nations (FAO). 2017. FAO Statistics. Available online: <http://www.fao.org/faostat/en/#data/PM>. Accessed on January 2019
- GOM (Government of Malawi). 2017. The Malawi Growth and Development Strategy (MDGS) III – 2017-2022. Available online: http://www.mw.undp.org/content/dam/malawi/docs/UNDP_Malawi_MGDS%20III.pdf. Accessed on 18/02/2019
- Lee, T. C., and C. G. Judge. 1996. "Entropy and Cross Entropy Procedure for Estimating Transition Probabilities from Aggregate Data." In *Bayesian Analysis in Statistics and Econometrics*, edited by D.A. Berry, K.A. Chaloner, and J. K. Geweke. New York: Wiley.
- MAFS (Malawi Department of Agriculture and Food Security). 2017. National Agriculture Policy. Available online: https://reliefweb.int/sites/reliefweb.int/files/resources/NAP_Final_Signed.pdf. Accessed on 18/01/2019.
- NEPAD, New Partnership for African Development. n.d. "The CAADP Results Framework (2015-2025)." <http://www.nepad.org/resource/caadp-results-framework-2015-2025>

- Regional strategic Analysis and Knowledge Support System. 2017. Tracking data indicators for CAADP across countries and regions. Available online: <http://www.resakss.org/index.php?pdf=45387>. Accessed on 19/01/2019.
- Thurlow, J. 2017. 2014 Social Accounting Matrix for Malawi: A Nexus Project SAM. International Food Policy Research Institute, Washington DC.
- United Nations (UN). 2015. Transforming Our World: The 2030 Agenda for Sustainable Development. Available online: <https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>. Access on 21/01/2019
- United Nations Conference on Trade and Development (UNCTAD). 2017. The Least Developed Countries Report. Available online: https://unctad.org/en/PublicationsLibrary/ldcr2017_en.pdf. Accessed on 19/01/2019
- World Bank. 2018. World Bank Open Data Bank. Available online: <https://data.worldbank.org/>. Accessed on 19/01/2019
- World Bank. 2017. World Development Indicators. Available online: <https://databank.worldbank.org/source/world-development-indicators>. Accessed on January 2019.

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