

# REFLECTION BRIEF BEYOND TECHNOLOGY ADOPTION



# Contents

INTRODUCTION	1
THE PROJECT CONCEPT	2
AWARENESS	3
TECHNOLOGY CONCEPT CHANGES	4
INPUT SUPPLY	5
PARTICIPATION	6
PROFITABILITY AND MARKET ACCESS	7
FARMER GROUPS	8
DIVERSIFICATION BEYOND THE INITIAL TECHNOLOGY	9
STORAGE AND VALUE ADDITION	10
CLIMATE SMART	11
POLICY	12
CONCLUSION	13

## CLIMATE SMART

*MI technology can easily graduate beyond adoption for they are in line with the already promoted technologies.*



# INTRODUCTION



Technology adoption has greatly shaped agriculture throughout time. Humans have developed new ways to make farming more efficient and grow more food. More research has been done to find new ways to irrigate crops or breed more disease-resistant varieties. These iterations are key to feeding the ever-expanding population

with the decreasing freshwater supply. Technology transfer and dissemination in the agriculture sector, specifically to the farmers, has been one of the core responsibilities from private sector players to the public sector through non-governmental organizations. Practically, the objective of the technology transfer is to engage the consumer/users to adopt and use the improved systems for effectiveness and efficiency whilst saving costs. Ever since the introduction of early technologies, adoption has not been easy and there appears to be a certain pattern for a technology to be fully adopted.

The introduction of many improved varieties in Malawi comes with some reservations and hitches even in the horticultural sector due to divergence from the norm. This is the reason demand-led plant breeding is important to cater for the value chain concerned. This is why technology development and transfer need to be revised time and again for its sustainability. More so, the sustainability of a technology is not a one-way thing rather a concerted effort of dynamic and inclusive actions to maintain and upgrade its use. This brief seeks to reflect upon the sustainability of technology usage even after adoption, and seeks to answer what are issues to look into for a technology to go beyond adoption. And it will use the Micro Investment project under the TRANSFORM program which is being championed by AICC as a case study.



# THE PROJECT CONCEPT



The Micro Investment Model is being implemented in Mndolera EPA in Dowa District in Central Malawi. The Micro investment model is targeting 5000 farmers in a four year period. The project is being implemented through an incubation approach where

farmers are put into a group of 12 (a host farmer and 11 follower farmers) for a period of 12 weeks. The incubates are taken through a series of weekly lessons from site selection and preparation including all the good agronomic practices involved in the production of different horticulture crops to post harvest handling and marketing thereafter, these farmers graduate in order to invest at an individual level. These incubators are provided with the MI kit which comprises of drip lines, fertilizer, chemicals and certified seeds.

The project is aimed at contributing towards sustainable horticulture production that will result in smallholder farmer's increase in income and consequently leading to poverty reduction in the implementation areas and Malawi at large. The specific objectives of the project are:

- To increase profitability for smallholder farming through drip irrigation;
- To increase production and productivity of horticultural produce.

Banking on farmers' crop management skills, the project seeks to help farmers to graduate from subsistence production to commercial production in which they produce for the market. The project

**“...leading to poverty reduction in the implementation areas and Malawi at large”**

has been implemented for 2 years now, and in the course of implementation, farmers have adopted the technologies it promotes, some at the very onset and some it took them a year or more to grasp the concept. Behavior change is progressive and varies within individuals, and when the results of a new idea are evident, acceptance of the norms and demand for graduation is inevitable. This entails that scalability is very high when there are tangible results after investing and that farmers can move beyond the adoption of the initial project idea to scale and adapt to other fields.

The onus is to make the idea show that it is worth investing in and taking it beyond adoption which this reflection brief seeks to show by looking into other dynamics that make it necessary.

## AWARENESS



Deliberate efforts must be made to facilitate going beyond adoption, one of which includes making the farmer understand the full benefits of the program. Farmers, in most cases, adopt technology without considering all the benefits but only a few. For instance, a

farmer will adopt a technology solely based on its profitability and when the technology has not been profitable, it can be dropped in the long run. This has been evidenced through the MI technology where initially farmers were not clear on the tangible profits that could be realized from the produce under the technology. It was up until when the first adopters testified on the huge profits that were attained under the

**“The awareness of all the benefits of the technology is key to the farmers in going beyond the adoption of a project concept”**

MI technology that made a good number of fellow farmers to participate. Thus, to go beyond adoption the farmer must be aware of the full package of the benefits so that even when the key benefits that triggered initial adoption fail, he or she can still use the technology. The awareness of all the benefits of the technology is key to the farmers in going beyond the adoption of a project concept. Under the MI technology, farmers who were sensitized on the four main pillars of the projects are still using the technology despite challenges met along the horticultural value chains.

## TECHNOLOGY CONCEPT CHANGES



Another important consideration should be made on easiness to improve the technology to go beyond adoption. All technologies have inherent room for improvement. However, it is important to consider that these improvements are made gradually to

avoid confusing the farmer, who, as at this time might be just in the adoption phase. Much as improvement of the technology is good for adoption and going beyond, the pace at which these improvements are made must be well considered, when farmers are confused because of abrupt changes, they may just opt to drop the whole technology. During the pilot phase of MI technology a lot of improvements were made. Initially, individual farmers were sensitized on the need to make an investment decision of purchasing the MI package at a cost of about MK 7,500. The arrangement slowed the adoption rate because most of the farmers

**“ Much as improvement of the technology is good for adoption and going beyond, the pace at which these improvements are made must be well considered...”**

in Dowa district fall below poverty line so much so that they could not manage to pay for the technology. Additionally, visiting an individual farmer in their respective fields was a toll order for the agronomists because it was time consuming and ineffective as number where kept on increasing. The incubation model was later introduced where farmers were grouped. The abrupt change of the model within a year pilot phase affected the technology adoption. The initial individual adopters felt unsupported hence affecting the implementation since more support shifted towards incubators.

## INPUT SUPPLY



Innovation creates a creative destruction, in which some old technologies and mechanisms are made obsolete. The market is demanded to adjust to the demands of the new technologies, even as new measurements of inputs. For example, if the technology

demands the use of small amount of fertilizer, in which farmers are not supposed to buy the whole 50 kg bag, the input market must adjust its measurements to fit the demands of the new technology. The input supply system is essential in facilitating going beyond adoption, and more so is its ability to adjust to the new demands that have come with the technology. A static input supply market will sabotage the development and diffusion of the technology while a flexible one will promote adoption and beyond. The introduction of MI technology for example, incited input supplies to repack their products into small units to meet the technology demand. The MI technology uses small amount of fertilizer and chemicals such that farmers are not bothered in buying such inputs in large quantities.

**“The input supply system is essential in facilitating going beyond adoption”**



# PARTICIPATION



There are different kinds of participants of every project but can be mainly classified into types: decision-makers and direct users of the technology. Decision-makers, in most Malawi communities, include community leaders at a community level and men who are

household heads, at a household level; and direct users can be anyone who maybe even a decision-maker or not. In a quest to promote a technology to graduate beyond adoption both types of participants must be considered.

For instance, a technology can demand that the man be the one designing it, and the woman might be the end-user. In this case, if the man doesn't see the value of the technology, he will not engage himself and thus stopping the woman from using it. In most Malawian communities, the man as household head provides resources for the household such as money, and if a technology demands the purchase of items, the man must see the value in the technology to release the money.

**“Women are also involved in making decisions as in some cases, they go to the market and participate in decision making”**

The MI technology demonstrated that it is gender responsive as both decision makers and end users were incorporated. For instance, women who cannot farm a bigger land under irrigation are now able to do so because of the simplicity of the technology. On the other hand, men are also participating in the technology from production to market due to its profitability. Women are also involved in making decisions as in some cases, they go to the market and participate in decision making.





Community leaders who are custodians of social norms and customs must be considered as well. If a technology is breaking some of the highly considered customs, it is very unlikely for it to succeed. Village heads were also among the first participants of the technology. This was attributed due to the fact the benefits attached to the technology could be seen right from the onset.

## PROFITABILITY AND MARKET ACCESS



One of the main issues that farmers consider when adopting a technology is profitability which is in most cases realized in its ability to increase productivity and production. Profitability is not only a factor in initial adoption but also continued usage of a technology. And

profitability is realized when there are markets for the product that uses the technology. Market access is a prerequisite to profitability. For instance, if there are no markets for horticultural products which are mostly perishable, rarely will farmers continue using the technology. Farmers will not continue using a technology that is not giving them expected returns. The continuous usage, thus, depends on the access to the markets, and the returns which will come from the product. Under MI technology, farmers have been linked to markets such as hotels, super markets and individuals off takers who are now able to buy products from them.

**“The continuous usage, thus, depends on the access to the markets, and the returns which will come from the product”**



This has helped the farmers to realize profits from their horticulture enterprise hence continued usage of the technology.

## FARMER GROUPS



The use of farmer groups approach in the production and marketing of products has been deemed to be of significance as it holds high economic returns than on an individual scale. As a result, building on capital is simpler so does knowledge sharing and management. A

technology built on the foundation as a group with good leadership and committed members with a vision has the potential to expand its venture as it is built on diverse strengths and weaknesses that complement each other.

It is easier for an individual to cut short a dream than for a group due to the ability to complement each other. On the other hand, there is a need to promote these farmers to be in cooperatives in order to help them further improve their income and develop

**“It is easier for an individual to cut short a dream than for a group due to the ability to complement each other”**

their managerial skills by venturing into business-oriented approach to farming. Therefore, strengthening farmer groups is key in the continued use of a technology for farmers groups are reservoirs for technology. For instance, when the MI technology was employing individual farmers during the initial phase of the project, consistence production was not possible

so much so that even linking such farmers to potential markets like chain stores was very challenging. This time around, farmers are able to produce in groups and consistent supply of their products to the markets such as chain stores is promising.

## DIVERSIFICATION BEYOND THE INITIAL TECHNOLOGY



Beyond adoption is also possible when the technology itself has the flexibility and wide range of applicability such that it can be scaled up and be used in other fields without forgoing a lot of its benefits. Beneficiaries of the project may de-adopt the technology but in a positive way. As

such, it is imperative that these beneficiaries should not be cast out rather encouraged to use their “new” way of utilizing technology. As a result, it should be emphasized that technology should be taken as a means of gains hence must be encouraged through diversification and expansion. Under MI technology, some farmers, who have been using the drip lines, have also expanded their level of production through increase in number of kits

**“Beneficiaries of the project may de-adopt the technology but in a positive way”** as well as area using the conventional type of cultivation. They are using the same knowledge and practices gained from the MI but in a positive way.

A technology that can be used in diverse fields can easily go beyond adoption. For instance, a technology that was initially used for horticultural crops in small buckets can be scaled up to bigger acreage for other types of crops, e.g. Irish potatoes.

# STORAGE AND VALUE ADDITION



This is just the way to go in the case of MI technology, horticultural production seems unpredictable sometimes as such there comes oversupply with low prices. Adding value creates a demand for the product as it also necessitates that the produce market

should be created. As such, a readily available market boosts production. It is possible to create a market for the value-added product to reduce wastage, improve nutritional patterns as feeding habits have also changed. For example, the basic drying of vegetables with good quality standards can enhance the introduction of a new market and can be sustainable as most people do not package these products. Currently, MI farmers have the knowledge and skills on how the product can be graded, sorted, and packed to fetch higher prices on the market. Storage is equally important, in Malawi the irony is that buyers are

**“MI farmers have the knowledge and skills on how the product can be graded, sorted, and packed to fetch higher prices on the market”**

the ones with storage facilities instead of sellers – this poses a challenge in the continued use of technologies that are used in perishable products like tomatoes. With an understanding that refrigerated cool stores are the best method of preserving horticultural products but yet expensive to buy

and difficult to run especially in rural areas where there is no electricity, AICC through the MI technology is promoting the use of the Zero Cooling Chamber as one of the better alternatives for storage of horticultural produce.





# CLIMATE SMART



There is a rise in the use of climate-smart agriculture, and institutions are promoting it for it is not labor-intensive and has proven to be productive. In MI technology for instance, there is minimal use of resources like water, fertilizer, chemicals e.t.c.; it also ensures

that there is production in the dry season because it uses drip pipes which use little amount of water that is directed right on the plant base; and this in line with climate-smart agriculture. MI technology can easily graduate

**“MI technology can easily graduate beyond adoption for they are in line with the already promoted technologies.”**

beyond adoption for they are in line with the already promoted technologies. This is the case as it allows all year production of crops in spite of very dry season catered with enormous pests and diseases

because of less usage of water for irrigation, use of improved varieties and means of controlling pests and diseases. It is therefore necessary that every technology should put into consideration the environmental factors. Farmers will continue using a technology that not in conflict with other technologies, especially, those that are being promoted in the agricultural sector.



# POLICY



A technology that uses imported inputs can barely stand the test of time. Smallholder production is marred with uncertainties, making the farmer make impromptu decisions, say, in the purchase of additional inputs to curtail a risk he has faced. In such a scenario, if the inputs

are not available in the country, and are to be imported will put the farmer at much risk and even leading him to a loss which will, in turn, discourage him further using the technology. It is thus, in the mandate of the government through policies to make sure that they open up for the manufacturing of the inputs that are used in a particular technology.

**“Domestic manufacturing of inputs will not only facilitate availability but also the affordability of the inputs, in turn, of the technology itself”**

Domestic manufacturing of inputs will not only facilitate availability but also the affordability of the inputs, in turn, of the technology itself. Using MI technology

as an example, joint purchase of the durable drip lines with the Tanzanian partners from India eased transport costs. The government policy on duty waiver for the purchase of irrigation equipments also helped farmers to have access to such equipments.

However, local farmers may not have a direct link to procure the equipments hence the need for government to revise some policies which will enable farmers to acquire the equipments cheaper or locally manufactured.



# CONCLUSION



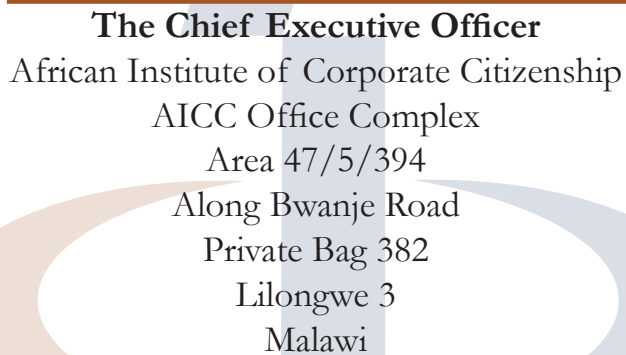
Technology transfer and adoption alone is not conclusive, as such there is a need for assessment of factors that will enable its sustainability which mostly dwell on what happens after farmers have successfully adopted the technology. Some key lights have been demonstrated

using MI technology as a case study. Farmers awareness to all benefits accrued to a specific technology is of great importance for the adopters to continuously use the technology. The technology that is market led, gender inclusive, alignment with other technologies, storage and value addition, policy key are some of the factors to look into outside technology adoption. This translates that the need for reflecting on lessons learnt through technology adoption should be pivotal as it indicates that planning and implementation sometimes go parallel. As it has been discussed, adoption of technology should be taken as a means for earning a living or livelihood. The MI technology has proved to be the technology that has produced

**“Adoption of technology should be taken as a means for earning a living or livelihood”**

more tangible results and has also attracted the attention of people from all walks of life because of the four pillars that surrounds it thus profitability, affordability, simplicity and scalability. However, there are still lessons being drawn from its implementation.





---

**The Chief Executive Officer**  
African Institute of Corporate Citizenship  
AICC Office Complex  
Area 47/5/394  
Along Bwanje Road  
Private Bag 382  
Lilongwe 3  
Malawi

---