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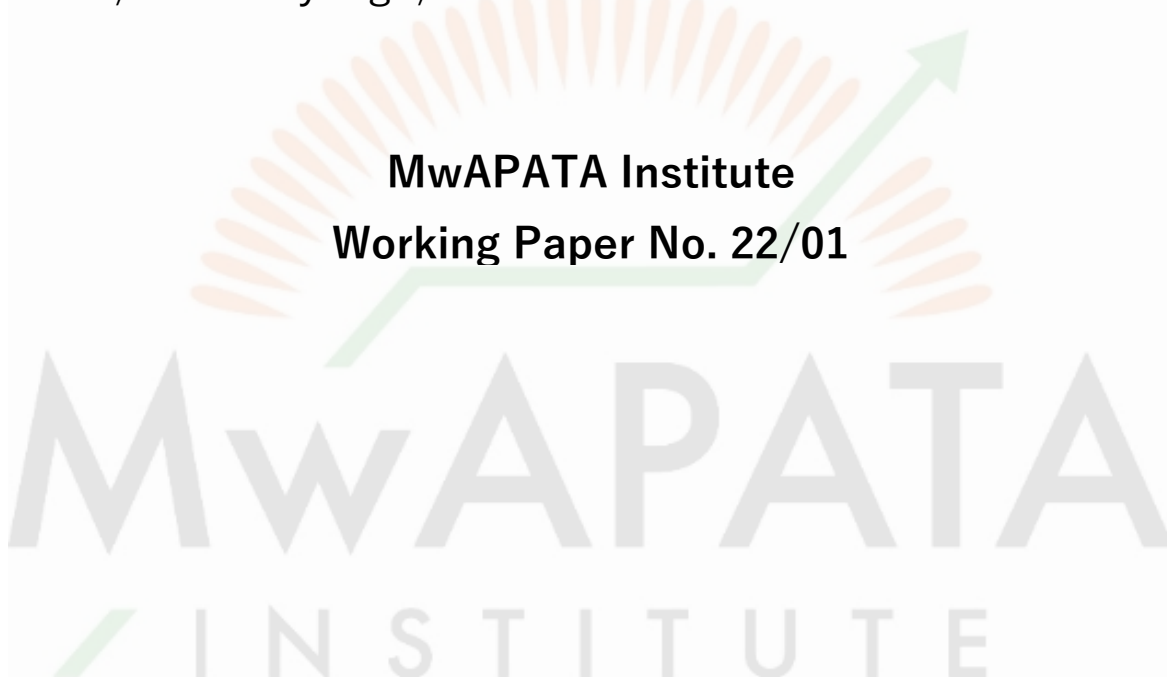
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The Potential for Mega-Farms to Transform Malawian Agriculture

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Executive summary

The Government of Malawi has committed to transform agricultural production through large-scale farming in the form of “mega-farms” that will be centers of large-scale production and serve as an anchor for other farmers in surrounding communities by attracting private markets for inputs and outputs. The Malawi 2063 (MW2063) Agenda, which describes what the government aspires to accomplish before the nation’s centennial, specifies a need to develop mega-farms to increase agricultural production, productivity, and commercialization, and to contribute to urbanization and industrialization.

This study presents findings from the review of literature from Malawi and other African countries on the performance of large farms and their impacts on surrounding communities and smallholder farmers. The study also presents results from interviews with key informants (agricultural sector experts) regarding how best the mega-farms concept can be implemented by the Government of Malawi.

Evidence on the impact of large farms has been mixed. The yields of most food crops are generally higher on small farms than on large-scale farms in Malawi. Unpredictable government interventions in output markets and insufficient incentives to support large-scale production are commonly cited as reasons for poor performance of large farms.

Findings from key informants indicated that a mega-farm should be at least 500 hectares in size, should be located in suitable areas of the country, and should support mechanized production and include value addition, irrigation, and other infrastructure. Further, most



experts believed the identification of target crops and livestock should be guided by suitable climatic factors and the National Export Strategy II, with mega-farms primarily focused on building the nation's access to foreign currency. Furthermore, operations and management of mega-farms should be private sector-led, with the Government providing a conducive environment for investors.

This review also highlights a need to support existing large farms by enhancing their human resource capacity, promoting sustainable agricultural practices, and addressing other issues that limit productivity. It is also important to put in place deliberate policies that will promote meaningful interaction between mega-farms and surrounding smallholder farmers and communities, such as through contract farming. Moreover, the mega-farm initiative can be accompanied by strong government programmes and policies to promote investment in off-farm upstream and downstream agrifood systems to absorb labor out of farming, expand off-farm employment opportunities, and promote economic transformation processes in the country. The current review of the National Agriculture Policy by Government should also incorporate the development of mega-farms as a key policy issue.

1. Introduction

Since Malawi's independence in 1964, its agricultural strategies have reflected the country's dual agricultural structure, with a large population of smallholder farms and a large-scale estate farm sub-sector. The policy emphasis has varied across the two sectors, with limited attention to how development of one sector could synergistically promote the development and performance of the other. However, Government has recently committed itself to transform agricultural production through large-scale estate farming in the form of anchor or mega-farms aligned with the Malawi 2063 (MW2063) Agenda, which describes what Government aspires to accomplish before the nation's centennial (National Planning Commission, 2020; Government of Malawi, Ministry of Agriculture, 2022).

The Government's strategy is to partner large-scale commercial farms (mega or anchor farms) with smallholder farms and provide them with access to improved inputs, training, and access to processors and other end markets. These reforms are specifically intended to generate positive spillover effects for smallholder farmers and address challenges related to low agricultural output, declining crop and livestock yields, limited competitiveness of the country's agro-industry, and the sector's susceptibility to climate change and weather shocks. In addition, the objectives of mega-farms include promoting irrigation, providing investors with access to unutilized or underutilized estate land and strengthening agricultural financing, and increasing agricultural exports (Government of Malawi, Ministry of Agriculture, 2022).

Operationalizing the mega-farm concept—and ensuring the strong performance of mega-farms once constituted—requires answers to many questions. For example, what is the appropriate size of the mega-farms? Where, how, and in which tenure category should land be procured for the mega-farms? What should be the objectives of the mega-farms? Which types of crops or livestock should be produced on the mega-farms? How should the farms be managed and governed? Will the mega-farm concept support or replace other policies in

Malawi? And how will the mega-farms be structured to effectively support the productivity, incomes, and food security of surrounding rural communities? All of these questions need to be considered carefully to ensure that the initiative will be successful. This study reports and analyzes the responses to these questions by 17 experienced key informants with diverse expertise and longstanding engagement in Malawi's agricultural sector.

The second section of this paper reviews the literature on the performance of large-scale farms in Malawi and other African countries. The third section discusses the main findings and key themes arising from stakeholder consultations, focusing on the informants' views of the concept of mega-farms and how best these can be structured. The fourth section summarizes the findings and draws some policy recommendations.

2. Performance of large farms and their impacts on small farms

Our literature review focuses on two key issues. First, we assessed the performance of large farms (inclusive of production, productivity, profits, and utilization of land) and the key challenges faced. Second, we assessed whether large farms and/or medium-scale farms have had some spillover effects (negative or positive) on surrounding communities with respect to the use of improved inputs, adoption of technology and good agricultural practices, yields, and market participation. While there is no universally accepted size to define large-scale farms, other studies often consider them to be roughly 100 hectares or more in many African contexts; however, as will be reported below, initial discussions for the mega-farm concept in Malawi has been at least 500 hectares. Medium-scale farms, by contrast, are generally defined as ranging from 5 to 100 hectares.

2.1 Performance of large farms

Based on key informant interviews with large-scale farmers in Malawian districts of Lilongwe, Blantyre, Kasungu, and Nkhosakota, Edelman et al. (2016) found that the large-scale farms have been largely unsuccessful. Major constraints to sustainable operations

included lack of off-takers, unpredictable Government interventions in output markets, insufficient incentives such as lack of subsidies from the Government. The authors concluded that access to export markets and contracts with off-takers would increase commercial production of key crops such as maize, tobacco, soya, and pigeon peas.

Julien et al. (2019) assessed farm performance by size in Malawi, Tanzania, and Uganda using data from the World Bank's Living Standards Measurement Study-Integrated Surveys on Agriculture (LSMS-ISA). They specifically sought to investigate the inverse relationship between farm size and productivity and identify factors that likely play a role in productivity differentials across farm size classes. Focusing on both crops and livestock, they found total factor productivity was higher in smaller farms across the three countries. The study further found that managerial performance was low for large farms, suggesting that programmes designed to enhance managerial capacity would promote farm productivity across all sizes. Access to agricultural input markets, they argued, would lead to an improvement in the productivity of small farms, while greater spending on transportation infrastructure and extension services would enhance the productivity of large farms.

Muyanga and Jayne (2019) tested the inverse relationship between land size and farm productivity in Kenya using a much wider range of farm sizes than in most previous studies. While the inverse relationship between farm size and productivity was upheld on farms between zero and 3 hectares, the study found a relatively flat relationship for land sizes between 3 and 5 hectares and a strong positive relationship for farm sizes in the range of 5 to 70 hectares. The study further concludes that the relationship between farm size and productivity remains an empirical question for further investigation before reaching generalised conclusions about the relative performance between smaller farms and larger farms.

Deininger and Xia (2018) assessed the performance of large-scale estates and spillover effects for smallholders in Malawi using the National Census of Agriculture and Livestock

data, digital land administrative data, and satellite imagery of land use. The study found that large estates were underperforming in terms of yield and intensity of land use. Furthermore, over 70 percent of the estates had expired leases and were not fully utilising the land leased from the Government.

Pryor and Chipeta (1990) found that the estate sector performed well and achieved higher production, profits and productivity than the smallholder sector. However, this study is based on data that is over 3 decades old. The authors argued that this was due to rising market prices, especially in the 1970s, and access to credit by some estate farmers. There was also dramatic growth in the gross value of crop production and value of crop exports which grew faster than any other major sector of the economy.

2.2 Effects of larger farms on smaller farms

The Government's embrace of mega-farms is based on the premise that large farms can be structured to generate positive spillover effects on surrounding smaller farms and communities. Literature from studies carried out in African countries is inconclusive with respect to whether larger farms have positive or negative impacts of on smaller farms or surrounding communities. However, generating positive spillover effects on nearby smallholders may not have been an objective of other large farms being assessed in the literature (most were privately owned and mainly concerned with their own outcomes). Thus, assessing the performance of large farms should not be limited to the creation of positive spillovers in surrounding communities.

Our literature review on spillover effects includes the impacts of medium-scale farmer on small farms because studies show that recently there has an increase in the prevalence of medium-scale farms in some African countries such as Ghana, Kenya, Malawi, Tanzania and Zambia (Wineman et al., 2021; Jayne et al., 2016; Anseeuw et al., 2016).

Pryor and Chipeta (1990) found that the growth of estate agriculture in Malawi had both desirable and undesirable consequences. On the positive side, it was found that the average income of families with members working on the estates was roughly twice higher than that of others. The negative effects of estate agriculture identified in the study was increased income inequality. There was inconclusive evidence as to whether the estate sector led to a reduction in land for smallholders or resulted in competition for labour. Another study in Malawi by Deininger and Xia (2018) concluded that, while contributing to growth in output for small estates, large estates in Malawi failed to act as a motor for the rural economy or source of positive spillovers in terms of productivity and profits for neighboring farms.

In Mozambique, Deininger and Xia (2016) found evidence of positive short-term spillovers from large farms on small farmers within a 50-km radius with respect to the adoption of new practices, access to inputs, and for large crop farms, labor demand. However, they also found no positive spillover effects on output market participation or yields (after controlling for inputs), and significant negative impacts on neighboring smallholders' subjective well-being within a 25-km radius. Similarly, evidence from Zambia by Lay et al. (2018) is also mixed. The study found evidence of the ability of the smaller farms to expand their acreage under production, but they also found evidence of reduced fertilizer use by smaller farms located in areas with a higher proportion of larger farms.

Liverpool-Tasie et al. (2022) found a positive relationship between the welfare of small-scale farms and the presence of medium-scale farms in Nigeria. They argue that this occurred through higher yields due to increased access to improved seed and fertilizer and increased adoption and intensity of use. Furthermore, this was associated with higher income and a reduction of vulnerability to extreme poverty.

In Tanzania, Chamberlin and Jayne (2019) and Wineman et al. (2021) both found that medium-scale farms in the 5–20-hectare range had positive spillover effects on nearby small-scale farm households. Farms over 20 hectares had either smaller or no clear positive

effects on nearby smaller farms. The former study noted that medium-scale farms in the 5–20-hectare category often share close social ties with nearby small-scale farm households in the community, including church, ethnic and clan relationships. Smallholder households may have less or no social ties with the owners and operators of large farms. But the broader spillover effects literature often does find that the presence of larger farms was associated with small-scale farms being more likely to use improved seeds, increase the cultivation of their landholdings, and receive agricultural extension.

3. Findings from Key Informant Interviews

Key informant interviews were carried out with experts and stakeholders to obtain information about the structure and operations of the mega-farms. Seventeen (17) interviews were successfully scheduled, a response rate of 85 percent. The informants were drawn based on their expertise and experience in Malawi’s agricultural sector. All of the key informants were Malawian nationals and stakeholders relatively equally drawn from Government ministries, departments, and agencies (MDAs), the private sector, academia, and civil society organisations¹. Furthermore, a roundtable discussion was organized where a wider network of stakeholders discussed the strategies for the successful implementation of the mega-farms concept.

3.1 Size of mega-farms

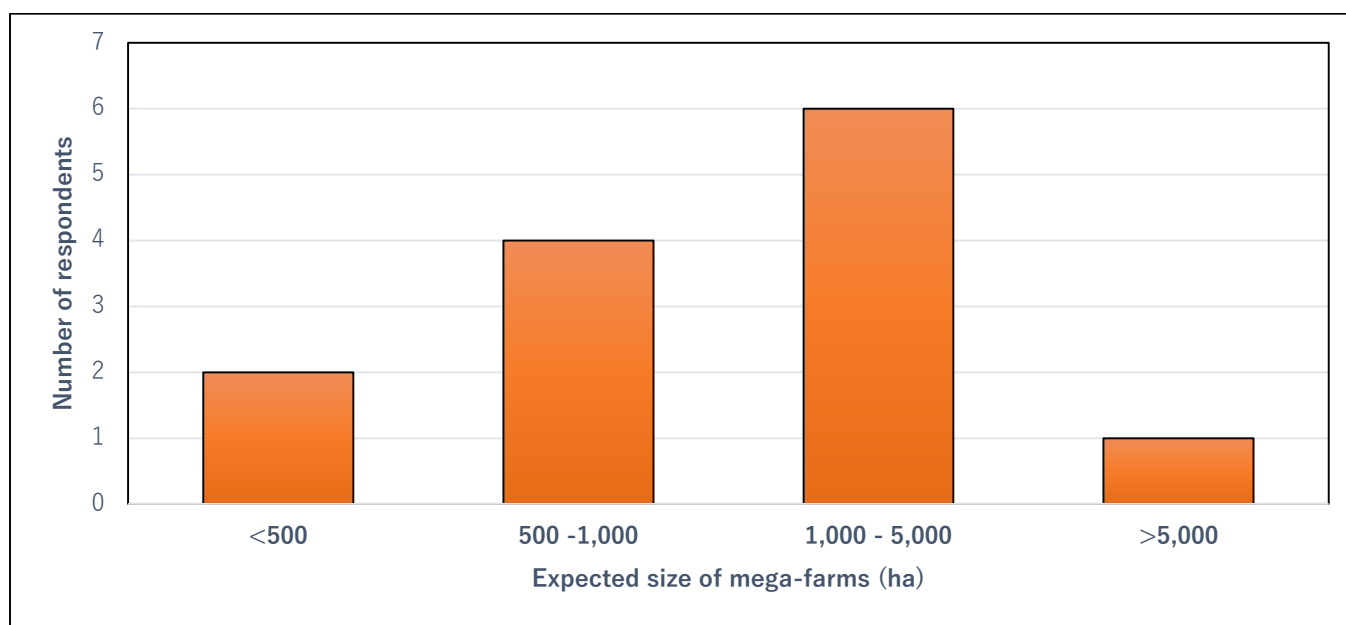
One key attribute of mega-farms is the size of the landholdings. Hermans et al. (2017) argue that mega-farms can reach up to 500,000 hectares, citing countries such as Australia, China, America, Russia, and Ukraine as having some of the world’s largest mega-farms. In the African context, large-scale farming has been reported in Nigeria, Sudan, Tanzania, and other Southern African countries, with varying landholding sizes. In Malawi, just 0.6% (total

¹ The MwAPATA Institute and key informants agreed to keep the identities of the interviewees confidential and results be presented without posing the risk of the participants being identified.

hectareage of 603,705) of all estates are above 500 hectares (Deininger and Xia, 2016). The plurality of estates (45.6%) is within the 10–30-hectare group. Therefore, the creation of mega-farms from estate land in Malawi will most likely require farmland consolidation.

Government has expressed its desire to facilitate access to land parcels of a minimum of 500ha to interested investors willing to engage in large-scale production. Our interactions with the key informants gave varying views about the appropriate size for Malawian mega-farms, with land sizes of between 1,000 to 5,000 hectares as the most common response. Stakeholders, however, claimed that the landholding sizes for most large estates in Malawi are in the range of 50 to 500 hectares.

Figure 1: Expected size of mega-farms from key informants in Malawi



Source: Key informant interviews

Some key informants did not specify the size of the farm and argued that the definition of a mega-farm should not depend on land size but with productivity and intensity of use of the farm, and the type of enterprise. The 30-hectare Inosselia-GBA horticultural farm, located in Lumbadzi, was cited as an example of a Malawian mega-farm with a small land size but a high intensity of land use. Similarly, mega-farms engaged in livestock production

(such as dairy, goats, poultry, and sheep) or producing other high-value horticultural crops (such as mushroom) may require relatively small hectareage.

Interviewees also proposed the establishment of mega-farms should be a gradual process, with an initial land allocation of around 50 hectares, for example, with gradual increases based on the availability of resources and building of capacity.

3.2 Sources of land

Interviewees largely believed the main source of land for mega-farms should come from idle estates, either land under Government control or estate land that has been leased but is unused or underutilized. Alternative sources include the consolidation of customary, smallholder and cooperative land, though these options were less favored.

Stakeholders indicated that consolidation of customary land works better where there is an irrigation scheme being set up, with a better governance and business management approach. However, the process of land amalgamation from smallholder farmers should be innovative, with farmers being assured as being beneficiaries. Lessons from the Shire Valley Transformation Project can be used for the establishment of mega-farms through the consolidation of smallholder customary farms. Consolidation of smallholder farms can work in areas with large land holding sizes, especially in the northern region of Malawi in districts such as Mzimba and Rumphi, which have larger landholding sizes and lower population density than most districts in the Southern region of the country.

In sharing their views on the above-mentioned proposed sources of land, some key informants suggested that investors could use the consolidated land under some conditional agreement. This will ensure that only business oriented and serious farmers are allocated land for productive farming during a particular period. Further, the Government could engage the existing private estate owners whose land is idle to be shareholders in the mega-farm agreement. There are also other private commercial estates in operation, such as the

Macadamia estates in Mchinji, which could partner with the Government to become mega-farms.

3.3 Location of mega-farms

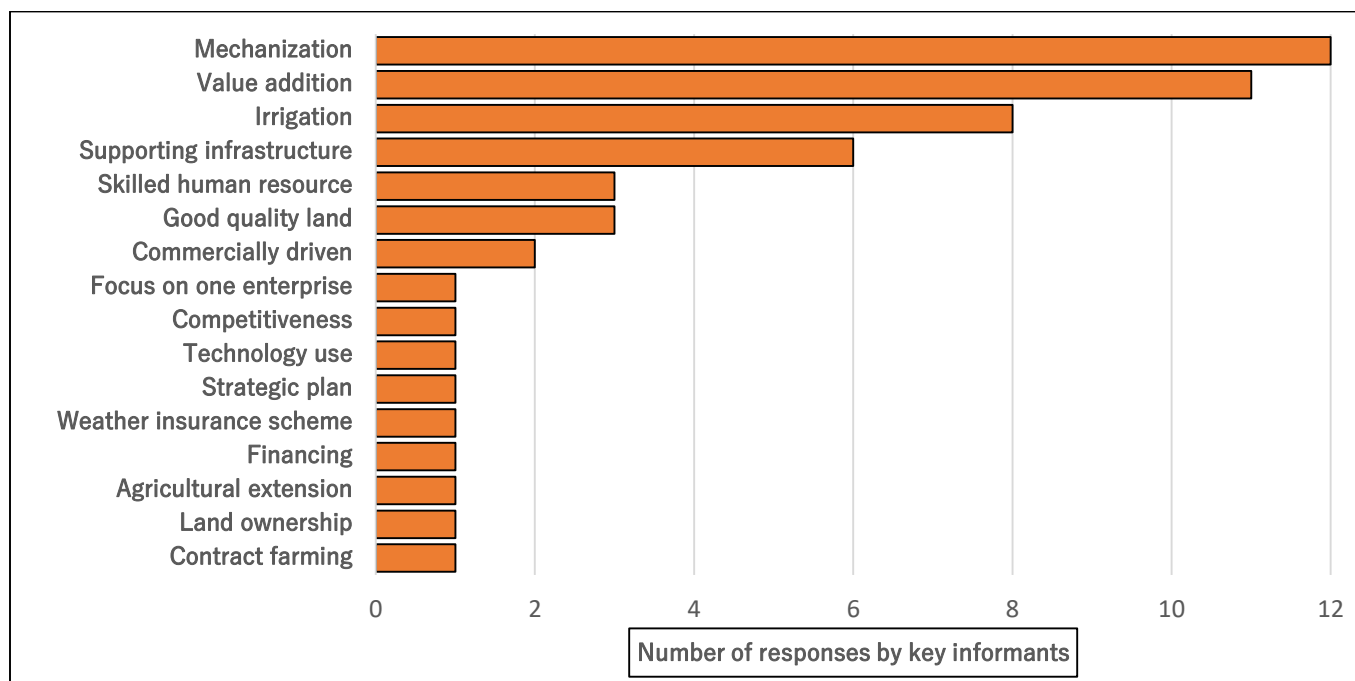
While mega-farms could be located anywhere in the country, stakeholders offered some considerations to be taken into account. Firstly, easily perishable crops (e.g., horticulture) earmarked for the export market may need to be located near the airport or close to a road network. This would keep transportation costs low and ensure easy access to markets. Secondly, the mega-farms should have access to a reliable water source for irrigation. Lastly, mega-farms should be located where land is abundant and population density is low.

Deliberate efforts should also be made to have mega-farms located in areas earmarked for other infrastructural developments. For example, the Malawi Millennium Development Trust (MMDT), through the Millennium Challenge Account (MCA), has earmarked four corridors for road development aimed at easing transportation challenges faced by smallholder farmers. These corridors are in Balaka/Mangochi, Chileka/Mchinji/Malingunde, Mkanda/Kasungu, and Mzimba. The establishment of mega-farms in these areas could provide a good synergy with the planned investments.

3.4 Other attributes of mega-farms

The success of a mega-farm, being a large-scale investment and complex business, depends on a number of key factors beyond landholding size. Interviewees consulted for this study indicated mechanization, value addition, irrigation, and supporting infrastructure were the most necessary attributes (Figure 2). These attributes, in addition to good quality land and financing, are also highlighted in the Government's concept note on mega-farms.

Figure 2: Other expected attributes of mega-farms from key informants



Source: Key informant interviews

Other important attributes of mega-farms according to the stakeholders are as follows:

Mechanization: A mega-farm typically requires most aspects of production to be mechanized. However, while investments in capital equipment may be key to increasing productivity, mega-farms present an opportunity for creation of wage employment which has the potential for increasing incomes of many Malawian households.

Value addition: Significant investments in storage, processing, and other post-harvest handling infrastructure are needed for mega-farms to exploit economies of scope and retain a larger share of consumer good prices.

Availability of year-round water supply for irrigation: To capture the full value of economies of scale, mega-farms may require multiple production cycles per year, and this cannot be accomplished with rain alone. A reliable water source and considerable investments in irrigation equipment and supporting infrastructure are thus important factors for success.

Supporting infrastructure: Access to smooth tarmac roads is important for linking mega-farms products to both domestic and export markets. A road network over which goods can reliably be transported on time and without incurring loss or damage is essential. Tarmac (as opposed to grated soil or gravel) roads provide the assurance that this access will be long-lasting, enabling farmers to make similarly long-term investments. There is also a need for a connection to the electricity grid to support operations and reliable internet and mobile phone networks.

Skilled labour and management: Large farms require skilled managers and labour that may be tailored towards specific commodities. Where there are skill gaps, it may be necessary to hire skilled managers and labour from outside Malawi, which eventually provides on-job training for the locals.

Good quality arable land: Arable land with physical and chemical properties that are aligned with the production needs of specific crops is essential. Soil tests may be required to determine the suitability of a particular crop on available land, or soil amendments to address the needs of desired crops on available land.

Agricultural extension services: There is a need for demand-driven, tailor-made and pluralistic extension services to provide insights on various areas of production, including commodity advisory services, soil management practices and water quality, agronomy, and veterinary services.

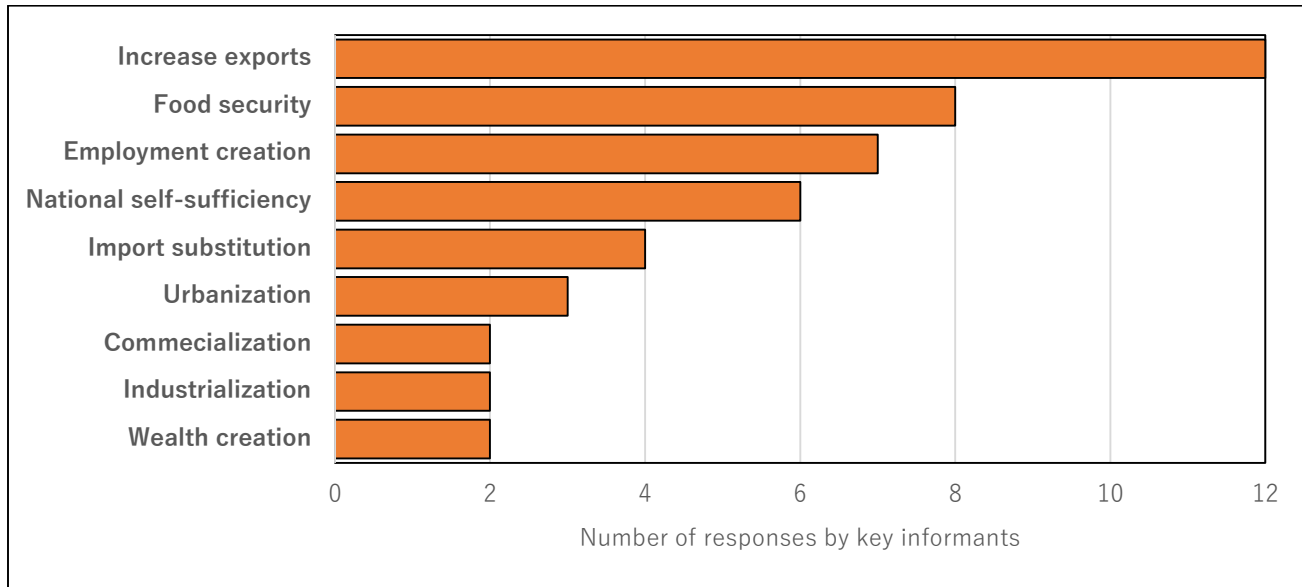
Commercially driven: The farms should be operated as profit-making business enterprises capable of sustaining their operations.

3.5 Objectives of mega-farms

The stakeholders shared views on what should be the objectives of mega-farms. The three most cited objectives of mega-farms by the stakeholders include increasing agricultural exports, achieving food security and creation of employment. These objectives

were also cited in the Government concept note on mega-farms, suggesting a shared understanding of what the farms should achieve.

Figure 3: Proposed objectives of mega-farms by key informants



Source: Key informant interviews

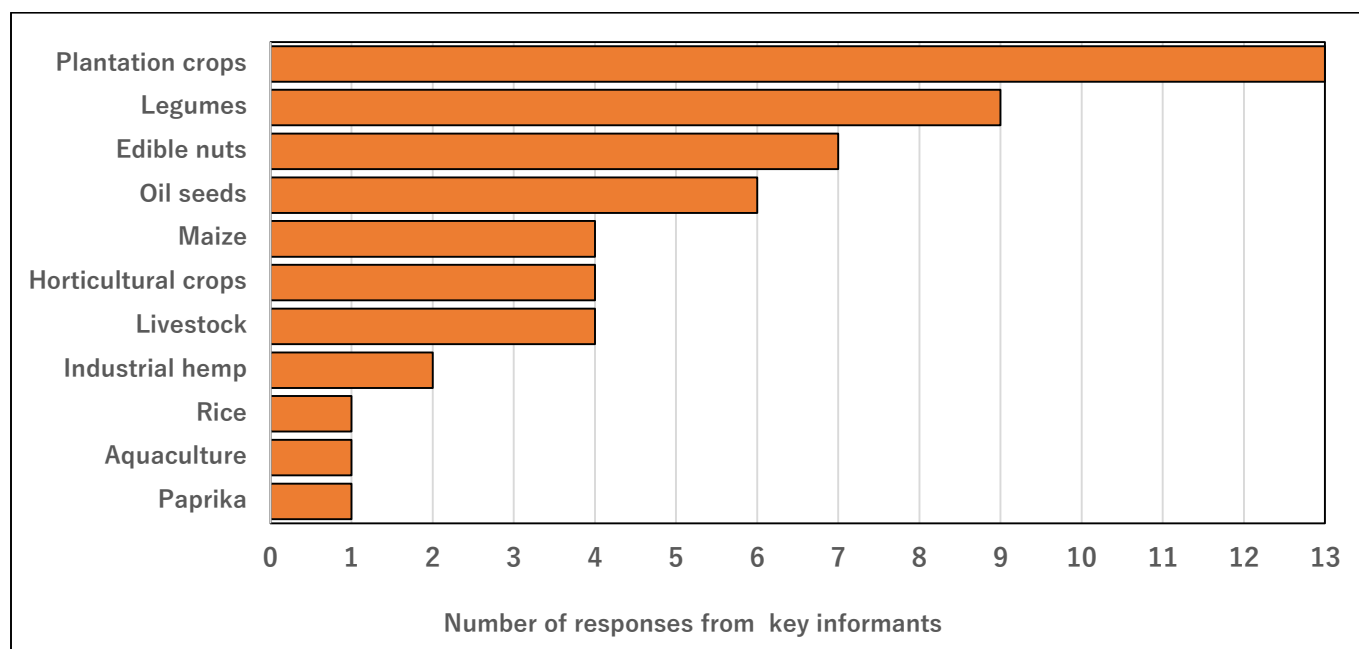
There was also an indication that mega-farms' objective should be wealth creation, which eventually drives national self-sufficiency and employment creation. Other key objectives of the mega-farms cited by interviewees included the creation of secondary cities or industries, improvement of the productivity of surrounding smallholder farms through extension services/demonstration effect, and improving access to input and output markets. This supports the urbanization and industrialization pillars of the MW2063 Agenda.

3.6 Types of crops and livestock

Interviewees believe mega-farms should focus on high-value crops, aquaculture, and livestock. They especially indicated the need for mega-farms to focus on high-value crops outlined in the National Export Strategy II. These include plantation crops (sugarcane, tea, coffee, bananas), legumes (peas, beans), edible nuts (macadamia), oil seeds (sunflower, soya, groundnuts), livestock (dairy, beef, goat), horticultural crops (onions, ginger, garlic),

rice, maize, and industrial hemp. Other expected crops include birds eye chili, sesame, cassava for ethanol, wheat, and palm oil.

Figure 4: Expected types of crops and livestock by the key informants



Source: Key informant interviews

Key informants further observed that maize, which is mostly grown as a food-security crop in Malawi, has a huge export market across Southern Africa, especially Mozambique, Zimbabwe, and Zambia, where it is also a staple food. Most countries in East Africa have annual maize deficits, providing an export market opportunity for Malawi. Sudan was also mentioned as a potential export market for maize flour. Challenges, however, include the political economy surrounding the crop which has frequently been subjected to export bans, and high transport costs. These impediments hinder Malawi's ability to be a reliable trade participant.

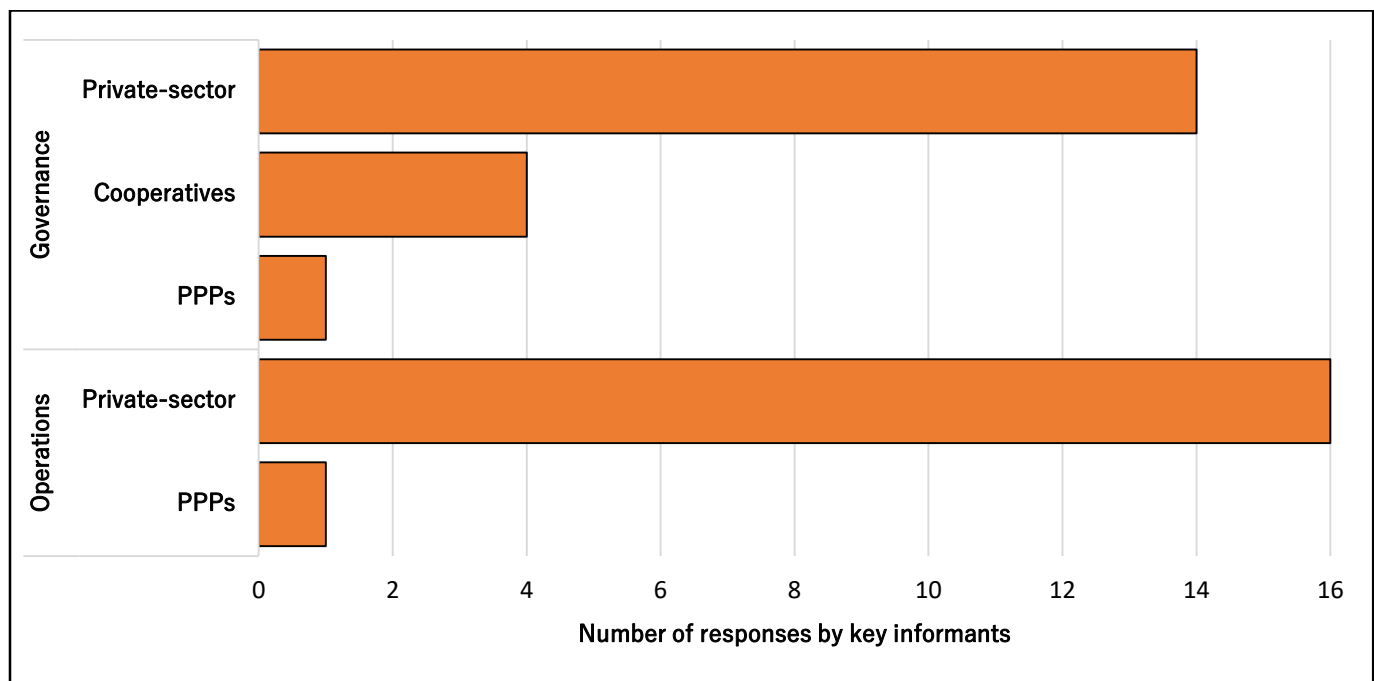
The choice of crops and livestock should also be guided by market demand. Traditionally, farmers search for markets only after harvesting. The mega-farm approach should be to find markets earlier and base crop portfolio decisions on these opportunities. For example, the current demand and high prices of cooking oil and baking flour can provide guidance on the

types of enterprises that will be profitable in the coming year. Furthermore, the choice of the focus crops or livestock on the mega-farms should be consistent with suitable climatic, soil, and other ecological factors.

3.7 Operations and governance of mega-farms

Virtually all respondents recommend that the operations of mega-farms should be led by the private sector. A majority also suggested governance or the board of directors should be led by the private sector (Figure 5).

Figure 5: Proposed operations and governance structure by key informants



Source: Key informant interviews

All interviewees believed that the Government would operate mega-farms less efficiently compared to the private sector. The main role of the Government should be to provide a conducive environment for private sector operations. For example, tax holidays for investors and exemptions on agricultural machinery imports would be welcomed policies to encourage key investments.

The Public-Private-Partnership (PPP) was mentioned as a preferred form of governance of the mega-farms for a few reasons. First, PPPs could mitigate risks associated with agricultural investments needed to improve operational efficiency. Furthermore, the Government could free up idle/underutilized estate land and invite private investments to bring in working capital, expertise, and other resources. That said, within the PPP arrangement, interviewees largely agreed that Government shareholding should be less than 50% to ensure that the private sector makes key business decisions in the management of mega-farms.

3.8 Interactions between mega-farms and surrounding communities

The consensus is that mega-farms should be structured to benefit local smallholder farmers, either through a nucleus scheme for smallholder farmers or as in-grower and out-grower schemes. For example, a mega-farm could provide contract farming arrangements with the surrounding communities, providing them with high-quality inputs, extension services, production technologies, and an output market. The smallholder farmers from the surrounding communities could thus be integrated into the mega-farms through employment and marketing. This is necessary if the growth of mega-farms is to occur in a socially responsible way. Importantly, mutually beneficial synergies between mega-farms and surrounding communities are not likely to manifest in the absence of premeditation and clearly outlined objectives consistent with this outcome. Haphazard mega-farm development is as likely to harm smallholder livelihoods as benefit them.

4. Conclusions and recommendations

In addition to presenting the perspectives of key informants regarding the structure and operationalization of mega-farms, this paper has provided a literature review on the performance of larger farms and their impact on smaller farms.

The evidence on the performance of larger farms and their impacts on surrounding communities remains inconclusive in the literature. In some cases, large farms have been associated with high profitability and productivity while in other cases performance has been low. In the case of spillover effects, the presence of large farms has increased small farms' access to and use of improved seed, fertilizers, and other inputs. Good management and the ability to operate unencumbered by marketing restrictions were identified as important factors determining the viability of mega-farms and their ability to contribute to stated objectives.

Most of the key informants in Malawi believe that a mega-farm should be larger than 500 hectares. Further, they believe it is important that in addition to land, the other key attributes of a mega-farm should include mechanization, value addition, irrigation, and supporting infrastructure. Most stakeholders are of the view that increasing agricultural exports, improving food security, and achieving self-sufficiency should be the most important objectives of a mega-farm. The identification of focus crops and livestock should be aligned to the National Export Strategy II.

There is a consensus that the Malawian mega-farms should be managed and owned by the private sector, while the Government should provide a conducive environment (e.g., provision of tailor-made extension services and investment incentives) and make available land for use by the investors. Stakeholders expect land for mega-farms to come primarily from idle estates, including estate land that has been leased but is unused or underutilized. Malawian mega-farms could feasibly be located anywhere in the country based on suitable climatic factors and the availability of suitable land and reliable water sources.

A number of policy recommendations emerge from this analysis. Firstly, considering that most rigorous studies in the literature find that large farm sizes are often not associated with higher productivity, it may be necessary to develop commercialization strategies that strengthen and support existing large farms and address factors that limit productivity such

as human resources, accountability, and the use of good agricultural management practices. In addition to supporting mega-farms, there may be some benefits for Government to explore the development of medium-scale farms based on the growing evidence of strong farm productivity and positive spillover effects on smaller farms.

Secondly, the management and governance of the mega-farms should be private sector-led. The mega-farms should be owned and managed by investors whose objectives will be to use the land for productive purposes. Government, meanwhile, should provide a conducive enabling environment and ensure that idle or unutilized land is made available through lease agreements with clear performance criteria to prospective private mega-farm investors. Government roles may also include ensuring access to financing, facilitating access to large domestic and export markets, and support in the form of incentives and investments in irrigation, electricity, and other supporting infrastructure.

Thirdly, policies need to be deliberately put in place to ensure meaningful interaction between mega-farms and surrounding smallholder farmers and communities. These relationships should extend beyond simply hiring labour. For example, mega-farms could be expected to offer rental services for agricultural equipment, supply inputs to nearby smaller farms, and/or purchase their produce. By demonstration, mega-farms may serve as a training mechanism for smaller farms. Lastly, considering that the mega-farm concept is aligned with the MW2063 Agenda, there may be a need to incorporate the mega-farm concept in the existing National Agriculture Investment Plan (2018-2023) as well as the National Agriculture Policy (NAP) which is currently undergoing review by the Government following the expiry of its predecessor, namely NAP (2016-2022).

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