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A Smart Subsidy

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Key Takeaways:

- *The current subsidy program does not efficiently meet farmer's household needs or preferences*
- *A 'smart subsidy' which is targeted based on farmer needs, growing conditions, and crops could greatly improve: agricultural productivity and profitability in Malawi, the financial impact of the subsidy program, and the return on investment of the national subsidy budget*

Introduction

According to The National Fertilizer Policy (2021), agriculture remains crucial for Malawi in terms of driving economic growth, export earnings, poverty reduction, and the development of the country. The sector accounts for over 28% of the country's GDP and contributes over 80% of the country's export earnings. The Malawi Growth and Development Strategy (MGDS) III, also identifies food security as an essential component for sustained economic growth and poverty reduction. Food security has always been and continues to be an important issue of concern on the agenda of the Malawi Government. The Government has tackled this issue through numerous interventions, most notably being the implementation of Farm Inputs Subsidy Program (FISP) in 2005, which was replaced by the Affordable Inputs Program (AIP) in 2021. The 2020/2021 inaugural season of AIP subsidized a 50KG bag of Urea, a 50kg bag of NPK, and a 5kg pack of hybrid seed or 7kg pack of OPV maize seed for an unprecedented 3.4 million smallholder farmers. Each beneficiary paid MK4,495 per 50kg bag of fertilizer, and MK2,000 for a pack of seed. The Government contribution to purchase fertilizer was fixed at MWK17,000 per 50kg bag while the contribution to purchase seed was fixed at MWK6,000 representing an 80% contribution to fertilizer and 25% to seed.

On 16th October 2021, the 2021/2022 AIP program was officially launched. In his keynote speech, President Lazarus M. Chakwera stated that the ultimate goal of Malawi's Affordable Inputs Program is to "attain food security at household and national levels thereby contributing to poverty reduction" which he further explained would be done by:

- improving access to quality farm inputs;
- increasing cereal (maize, sorghum, rice) production at household level;
- increasing livestock production;
- improving national and household incomes through the sale of surplus produce.

The 2021/2022 season of AIP subsidized a 50KG bag of Urea, a 50kg bag of NPK, and a 5kg pack of hybrid maize seed for 3.2 million smallholder farmers. Each beneficiary paid MK7,500 per 50kg bag of fertilizer, and a flexible top up for a pack of seed. The Government contribution to purchase fertilizer was fixed at MWK19,500 per 50kg bag representing an 72% contribution to fertilizer, while the contribution to purchase seed was fixed at MWK3,365 which represented a 30% contribution and a 44% reduction in the contribution from the previous season.

Research has shown that in Malawi, since its implementation in 2005, the program has often resulted in a considerable increase in productivity during seasons in which inputs were delivered to farmers on time, the country has had good rainfall patterns and farmers have practiced proper fertilizer use. Additionally, in some cases it has increased the number of self-sufficient households and in a few cases helped households transition to become net sellers of maize. Communities have also had a reduction of crime stemming from the lack of food, and there has been improved general nutrition of the rural population due to access to regular meals. The program has also helped introduce improved, disease and drought resistant seeds into the local farming ecosystem on a large scale and over time has had a positive effect on the National seed gene pool[1].

Background of the Subsidy Program

The positive impact of Malawi's subsidy program cannot be overemphasized because without it a large segment of the population would not be able to produce enough to feed their households. Over time the program has proven to be more beneficial than not. The improvement of agricultural production was one of the key drivers of economic prosperity and social development during the 1960s – 70s in Asia, and the same can be replicated here in Africa. Countries such as Kenya, Zambia, Nigeria, Ghana, Ethiopia, Rwanda and Burundi have all implemented subsidy programs of varying scope and design.

Despite the positive impacts outlined above, subsidy programs have not always proven to be sustainable and ultimately must have an exit strategy to prevent increasing amounts of the annual agriculture budget being consumed by a single program. Nigeria discontinued its Growth Enhancement Support subsidy scheme due to high levels of incurred debt, while Ghana reduced its fertilizer subsidy rates as did many other countries[1]. Thus far, the agricultural input subsidy mechanism has largely served the Malawian smallholder farmer well and it is imperative that it evolves into a "smart subsidy" in order for it to be sustainable and to maximise effects at the lowest possible cost.

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[1] Mwakubo, 2018

Over the years the program has undergone adjustments in regards to the following:

- The type of inputs offered (including crops and livestock)
- The number of beneficiaries targeted
- The ratio of the Government contribution to the farmer top up
- Involvement of the private sector

During the period of 2006 to 2019, the subsidy program included seeds of various legumes such as beans, soya, groundnuts, pigeon peas and cowpeas. Where open pollinated seeds have been included, in the case of maize or legumes, there is a considerable lasting impact as farmers recycle this seed for a number of subsequent farming seasons. Other seeds offered during the subsidy program include cotton, rice and sorghum. However, maize has always been the primary seed offered in large quantities as it is Malawi's staple crop. In the early years of the program, 2006 to 2011, NPK for maize, Urea, D Compound for tobacco and CAN as an N top dressing were offered to farmers. However, since 2012, maize specific NPK and Urea as an N top dressing have been the only fertilizers offered.

The overall budget approved by Parliament for the program determines the Government contribution, the farmers top up, as well as the number of beneficiaries targeted. The Government contribution and farmer top up is adjusted on an annual basis in order to align with the fertilizer market price. The typical target values being a Government contribution of 75% and a farmer's contribution of 25% to the total cost of fertilizer. In some years, the farmers top up was made flexible and therefore determined by the supplier, though it could not exceed a specified amount dictated by the Government. The advantages and disadvantages of the flexible and fixed top up approaches are shown in the table below:

Fixed Top Up Vs. Flexible Top Up

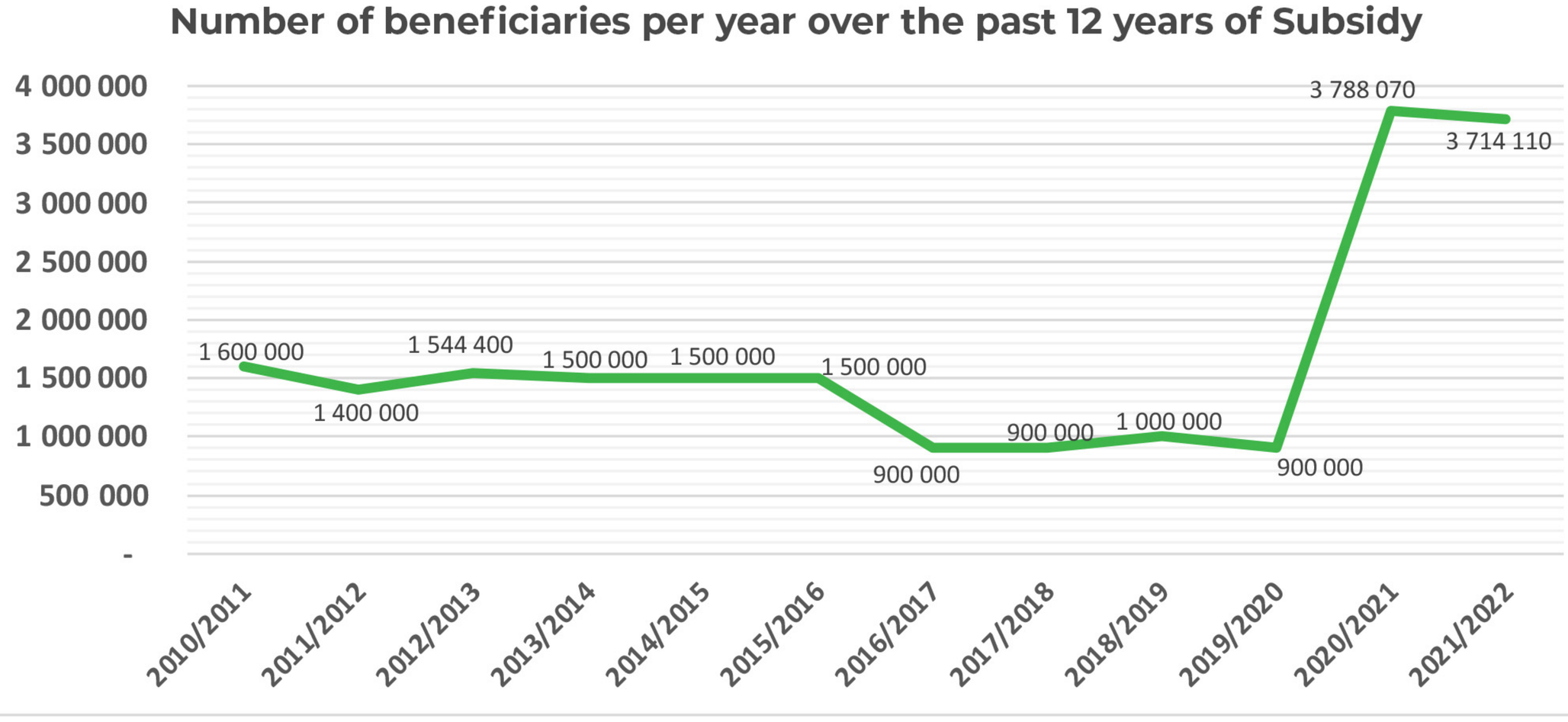
	Fixed Top Up	Flexible Top Up
Advantages	• Standardized price across the country for farmers	• Protects suppliers against foreign exchange risk • Suppliers are confident and can import and sell fertilizer in a free market environment • Supply is not disrupted due to price uncertainty or foreign exchange rate changes • Farmers can benefit from a fall in fertilizer prices or the strengthening of the exchange rate • Government can have a fixed budget

		• Encourages supplier competition on price, quality and service. • Government and suppliers are protected from price volatility
Disdvantages	• Government and suppliers are not protected from price volatility • May cause the Government to exceed the budget • Leaves suppliers open to foreign exchange risk • Supply is disrupted due to price uncertainty or foreign exchange rate changes • Farmers do not benefit from a fall in fertilizer prices or the strengthening of the exchange rate	• Price is not standardized across the country

Table 1

The number of beneficiaries was generally kept below 3 million, and in the years 2016 to 2019, it was less than 1 million.

Number of beneficiaries per year over the past 12 years of Subsidy



Graph 1 - Fertilizer Association of Malawi: Crop Production Data Analysis

In the year 2015, after many years of the Government bulk procurement and parastatal distribution, crowding out of the private sector and a multitude of inefficiencies, the program saw the addition of the private sector to the retailing portion of the fertilizer supply chain. It is worth noting that 2016 was the first year that the program adopted the flexible top up method, was completed within budget, within the stipulated 12-week timeframe and with zero reported losses of fertilizer which can undoubtedly be attributed to the involvement of the private sector[2].

[2] Final FISP Implementation report 2015, Logistics Unit.

The flexible top up method brought about the following benefits:

- Competitive pressure for suppliers to attract farmers
- Allowed the system to adjust to the fertilizer prices and the exchange rates without catastrophic disruption in supply

In the years following 2016 the private sector began to build its capacity, capability and operational efficiency leveraging the program to create more jobs and improving the agricultural industry's infrastructure. Over the past 17 years, the involvement of the private sector has been the single most effective change in improving the implementation of the program.

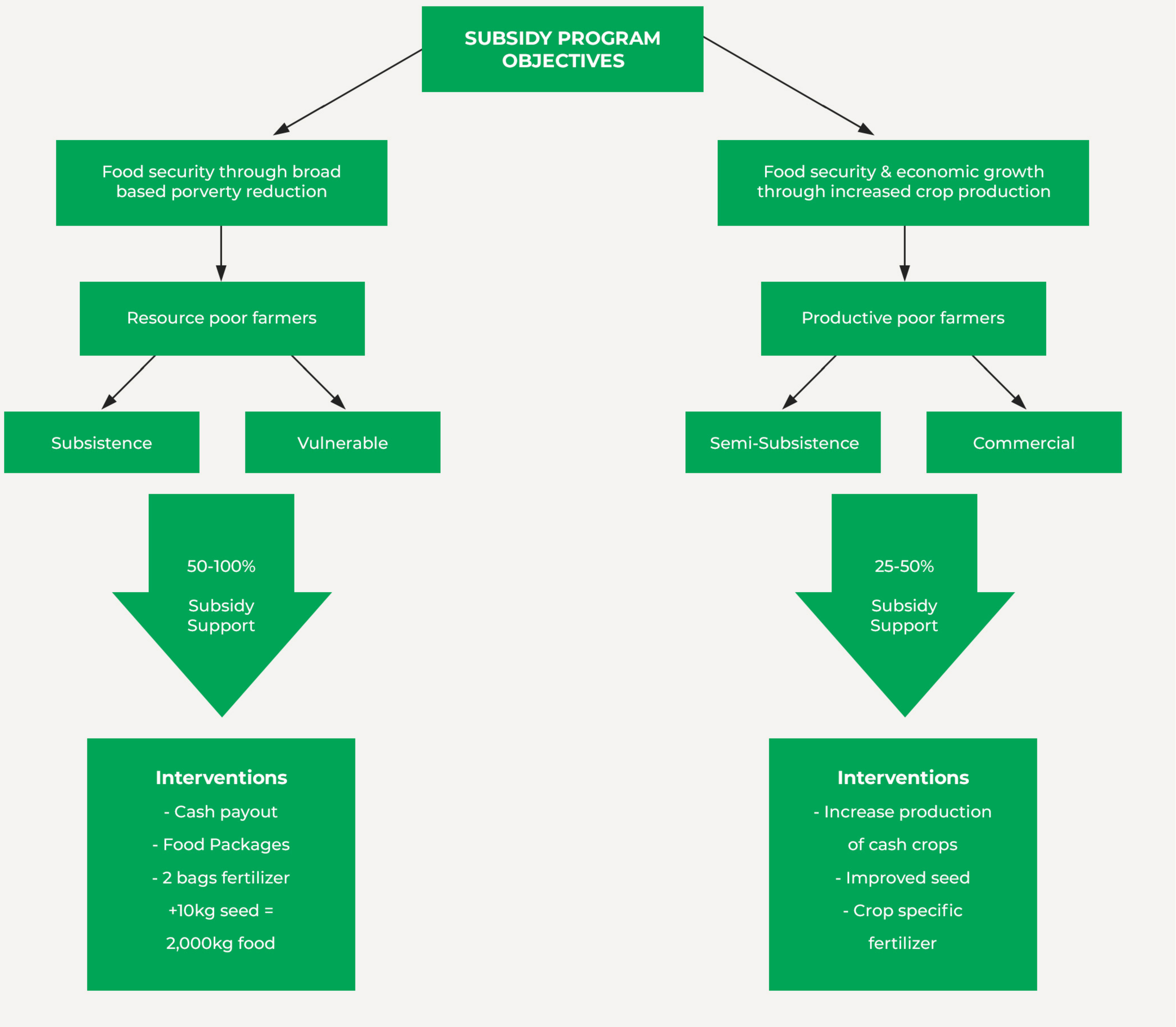
Current AIP Challenges

The current design of the AIP, which was introduced in 2020, presents 3 significant challenges that need to be addressed in order to increase the impact and sustainability of AIP for the foreseeable future.

Inefficient Targeting

The current program attempts to target ALL smallholder farming households that have their ID data registered in the National database under the National Registration Bureau, thus making it a universal subsidy program. Universal Subsidy programs have been proven to be very costly as they require that the Government subsidize extremely large numbers of beneficiaries with an equal contribution without determining whether all beneficiaries truly require full subsidy support[3]. Research has shown that it is often the wealthier, well-connected and male headed households that are likely to obtain the subsidy support, displacing the poor and vulnerable that are in need of it[3]. Another negative impact of inefficient targeting is that it results in the displacement of commercial sales, as households that are otherwise capable of purchasing some or all of their own inputs are subsidized by the program. This displacement in commercial sales causes the private sector to shrink or become heavily dependent on the subsidy program for sales[4]. The criteria used to define who is and who is not a beneficiary should be determined by the objective of the program. The program goal needs to be clearly defined in order for the program design to achieve the objectives. The diagram below shows two often cited objectives of agricultural subsidy programs and how each is achieved.

[3] Balter and Hansen, 2011
[4] Mwakubo, 2018



Mono-cropping

AIP currently only offers maize seed and maize suitable fertilizer which encourages mono-cropping. The advantage of this is that it often results in the production of a maize surplus that reduces the cost of maize to all national households and can be exported outside the country. However, if, as is often the case, the local pricing mechanism and export regulations do not carefully consider global maize prices, this leads to a collapse in local maize prices, low levels of formal exports, increased informal exports, a loss of foreign exchange revenues and post-harvest losses. Mono-cropping also presents disadvantages for the farmer such as damage to soil fertility and increased crop susceptibility to pests and diseases. Farmers are also discouraged from adopting other cash crops that would add to the variety of agricultural produce that Malawi can export, and reduce Malawi's reliance on a maize centred diet.

Uncontrollable cost of the program

Due to the fact that Malawi imports all its fertilizer, up to 80% of the retail cost of fertilizer in Malawi is largely determined by global market forces, therefore, Malawi is a price taker that cannot mitigate against the global price increases. The AIP 2021/22 the program experienced fertilizer procurement challenges caused by high global fertilizer prices combined with a poor implementation design. Industries were reeling from the economic effects of the Covid 19 pandemic which brought about an increase in gas prices, shipping costs and fuel prices. As a result, the local retail price increased by over 50% from just over MK20,000 to over MK30,000 per 50kg bag of fertilizer in as little as 3 months. The present program design of a fixed top up further exacerbated the situation putting strain on companies who were expected to supply fertilizer at the capped subsidy price of MK27,000 per 50kg bag. Such price increases can cause the Ministry of Agriculture subsidy program budget to expand uncontrollably taking funding away from other projects within the Ministry, and furthermore taking up a larger portion of the country's forex reserves. Ultimately, the private sector was not able to effectively supply to the program and the parastatals had to close the supply gap which required them to procure fertilizer at market price and sell at a loss.

The "Smart" Approach

Outlined below are 2 key changes that can be made to the program to mitigate the challenges mentioned above.

Improved farmer targeting criteria

It is worth noting that the current AIP is in fact a targeted cash transfer program and the targeting is achieved at 2 levels:

a. The selection of the beneficiary farmer
b. The restricting of the application of the cash to towards the purchase of fertilizer and seed

There is a need to redefine who qualifies as a beneficiary under the program. Ideally, the program targeting methods should result in low levels of displacement of commercial fertilizer sales, a significant increase in productivity, and encourage the graduation of households from subsidy without them reverting to their previous poor or vulnerable state[4].

Households can be divided into 4 categories:

1. **Vulnerable:** Those that cannot cultivate or produce crops even when given

[4] Mwakubo, 2018

subsidy assistance in order to purchase fertilizer. This includes households that are physically incapable of farming, are headed by a child/children, or do not own enough land to cultivate. These beneficiaries would be more suited to support in the form of a cash pay-out or a food package.

2. Subsistence: These households are ones that have the capacity to cultivate and produce and require assistance to eventually achieve self-subsistence. These households would benefit from 100% subsidy support. For example, if the 100% subsidy support enabled the farmer to redeem 2 bags of 50kg fertilizer and 10kg of seed, they would be able to produce 2,000kg of food which is enough for a 5-person family for a year.

3. Semi-subsistence: Semi-subsistence households play a considerable role in production and consumption in developing countries, a great part of consumption by these households is contributed by home production for home consumption. For example, they can be given 50% subsidy support, therefore, their top up for inputs would be higher than the categories above.

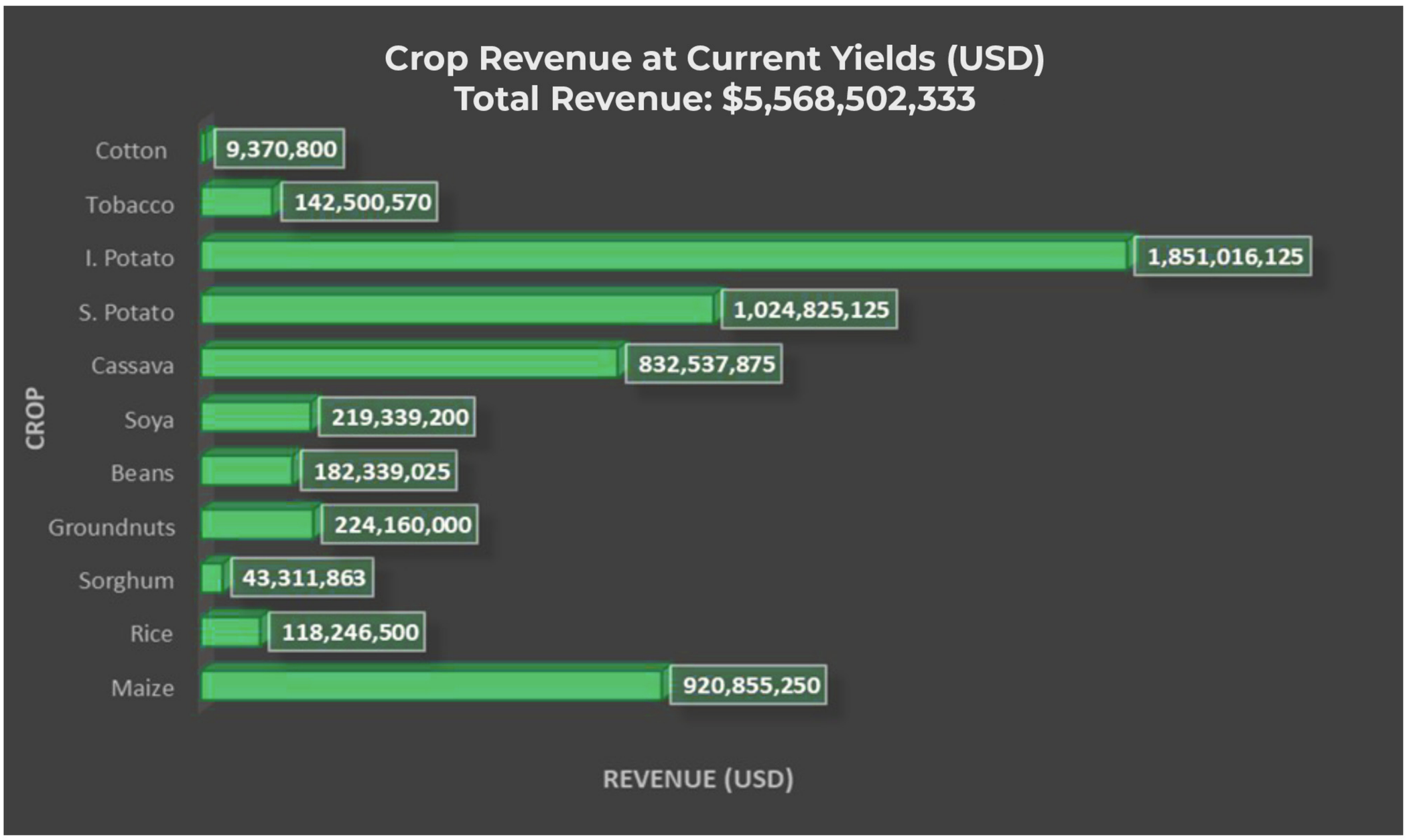
4. Commercial: These are households that require small intervention or none as they already have the ability to produce enough to be self-subsistent. In this case, partial subsidy support would enable them to become net sellers. For example, they could get 25% subsidy support on inputs as encouragement for them to grow cash crops. Alternatively, these commercial farmers can simply receive a cash transfer. Many studies have shown that cash transfers timed around the agricultural seasons are primarily spent on agricultural inputs anyway. Cash transfers to this band of farmers would significantly reduce subsidy administrative costs as they can be done through mobile money.

A smart subsidy program could set out to address a number of key objectives by targeting different beneficiaries, segments, and crops. As the first objective it could target those farmers that are subsistence farmers assisting them to produce enough maize to be food secure. The second objective could be to target semi-subsistence farmers who have the capacity to grow some cash crops. These farmers could receive improved seed and fertilizer for the crops that contribute to their household incomes, national exports and GDP. The Government through the extensive extension network of the Ministry of Agriculture in collaboration with the National Registration Bureau (NRB) would have to carry out a thorough beneficiary targeting project in order to correctly classify the categories of beneficiaries. The NRB already has a database of beneficiaries built up during previous beneficiary targeting exercises for prior subsidy seasons which should make this task relatively quick and manageable. It must be noted that more efficient targeting can simultaneously act as a cost saving mechanism by preventing the inclusion of beneficiaries that should not otherwise be under the program.

The Government could also collaborate with other technically qualified organisations in order to identify and exclude beneficiaries that are already recipients of similar support from other social agricultural programs.

Improved crop targeting

The program should also offer subsidy on key legume crops that are exportable assisting in the recent push to find cash crop substitutes for tobacco farmers. Cash crops that can be added to the subsidy program include soya, groundnuts, beans, sweet potato, cassava and pigeon peas. Based on the 2020/21 Government minimum farm gate prices for main crops in Malawi, the following figure illustrates the approximate annual revenue at the current yields.



Graph 2 - Fertilizer Association of Malawi: Crop Production Data Analysis

The exportation of these cash crops is less restricted in comparison to maize which is often restricted because it is a staple crop. Exports of these cash crops would also contribute substantially to Malawi's forex earnings. The table below shows a comparison of the lowest, highest and average export prices of soya bean and maize over the past 2 seasons in Malawi. In 2021, the average price for soya beans was $622 per MT while maize was for $147. In 2022, the average price for soya beans was $342 per MT while maize was for $202.

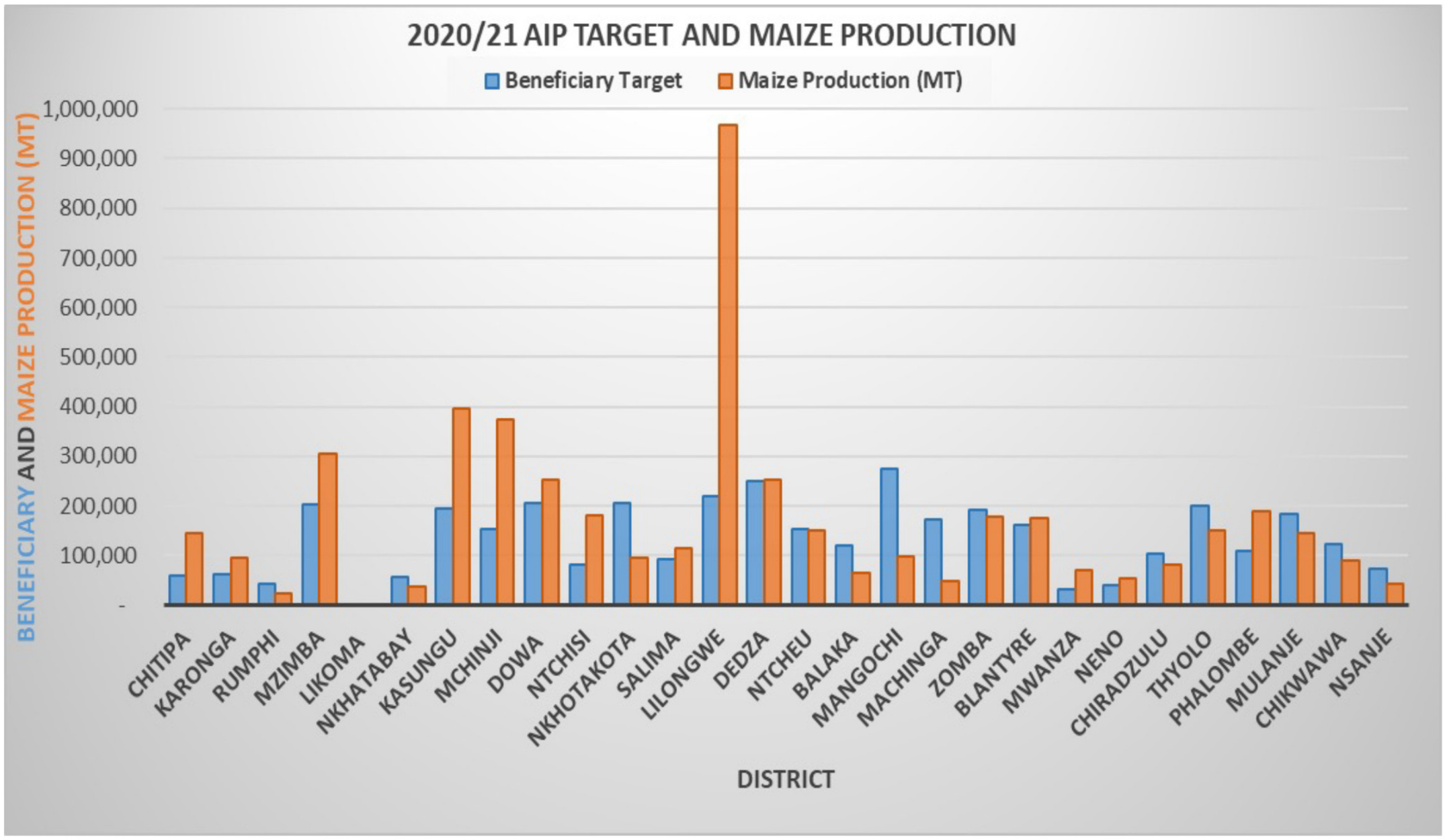
2020/21 SEASON							
Soya Bean				**White Maize**			
Month	**Year**	**USD/MT**	**Status**	**Month**	**Year**	**USD/MT**	**Status**
April	2020	$338	Low	June	2020	$192	Low
August	2020	$346	High	Jan	2021	$213	High
	2020	**$342**	**Avg.**		**2020**	**$202**	**Avg.**
2021/22 SEASON							
Soya Bean				**White Maize**			
Month	**Year**	**USD/MT**	**Status**	**Month**	**Year**	**USD/MT**	**Status**
April	2021	$450	Low	June	2021	$128	Low
August	2021	$795	High	Jan	2022	$166	High
	2021	**$622**	**Avg.**		**2021**	**$147**	**High**

Table 2 - Commodity Insight Africa (CIA) "Soft commodities - Africa, weekly reports - Malawi".

The majority of these crops are being produced without the use of fertilizer, therefore, the program should not only include the suitable improved seeds of these crops, but the crop specific fertilizers as well. Legumes such as ground nuts, soya and dry beans have been shown to respond well to fertilizer increasing yields between 40% - 100%. Promoting crop specific fertilizers would also be in line with one of the strategies of the National Fertilizer Policy which is to move away from blanket fertilizer formulas and assist in maintaining soil fertility. Currently, unfertilized crops are mining minerals and fertility from the soils. Depending on which category farmers fall into from the four categories of beneficiaries above, a specific amount of inputs for cash crops should be included in the subsidy. Cash crops inputs could be allotted to specific Agro-ecological zones favourable to cultivation of the crops and supported by:

- Extension efforts
- Market intervention and linkages

Based on the 2020/21 AIP Beneficiary allocation and Crop production data, the figure below illustrates the relationship between number of beneficiaries and maize production per district.



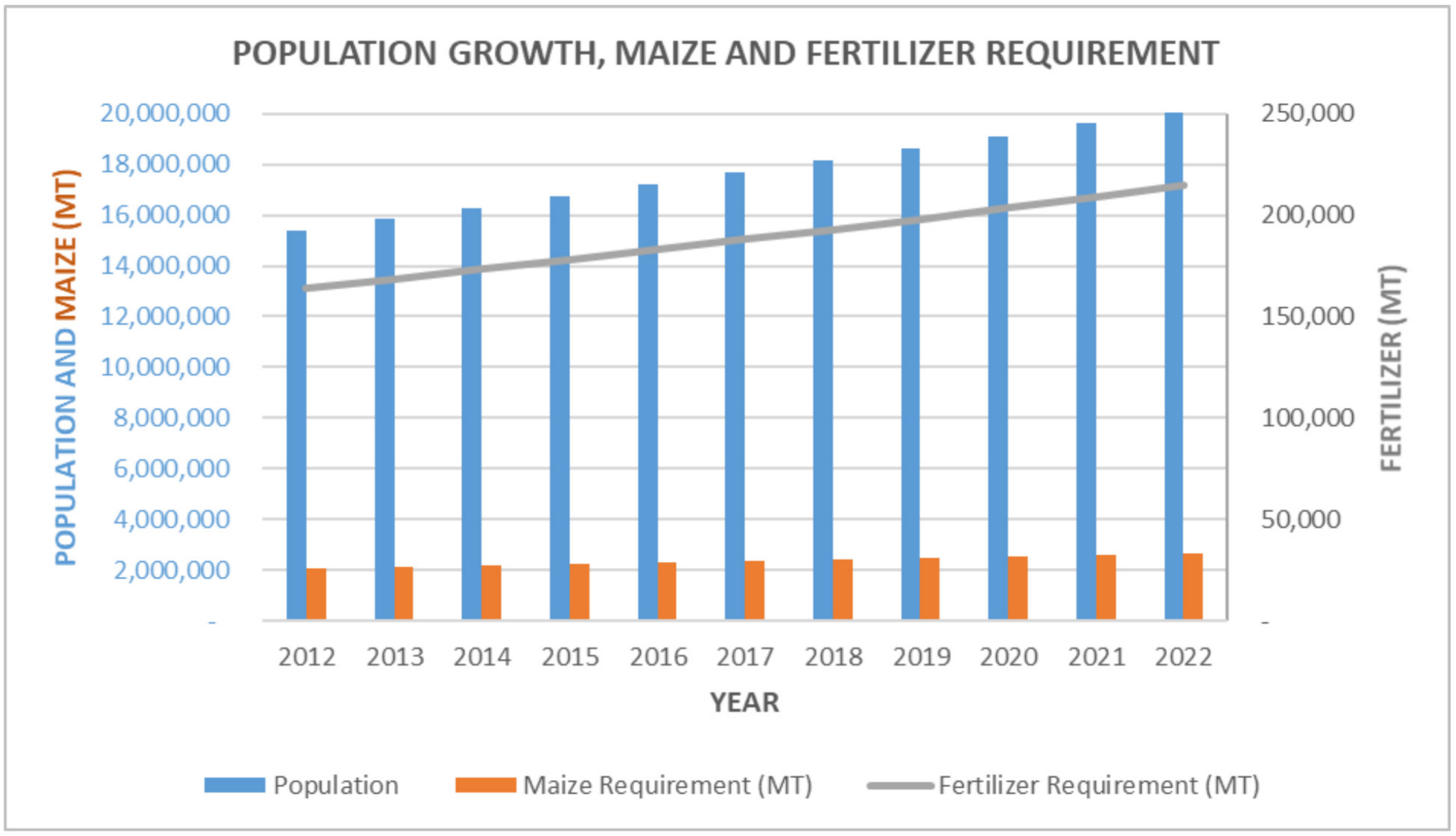
Graph 3 - Fertilizer Association of Malawi: Crop Production Data Analysis

In districts such as Balaka, Mangochi and Machinga, it is evident that production levels of maize are quite low despite the high number of beneficiaries targeted. These areas could be more suited to producing other types of crops that are better suited to their climate and soil conditions.

Another benefit of increasing the variety of crops under the program is that it brings about more nutritional diversity through the support of the high value nutritional crops mentioned above. Increased nutritional value foods would encourage better diets, help reduce malnutrition across the population, and further strengthen food security. Legumes are an inexpensive source of protein, B vitamins, iron, folate, calcium, potassium, phosphorus, zinc, and fibre, as well as low in fat and calories.

Additionally, given that Malawi is rain fed and has poor irrigation systems, farmers benefit from this multiple cropping approach by reducing their vulnerability to climate change as crops like sweet potato and cassava are relatively drought tolerant. Climate smart agriculture approaches like this are incredibly important as the agricultural sector is extremely vulnarable to climate change. All of this would help increase on-farm intensification which is important given shrinking landholding sizes.

Based on the annual maize consumption of 133kgs per capita and the fertilizer requirement of 100kgs per 1 Acre (0.4 ha) to produce 1, 250kgs of maize, the figure below illustrates the fertilizer requirement for maize as the population has increased in Malawi.



Graph 4 - Fertilizer Association of Malawi: Crop Production Data Analysis

As the population continues to increase, the maize requirement will also continue to grow, however, farm land will not increase. Therefore, on-farm intensification will be vital to meet the population food demand. Meeting this increasing food demand can also be aided by the diversification of the local food diet from a maize centric one to one that includes more root and tuber starches as staple options. Root crops and tubers such as potatoes and cassava produce significantly more food per unit area grown.

Conclusion

The savings realised from the proposed adjustments to the program could be used to fund other Government Agricultural programs and technologies, e.g. technologies to improve soil health which could further enhance crop yields. Supplementary extension programs alongside AIP on the best practices of fertilizer use and climate smart agriculture, would also help increase the effectiveness of the fertilizer, increase yields per unit area of production, stimulate commercial demand and contribute to the environmental sustainability of the program. This is an area the private sector already invests in with various small scale extension services as it understands the need for proper and effective use in order to realise the full benefits of fertilizer. Implementation of these “smart subsidy” strategies will provide an exit strategy for farmers that allows them to graduate from the program and increase their household income. These strategies also greatly enhance the sustainability of AIP by employing targeting methods that result in lower costs, increased diversity in cash crop options that ultimately result in higher forex earnings and better nutritional health of Malawians. Transformation of AIP to a smart subsidy program will give the Government a higher return on investment and ensure that Malawi continues to be one of Africa’s agricultural success stories.

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Feeding the soil, feeding Malawi

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