



Food and Agriculture
Organization of the
United Nations

AgWA

Partnership for agricultural water for Africa



National Investment Profile



**Water for
Agriculture and
Energy**

MALAWI

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EXECUTIVE SUMMARY

The agriculture sector in Malawi is of great importance both in economic and social terms. It accounts for 38% of the Gross Domestic Product (GDP), and provides a livelihood for 85% of the population (MoAIWD, 2009). The agriculture sector is thus expected to contribute to sustainable economic growth, central to Malawi's aim to reduce poverty. It is recognized that, without achieving this agricultural growth, it will be impossible to deliver on the Government's vision of creating wealth and employment for all the people of Malawi.

The agriculture sector is divided into two main sub-sectors, i.e. the smallholder and the estate sub-sectors. The smallholder sub-sector concentrates mostly on producing food for their own consumption, with only surpluses sold for cash. The average land holding size per household for smallholders in Malawi is 1.2 hectares (World Bank, 1994). Over 90% of the total agricultural value-added comes from about 1.8 million smallholders who on average own only 1 hectare of land. Malawi is also highly dependent on rain-fed agriculture which partly explains the low productivity levels in the country, with considerable gaps between current and potential yields.

According to the Ministry of Agriculture, Irrigation and Water Development (MoAIWD), the potential irrigable land area lies between 480,000 and 620,000 hectares. However, the land that has been developed for irrigation is about 97,000 hectares accounting for between 16% and 20% of the irrigation potential. Agricultural intensification through irrigation has the potential to quadruple yields and provide at least two harvests per hectare to the small farmer in a given year (MoAIWD, 2009).

Malawi is endowed with abundant natural resources for energy. However, the country suffers from intermittent energy supplies. The need to meet the current and projected demand calls for adequate investment in the energy sector. Currently, due to undiversified sources of power, Malawi's energy supply faces significant hydrological risks. The fact that 98% of the Electricity Supply Commission of Malawi's (ESCOM) generating capacity power production is dependent on the flow of the Shire River and the level in Lake Malawi renders Malawi very vulnerable to fluctuations in rainfall patterns (World Bank, 2011).

The government's medium-term strategy to attain the Vision 2020 is to create wealth through sustainable economic growth and infrastructure development as a means of achieving poverty reduction. The government reviewed the various national development strategies and agricultural related legislation and policies and produced the Agricultural Policy Framework (APF). The APF and the Malawi Growth and Development Strategy (MGDS) are consistent with the Comprehensive Africa Agriculture Development Programme (CAADP) in terms of objectives of agricultural development. The Agricultural Sector Wide Approach (ASWAp) process is a path

that Malawi has chosen to align its agricultural development agenda with the CAADP process. All these plans aim to increase the area under irrigation, although with different targets and time frames.

To translate these goals into reality, the Malawi government - with funding from different donors and cooperating partners - is currently implementing and planning a number of irrigation and hydropower projects for a total of US\$843.7 million, of which US\$299.4 million is allocated to the rehabilitation of hydropower plants, US\$275.6 million to the development of small scale irrigation, US\$93.3 million to the rehabilitation/modernization of irrigation schemes, US\$63.5 million to the development of small/medium scale hydropower projects and US\$5.7 million to the development of large scale irrigation schemes. The others category is worth US\$106.2 million and is allocated for activities such as training, awareness raising and strengthening of sector institutions. No funding is allocated to the development of large scale hydropower projects.

The figures show that investment in rehabilitation of hydropower plants is predominant in the envelope. The financial analysis of projects also illustrate that investments are mostly executed by donor funds and majority of the investment in irrigation and hydropower will take place in the short-term. This highlights an insufficient long-term strategic investment plan.

The overarching development issue facing Malawi's agricultural sector is the low productivity and profitability of smallholder agriculture, which has been characterized by low and stagnant yields, particularly in maize production systems (MoAIWD 2009).

LIST OF ABBREVIATIONS AND ACRONYMS

APF	Agriculture Policy Framework
ASWAp	Agricultural Sector Wide Approach
BADEA	Arab Bank for Economic Development in Africa
CAADP	Comprehensive African Agriculture Development Programme
EMA	Environmental Management Act
ESCOM	Electricity Supply Commission of Malawi
FAO	Food and Agriculture Organisation
GAFSP	Global Agriculture and Food Security Program
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GoM	Government of Malawi
HIV	Human Immunodeficiency Virus
IDA	International Development Association
IFFPRI	International Food Policy Research Institute
IRLAAD	Irrigation, Rural Livelihoods and Agricultural Development Project
LCDF	Least Development Countries Fund
MDG	Millennium Development Goals
MERA	Malawi Electricity Regulatory Authority
MGDS	Malawi Growth and Development Strategy
MoAIWD	Ministry of Agriculture, Irrigation and Water Development
MPRS	Malawi Poverty Reduction Strategy
MW	Mega Watts
NAPA	National Adaptation Plan of Action
NEAP	National Environmental Action Plans
NEP	National Environmental Policy
NIPDS	National Irrigation Policy and Development Strategy
NSO	National Statistical Office
PSRS	Power Sector Reform Strategy
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United Agency for International Development
WRA	Water Resource Area
WRM	Water Resource Management

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1. CONTEXT

This chapter will give an introduction into the contextual information of agriculture and food security (chapter 1.1), water resources and hydropower (chapter 1.2) and climate change in Malawi (chapter 1.3).

1.1 AGRICULTURE AND FOOD SECURITY

Agriculture

Malawi is a small land locked country with a population of over 16 million inhabitants and has one of the highest population densities in Sub-Saharan Africa (NSO, 2014). The Government of Malawi recognizes the need to enhance the productivity of smallholder farmers as a means for achieving the agricultural growth and poverty alleviation goals of the MGDs. It is expected that agricultural development will drive medium-term growth by expanding and diversifying production. The agriculture sector is thus expected to contribute to sustainable economic growth central to Malawi's ability to reduce poverty, achieve the MDGs and gain food self-sufficiency. It is recognized that, without achieving this growth, it will be impossible to attain the Government's vision of creating wealth and employment for all the people of Malawi. The MGDs have targeted agriculture as a driver of socio-economic development and recognize that food security is a pre-requisite for economic growth and poverty alleviation. Indeed, the sector contributes 38% of the GDP, and provides a livelihood for 85% of the population (MoAIWD, 2012).

The agriculture sector in Malawi has been customarily divided into two main sub-sectors, namely: the smallholder and the estate sub-sector. Smallholder farmers comprise an estimated 2 million farm families and cultivate about 4.5 million hectares of land. Smallholder production is highly subsistent. It is characterized by low levels of input and low output levels. Approximately 25 percent of smallholder farmers cultivate less than 0.5 ha on average; 55 percent cultivate less than 1.0 ha; 31 percent cultivate between 1.0 and 2.0 ha; and 14 percent cultivate more than 2.0 ha. Despite being resource poor, smallholder farmers produce about 80 percent of Malawi's food and 20 percent of its agricultural exports.

The estate subsector is the nation's principal foreign exchange earner. While it contributes only about 20 percent of the total national agricultural production, it provides over 80 percent of agricultural exports mainly from tobacco, sugar, tea and, to a lesser extent, tung oil, coffee and macadamia. The estate subsector operates on leasehold or freehold land. However, with

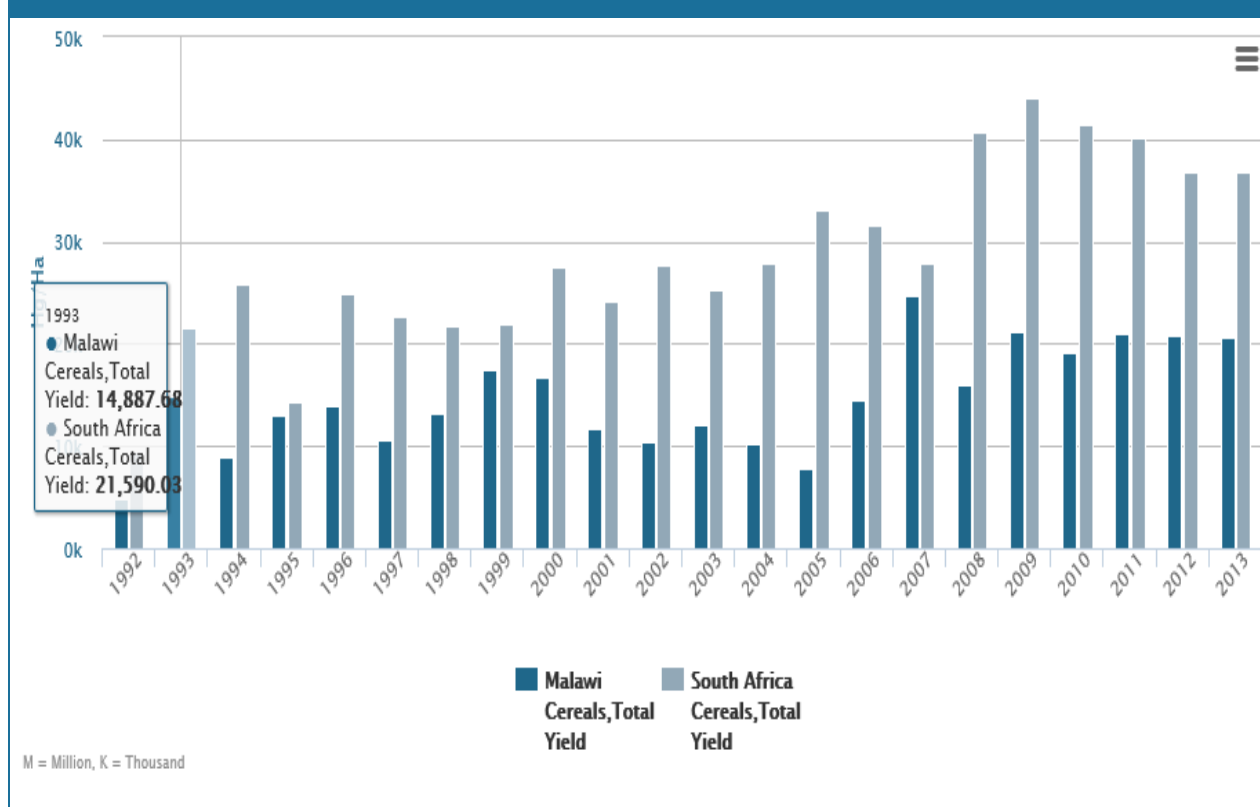
market liberalization in the 1990s, the distinction between the two sub-sectors has been diminishing (World Bank, 1994).

Smallholder production is on customary land on which the rights to cultivate and transfer land are conferred by chiefs. With a growing population, customary land has become more fragmented and land holding sizes have declined drastically. The average land holding size per household in Malawi is 1.2 hectares while the average land per capita is 0.33 hectares (GoM, 2010). In addition, the per capita land holding size is highly skewed with the poor only holding 0.23 hectares per capita compared to the non-poor that hold 0.43 hectares per capita. Land pressures (and correspondingly extreme poverty) are severe throughout the country especially in the Southern region of Malawi where farm sizes are as low as 0.2 hectares per household (MoAIWD 2009).

While maize has been the major food crop in terms of the policy agenda and hectareage planted, tobacco has been, and continues to be, the dominant cash crop in the economy accounting for approximately 63 percent of the country's total export earnings. Tea and sugar are other important cash crops accounting for 8 percent and 7 percent of export earnings, respectively.

The overarching development issue facing Malawi agriculture is the low productivity and profitability of smallholder agriculture, which has been characterized by low and stagnant yields, particularly in maize production systems (MoAIWD 2009). The low and stagnant yields have been influenced by a dependence on rain-fed farming and low level of irrigation development, poor varietal selection, declining soil fertility, and overall poor agricultural practices. The productivity of most agricultural crops similarly has not substantially improved beyond the levels witnessed in the 1970s. The gap between potential and actual yields given the available technologies ranges from 38% to 53% for cereals and 40% to 75% for legumes (MoAIWD, 2009). Figure 1 compares average cereal yields for the period 1992-2013 between Malawi and South Africa. The graph below shows that since 2001 Malawi cereal yields are less than half of those of South Africa (except in 2007).

Figure 1. Yield gap in Cereals between Malawi and South Africa (1992-2013)



Source: FAOSTAT

The rain-fed nature of smallholder farming makes agricultural production prone to adverse weather conditions such as droughts and floods. This is bound to worsen with the current onslaught of climate change. It is therefore not surprising that the Government of Malawi (GoM) together with its development partners is prioritizing irrigation development.

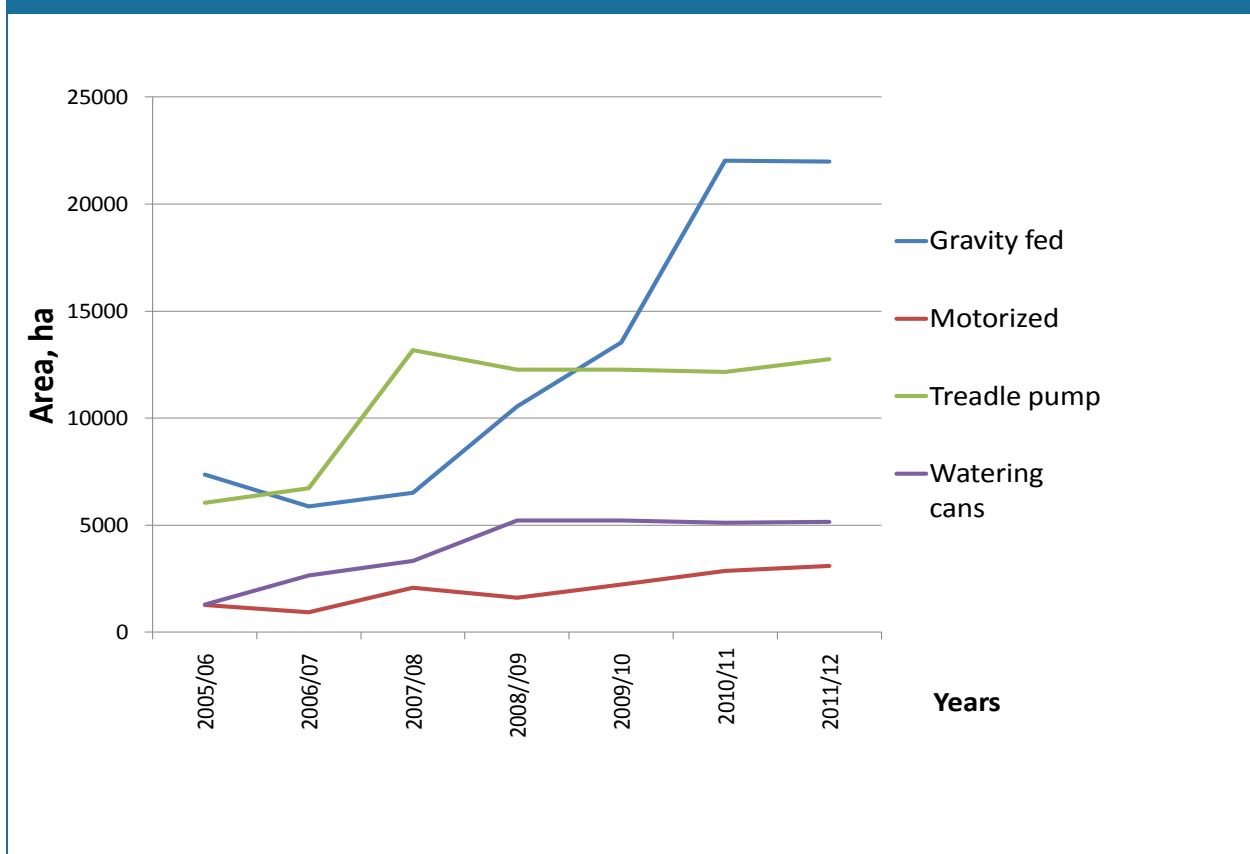
Irrigation and Water Control

Agricultural intensification through irrigation has the potential to quadruple yields and provide at least two harvests per hectare to the small farmer in a given year. According to the World Bank (2010), data shows that yields per hectare in Asia for most crops increased by 100% to 400% as a result of irrigation. Analyses of small irrigation schemes in neighboring Kenya and Zimbabwe where average land holdings range between 0.5 and 1.0 hectare, have shown that irrigation can increase total household income with 25% to 80%, contributing substantially to poverty reduction (MoAIWD, 2009).

Malawi's unreliable rainfall, combined with extended dry spells that adversely affect crop productivity, calls for full and supplementary irrigation. Investment in the harvesting and management of water during periods when water is readily available for irrigation use during periods of scarcity is critical to meeting the country's growing food requirements. Enhanced agricultural productivity through irrigation has the potential to double yields and provide two harvests per year to the small farmer in a given year. It has been noted that farmers using irrigation schemes are more food self-sufficient and economically better off than those totally dependent on rain-fed farming (World Bank, 2012).

There is some contradiction regarding figures on potential and current area under irrigation in the country. The evident lack of consensus on both the amount of land that is currently irrigated, and the irrigable potential of Malawi, is the result of a fundamental data limitation. According to the Food and Agriculture Organization's (FAO) AQUASTAT, the total potential for irrigation in Malawi in the 1990s was estimated at 162,000 hectares including (wetlands) or dambos (FAO AQUASTAT, 2015). Other estimates for potential irrigable land range from 200,000 hectares for formal irrigation up to 480,000 hectares for informal irrigation; the potential of small-scale irrigation is estimated at 100,000 hectares (FAO AQUASTAT, 2015). However, the Ministry of Agriculture, Irrigation and Water Development (MoAIWD), estimates that the potential irrigable land area lies between 480,000 and 620,000 hectares (MoAIWD 2012). MoAIWD estimates that the land that has actually been developed for irrigation is about 97,000 hectares accounting for between 16% and 20% of the irrigation potential. The plains along the shores of Lake Malawi in the Karonga, Nkhosha-Salima, Lake Chilwa plain, and Lower Shire Valley have the highest potential for irrigation. Of these, the greatest potential for irrigation lies in the Lower Shire Valley because of its fertile soils and sufficient water resources (FAO AQUASTAT, 2015).

In the mid-1990s limited support was provided by the donor community to irrigation because the GoM's focus was on supporting rain-fed crop production. In recent years, the GoM committed to expanding sustainable irrigation development to promote rural economic growth and food security. Most of the irrigation presently is from surface water, either from diversion weirs or by pumping from rivers, or increasingly from shallow wells in dambos where temporary or perched water tables are close to the surface. Figure 2 shows the trend in irrigation by technology. As can be seen from the figure, gravity fed irrigation has grown considerably over the years followed by the use of treadle pumps.

Figure 2. Trends in Irrigation Development by Technology

Source: Department of Water and Irrigation Annual Report, 2013

Food Security

Achieving food security has been one of Malawi's major objective agricultural strategies since its independence in 1964. In Malawi, national food security is mainly defined in terms of access to maize, the main staple food. Thus even if the total food production is above the minimum food requirement, but maize supply is below the minimum food requirement, the nation is deemed to be food insecure. The country therefore faces a food crisis if the production and supply of maize falls below the minimum required levels (220 kilograms of maize per capita including losses between harvest and consumption). Despite the fact that other major food crops such as rice and cassava are alternative crops, in some parts of the country, maize has remained the main staple food for Malawi (MoAIWD, 2009).

Malawi Vulnerability Assessment Surveys have shown that average months for food security for rural households from own production is between 6-7 months (MoAIWD, 2009). Maize production has also fluctuated widely in the past decade, which is influenced by maize input availability and good rainfall patterns for production. As can be seen from Figure 3, maize

production increases when rainfall is sufficient for maize production and smallholder farmers have access to affordable fertilizers and it falls when there is either a drought or smallholder farmers do not have access to adequate fertilizers (MoAIWD, 2009). The chronic food insecurity and stalled development can be tied to the fact that the poor in Malawi simply cannot afford the resources to break out of poverty.

The renewed emphasis on agriculture in the past few years which led to the availability of affordable subsidized fertilizer has transformed Malawi from being a net importer to a net exporter of maize and allowed the majority of the households to attain food security (MoAIWD, 2009). This has also led to low prices for maize which is crucial in a country where the majority of the households are net consumers and where food accounts for 60% of the total household income (GoM, 2010). The key policy that has led to this new scenario is the re-introduction of the farm input subsidy.

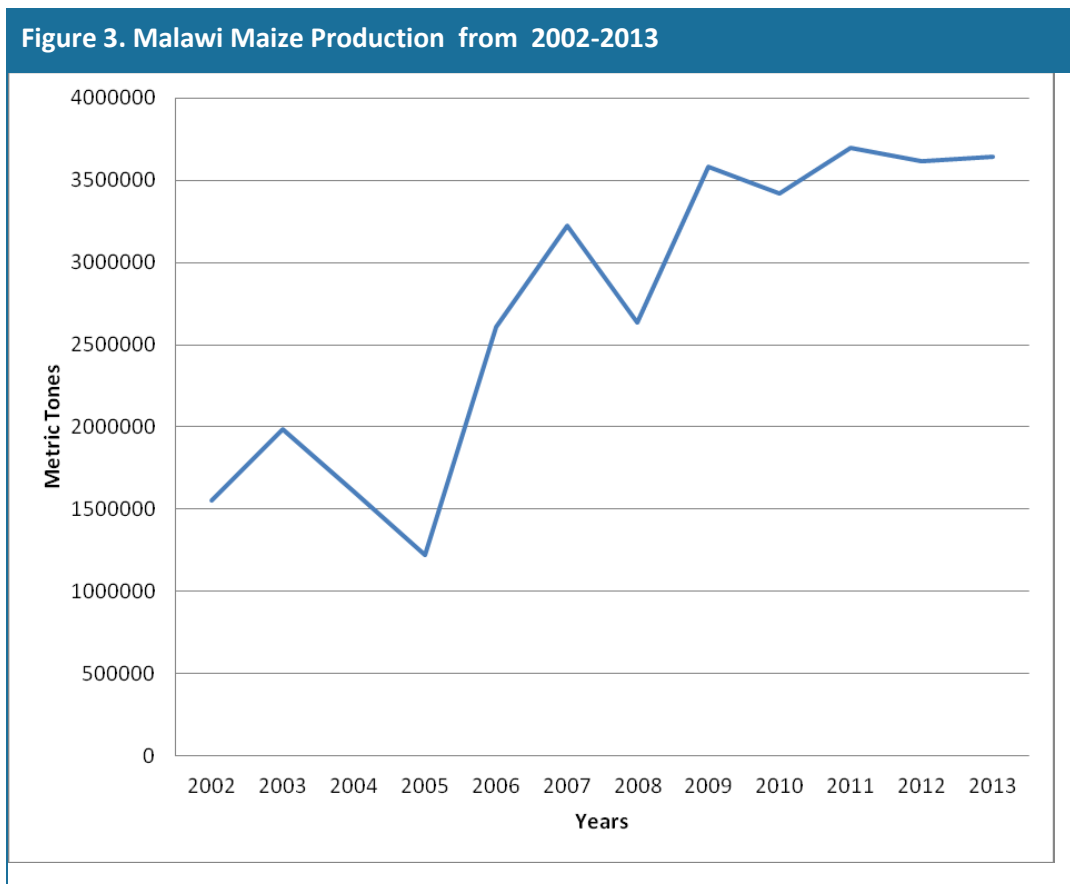
As a result of the Fertilizer Subsidy Programme (FISP), Malawi's expenditure in Agriculture has been well above the 10% of the total budget (MoAIWD, 2009). However, the International Food Policy Research Institute (IFPRI) maintains that the country will need 6.9% GDP growth and 7.6% agricultural growth (rather than the recommended CAADP 6%) if the country is to meet the 2015 poverty goal (Feed the Future 2010). IFPRI further argues that achieving these rates of growth will require national budget allocations between 20% and 24% for agriculture (doubling the recommended 10% for CAADP), and investments would need to be targeted specifically to agricultural research and development, irrigation and rural infrastructure (Feed the Future 2010). Malawi's government has only allocated US\$36 million (approx. 0.0004% of public expenditures) for agriculture which is a huge decline from the 19% agricultural spending of the total public budget in 2005.

Food Self-Sufficiency

Malawi was in aggregate terms self-sufficient in maize production in the 1960s and 1970s when there were fewer people and larger farms - although nutrition data shows that the distribution of maize was quite unequal (GoM, 2011). From the late 1990s onwards, two events, namely, the collapse of the credit system and the increase in fertilizer prices as a result of the removal of subsidies, drastically affected Malawi's food security. During the 1980s when Malawi started implementing economic reforms there was an increase in maize imports to satisfy domestic demand. This can also be attributed to poor weather conditions, low maize productivity, high population growth and the withdrawal of subsidies (MoAIWD, 2009). Recent government support towards the smallholder sector through the agriculture input subsidy, combined with good rains has led to a significant increase in aggregate maize production as shown in Figure 3.

Figure 3 also shows that maize production over the years has fluctuated widely resulting in insufficient consistency in the growth performance of the agricultural sector. This trend has largely been driven by government policy and weather conditions as already pointed out. However, this growth has not translated into any meaningful poverty reduction, primarily because the growth of the agricultural sector since the 1980s has fallen below the growth of the human population.

At the same time, Malawi has also witnessed a tremendous increase in the production of other food crops like cassava, potatoes and rice. This has been attributed to the escalation in the price of fertilizers and maize seed making these inputs unaffordable by the majority of smallholder farmers. Smallholder farmers have diversified away from maize to these other crops. This has also been influenced by the frequent droughts that Malawi has been experiencing, and deliberate efforts by both government and non-governmental organizations (World Bank, 1994).



Source: FAOSTAT, 2014

1.2 WATER RESOURCES AND HYDROPOWER

There is a growing national demand for water resources particularly during the dry season. This has resulted in calls for better Water Resources Management (WRM) and its development to ensure that water resources do not limit social and economic development and poverty reduction in the country. Over the years Malawi has been facing problems of water scarcity due to climate change, environmental degradation, and lack of storage and reservoirs.

The country is divided into 17 Water Resources Areas (WRAs), which are subdivided into 78 Water Resources Units (WRUs). There are two major drainage systems: The Lake Malawi system, which is part of the Zambezi River basin. The Shire River is the only outlet of the lake with an average flow of 400 m³/s of water (FAO, 2015).

The government placed a high priority on irrigation and WRM development in order to ensure food and water security at household level, for example, through water harvesting, improved water catchment and management. The department of WRM in MoAIWD has constructed over 25 small to medium multipurpose dams in the 24 districts across the country to make water resources readily available for multiple uses (MoAIWD, 2012).

By 2010 the demand for water in Malawi was already greater than the supply in many WRAs with the situation predicted to worsen in the future (MoAIWD, 2012). In addition, data for 17 WRAs shows a deficit of 110 MI/d in 2010 increasing to 170 MI/d by the year 2020 and worsening to 956 by the year 2035 (MoAIWD, 2012).

Surface Water

In an average year, in Malawi there is an estimated national surface water availability of approximately 42,500 MI/d (MoAIWD, 2012). FAO estimates that Malawi has 17.28 km³/yr of total actual renewable water resources, out of which 16.14km³/yr is internally produced while about 1.14km³/yr comes from Mozambique. The predominant source comes from the River Shire Catchment (WRM 1) downstream of Lake Malawi to such an extent that during an average dry season the catchments draining into Lake Malawi, which constitute 70% of the total land area, provide only 20% of the nationally available river flow. There are currently little surface water resources available during the dry season when there are extreme droughts, even though some WRAs retain some water (MoAIWD, 2012).

Malawi has significant water resources with annual run-off averages of 16.14 billion m³. Only 7% of this is utilized for irrigation. Rainfall occurs from October to April although with climate

change this has varied between November/December to April, with precipitation varying from 1,800 mm in the highland plateau and mountains to less than 800 mm in the rift valley areas (MoAIWD, 2012).

Hydropower

The country has a total installed hydropower capacity of 350 MW, although units are frequently taken out of service for repairs (World Bank, 2011). Malawi generates 98% of the grid-supplied electrical power through six run-of-river hydropower projects on the Shire River (World Bank, 2011).

ESCOM is a vertically integrated, Government-owned electric utility company that generates, transmits and distributes electric power to customers. ESCOM owns and operates all of the formal generation capacity in the country. Only about 8% of the population has access to electricity, mostly in urban areas. For the 80% of the people living in rural areas, access to electricity is less than 1% (World Bank, 2011).

Peak demand in Malawi is currently estimated at about 351 MW and demand is expected to grow at about 5% annually over the next decade (World Bank, 2011). Currently, electricity supply cannot meet demand and new capacity is urgently needed in the generation system. To meet both currently suppressed demand as well as project future demand, Malawi would need to have in place by 2015 an estimated additional 140 MW of available capacity (World Bank 2011).

Due to highly undiversified sources of power, Malawi faces significant hydrological risks. The fact that 98% of ESCOMs generating capacity of power production is dependent on the flow of the Shire River and level of Lake Malawi renders Malawi extremely vulnerable to fluctuations in rainfall patterns.

1.3 CLIMATE CHANGE

Climate supports the productive sectors of the Malawian economy, chiefly among them agriculture, forestry, national parks, wildlife, fisheries, tourism and energy. The grim projections of the long-term consequences of climate change threaten the economic growth of Malawi. The impacts of climate change are occurring in many different forms such as increased rainfall variability, sudden and severe floods, drought, prolonged dry spells, thunderstorms and hailstorms (GoM, 2011) The country is increasingly becoming vulnerable, a situation that is

being aggravated by the country's low adaptive capacity, overdependence on rain-fed systems and severe environmental and natural resource degradation.

The need to achieve sustainable development cannot be overemphasised. For a country like Malawi with a largely agro-based economy, the importance of its natural resources is evident; and so is the need of protecting the people's livelihoods from the impacts of climate change. It is crucial that the development agenda as espoused in the country's medium-term strategy, The Malawi Growth and Development Strategy II (MGDS II), takes into account issues of climate change and adaptation.

Climate Change is not only a national issue, but it is a global issue. To this end, the international community has been involved in putting in place various apparatuses, both technical and legal, to ensure that the global community responds to the challenge of climate change while at the same time addressing issues of development at national level. Legally, international conventions, such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol are in place to ensure compliance of nation states to the agreed to actions. While conventions ensure that the global community acts in unison, particularly those who have ratified them, the operationalisation of the plans of action agreed to in these conventions has to be done at national level. Legal and technical instruments at national level therefore provide the pathway through which countries can implement and put into action the internationally agreed actions. It is in this regard that Malawi enacted the Environmental Management Act (EMA), the National Environmental Policy (NEP), the National Environmental Action Plans (NEAP), and the National Adaptation Plans of Action (NAPA). In addition, a Climate Change Policy is being developed. All these instruments demonstrate an awareness of the important linkage between development activities and the environment, as well as the impacts that some anthropogenic activities related to development and livelihoods of the people, have on the climate.

Malawi signed the UNFCCC treaty on 10th June 1992 and ratified it on 21st April 1994. Following the adoption of the UNFCCC, the Kyoto Protocol – a legal instrument for enforcing the UNFCCC was adopted in 1997 in Kyoto, Japan and Malawi ratified the Kyoto Protocol on 26th October 2001. The Kyoto Protocol entered into force on 16th February 2005. Following ratification of the Kyoto Protocol, Malawi developed the NAPA as a strategy to provide short-term adaptation interventions and urged development partners to assist Malawi in combating the effects of climate change (GoM 2011).

2 NATIONAL STRATEGIES FOR WATER, AGRICULTURE AND ENERGY

Overall Development Strategies

Vision 2020 is a policy framework that sets out the long-term development perspective for Malawi. It emphasizes the long-term strategic thinking, shared vision and visionary leadership, participation by the population, strategic management and national learning. The Vision 2020 states "that by year 2020, Malawi as a God fearing nation 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 technologically driven middle income economy."

In May 2002, Malawi launched the Malawi Poverty Reduction Strategy (MPRS) which was the first attempt to translate the long-term vision into a medium-term focused action plan. The goal of the MPRS was to achieve sustainable poverty reduction through the empowerment of the poor. The MPRS was built around four pillars: (i) sustainable economic growth, (ii) human capital development, (iii) improving the quality of life of the most vulnerable and (iv) good governance. The cross cutting issues were HIV and AIDS, gender, science and technology.

The comprehensive review of the MPRS in 2005 led to the development of the MGDs which was launched in 2011. The main aim of the MGDs was to create wealth through sustainable economic growth and infrastructural development as a means of achieving poverty reduction. The MGDs were implemented between 2006 and 2011.

The MGDs II is the overarching medium-term strategy for Malawi designed to attain Malawi's long-term aspirations as spelt out in its vision 2020. The strategy covers the period 2011 to 2016. This is a follow up on the MGDS I that was implemented between 2006 and 2011. The objective of MGDS II is to continue to reduce poverty through sustainable economic growth and infrastructure development.

MGDs identified six broad thematic areas namely, Sustainable Economic Growth, Social Development, Social Support and Disaster Risk Management, Infrastructure Development, Improved Governance and Cross Cutting issues. Within the six thematic areas, the MGDs II isolated nine key priority areas namely: Agriculture and Food Security, Transport infrastructure and Nsanje World Inland Port, Energy, Industrial Development, Mining and Tourism, Education, Science and Technology, Public Health, Sanitation, Malaria and HIV/AIDS Management, Integrated Rural Development, Greenbelt Irrigation and Water Development, Child

Development, Youth Development and Empowerment, Natural Resources and Environmental Management (GoM 2010).

Agriculture and Irrigation

Malawi's post-independence agricultural strategy focused on food self-sufficiency and a rapid economic growth through enhancing smallholder productivity (World Bank, 2006). As a result, food self-sufficiency guided sectorial strategy programmes and action plans. The policies focused on maize production even in areas deemed unsuitable and where maize is not a staple food. Malawi's agricultural policy has generally gone through a number of reforms following the country's adoption of Structural Adjustment Programmes (SAPs) in 1981. The policies have evolved from total government control such as the allocation of production quotas and crop restrictions and the provision of input subsidies, into one of total government deregulation, removal of input subsidies - that have since been re-introduced - and the liberalization of agricultural markets.

Agricultural Policy Framework and Strategy

In an attempt to harmonize policies, the government reviewed the various national development strategies and agricultural related legislation and policies and produced the Agricultural Policy Framework (APF). The APF summarizes the objectives of agricultural development, strategies and policies that will be pursued to achieve both stated and commonly perceived agricultural objectives (MoAIWD, 2006). The purpose of the APF was to increase agricultural productivity so as to ensure food security and sustainable agricultural growth and development.

The Malawi Agricultural Policy framework and the MGDs are consistent with the CAAPD in terms of objectives of agricultural development and the key areas of focus in order to achieve sustainable development (MoAIWD, 2009). The Agricultural Sector Wide Approach process (ASWAp) is a path that Malawi has chosen to align its agricultural development agenda with the CAADP process. The ASWAp has five broad focus areas called priority pillars namely: (i) Food security and risk reduction, (ii) Agribusiness and Market Development, (iii) Sustainable Land and Water Management, (iv) Research, Technology and Dissemination and (v) Institutional strengthening and capacity building (MoAIWD, 2009).

The ASWAp is an investment framework that will guide government and development partners in the implementation of result-oriented priority programmes in the agricultural sector. The ASWAp is also a programme approach to development that will broaden ownership by

government over decision making on policy, strategy and spending, increase coherence between sectoral policies, reduce transaction costs through the use of government procedures and strengthen national institutions (MoAIWD, 2009).

Malawi needs substantial increases in its agricultural growth rate if it is to significantly reduce poverty and lay the foundation for any kind of structural transformation that will benefit a large portion of the population. The CAADP, which is a concept of the New Partnership for African Development (NEPAD), has set out the agricultural GDP growth rate target of 6% per annum for African countries, which were tasked to find ways to achieve this target. The ASWAp is therefore using a minimum target of 6% growth in the agricultural sector as recommended by the CAADP.

In general, the ASWAp encourages broad based growth in order to achieve the 6% annual agricultural GDP growth as prescribed by MGDS and CAADP with the assumption that the sector will be supported with an allocation of at least 10% of the national budgetary resources as per the Maputo declaration.

The GoM adopted a National Irrigation Policy and Development Strategy (NIPDS) in June 2000. The NIPDS, supported by an Irrigation Act passed in 2001, states that GoM will assume the role of facilitator of sustainable irrigation development in areas having potential, using a participatory approach, and will embark on developments only if the smallholder farmers in the area request such development and meet the criteria for sustainable development. The NIPDS aims to: (i) identify areas with irrigation potential; (ii) encourage private sector development of irrigated agriculture (estates and commercial farms); (iii) assist smallholders to develop and manage their own self-help irrigation schemes; (iv) transfer management of existing government schemes to their beneficiaries; (v) assist informal sector irrigation; (vi) enhance national capacities for irrigation development; (vii) conduct research in irrigation technology; and (viii) promote the use of both simple and advanced irrigation (MoAIWD, 2009).

Water Resources

Despite its significant water resources, Malawi often experiences droughts with periods of unreliable and poorly distributed rainfall. This has severely affected crop production which often times results in families running out of food by November each year. The vulnerable areas tend to be those with average rainfall amounts of less than 1000 mm (World Bank, 2010). In these areas, many of which are located in the South of the country, the variability of the rainfall

is higher with actual useful amounts available to the crops being masked by the average figures (World Bank, 2010).

The Ministry of Agriculture and Water Development formulated the National Water Policy (2004) to strengthen and harmonize issues of water resources management and utilization to guide the country in the sustainable use of water. Among its strategies, the policy ensures that the relevant institutions are provided with the relevant information on floods and droughts; and formulation of mitigation measures to reduce the impact of climate change and variability as a means for disaster preparedness and management; but also promoting coordination with other institutions on disaster management. The Water Works Act (1995) and the Water Resources Act (1999) introduced the commercialization and decentralization of urban and peri-urban water supply to parastatal bodies established under its provisions. The act made provisions for the control, conservation, apportionment and use of water resources of Malawi (World Bank, 2011)

Energy and Hydropower

The Government of Malawi has developed a number of strategies in the energy sector, including power sector reform, rural electrification, biomass energy and renewable energy. The Power Sector Reform Strategy (PSRS) approved by the Government of Malawi in 2003, provided for the unbundling of ESCOM and private sector participation via long-term concessions in transmission and distribution and entry of Independent Power Producers (IPPs) for new generation capacity. Consistent with these strategies, a set of legislation was approved by the Parliament in 2004, including the Energy Regulation Act, an Electricity Act, a Liquid Fuels and Gas Act, and a Rural Electrification Act.

As part of the reform process, the Government announced that it intends to revise the electricity market structure and the role of ESCOM in the market (particularly the question of multiple licenses held by ESCOM) by revising the Electricity Laws. To this end, the Government will put in place two enabling policy instruments: (i) a Feed-in-Tariff policy, to cover small hydro, biomass and wind resources and (ii) a Standard Power Purchase Agreement framework, to provide clear guidelines on the scope, duration and operational conditions of an IPP contract.

As part of the operationalization of the 2004 energy sector legislation, the Malawi Energy Regulatory Authority (MERA) was formed and the predecessor energy sector regulatory bodies, the National Electricity Council and the Petroleum Control Commission, were dissolved. MERA's role includes inter alia (i) reviewing tariff applications from ESCOM and recommending tariff

changes to GoM; (ii) granting licenses for generation and distribution operators; and (iii) arbitrating commercial disputes that arise under the 2004 energy legislation.

Malawi is heavily reliant on biomass for its cooking energy requirements, especially firewood and charcoal, which account for 95% of national energy requirements for cooking (World Bank, 2011). The growing demand for charcoal and wood fuel has been a primary factor in the widespread exhaustion of woodlots across Malawi and is thus an increasingly critical development issue in Malawi (World Bank, 2011). The impacts are multi-sectoral: deforestation is resulting in soil fertility degradation, erosion and river siltation, which in turn undermine subsistence livelihoods, increase flood risks and damage hydro-power infrastructure (World Bank, 2011).

3 INVESTMENT ENVELOPE

The **investment envelope** is a matrix that presents current and planned investment in the development of water resources for agriculture and hydropower production in a given country.

The investment envelope is produced through the application of AgWA's **Financial Diagnostic Tool**. This tool processes project-based information to derive the investment estimates at country level. The fundamental project information to plug in the tool is: project description, project characteristics, funding partners, time-scale, total cost and type of project. The Financial Diagnostic Tool also incorporates a number of variables such as the project cost distribution over time and the relevance of the water component as a percentage of the total cost in order to develop a detailed analysis of investment. A currency conversion application (annual average and projection of growth of foreign exchange rates using exponential regression) is built in this model to present the output in a single currency.

Project types included in the tool are the following:

1. Small scale irrigation development¹
2. Rehabilitation/modernization of irrigation
3. Large scale irrigation development
4. Small/medium scale hydropower development
5. Rehabilitation of hydropower plants

¹ Small scale: < 500 hectares, large scale: > 500 hectares

6. Large scale hydropower development
7. Others (drinking water supply, etc.)

This tool also supports conducting **complementary financial analyses** such as investment by type of project, investment by source of funding, investment by timespan of the project, hectares to develop or rehabilitate by crop, etc. These complementary financial analyses are presented in Figures 4 to 14.

The investment envelope (Table 2) presents investment estimates according to the project characteristics mentioned above and distributed over three time scales: short-term (less than 4 years), medium-term (between 4 and 8 years), and long-term (more than 8 years)².

Description of project portfolio

In the case of Malawi, the investment envelope has been calculated based on 14 on-going projects and 4 pipeline projects (Table 1). The on-going projects range from a cost of about US\$2 million to a maximum of US\$351 million. The investment cost of pipeline projects range between a minimum of US\$2.23 million and a maximum of US\$134 million. The average investment costs of on-going projects and pipeline projects are respectively US\$58 million and US\$65 million.

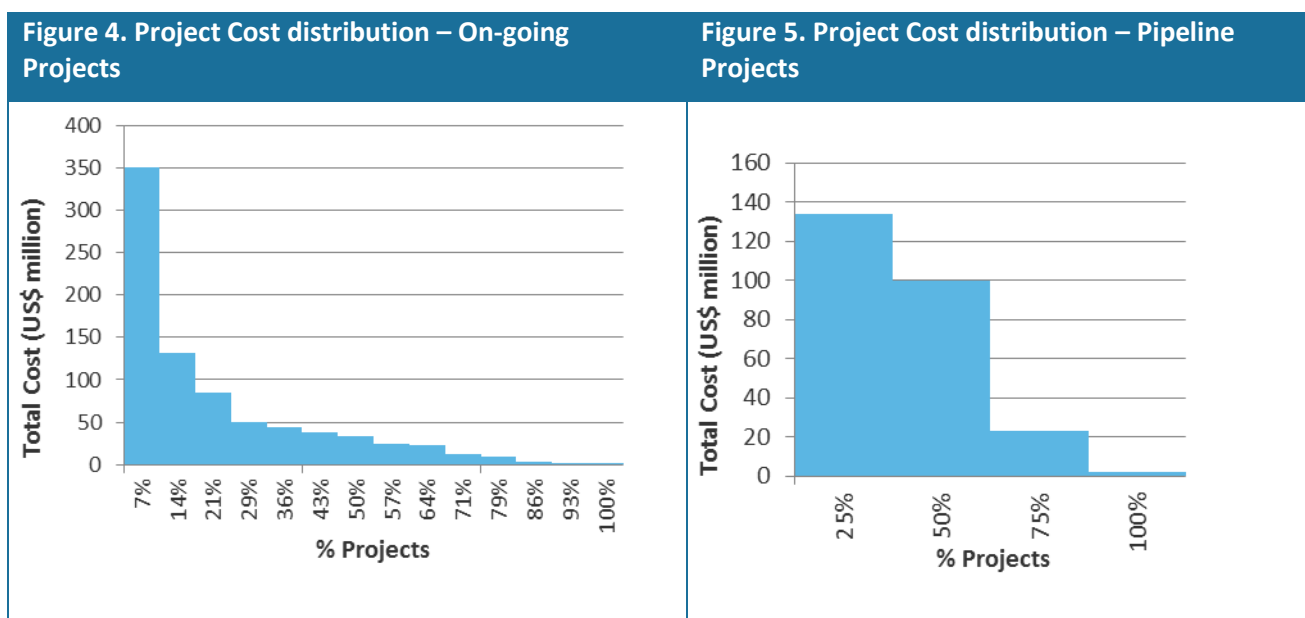
Table 1. Summary statistics of the Projects Portfolio		
	On-going	Pipeline
Number of Projects	14	4
Min (million US\$)	2	2.23
Max (million US\$)	351	134
Average (million US\$)	58	65

A closer look at the distribution of costs among on-going projects (Figure 4) shows that only one project involves an investment of more than US\$150 million, i.e. US\$ 351 million for the Millennium Challenge Compact which has as main objective the rehabilitation of hydropower plants. Three projects (21%) cost between US\$150 million and US\$50 million; the remaining 71% requires an investment cost between US\$2 million and US\$50 million and is characterized by a fairly equal spread with an average of US\$19 million (Figure 4).

² The baseline year considered for the analysis is 2014. Therefore investment in the short-term would be executed from 2014 to the end of 2017, in the medium term, from 2018 to the end of 2021 and in the long term, from 2021 onwards.

Figure 5 displays the distribution of investment costs of the four pipeline projects that will be implemented in Malawi. The Programme for Rural Irrigation Development (PRIDE) requires the highest investment cost of the pipeline projects with US\$134 million. The main objective of this project is the development of small scale irrigation systems in order to support smallholder farmers with the transition from low value to high value crops and from subsistence to commercial farming. The second pipeline project is the Shire Valley Irrigation Project which involves an investment of US\$100 million and aims to provide 42,500 hectares of irrigated land. The other two pipeline projects in this portfolio have an allocated investment of respectively US\$23 million and US\$2 million.

The relevance numbers (relevance of the water component as a percentage of the total investment cost) were not taken into account when analyzing this project cost distribution since all components within infrastructure projects have proven to be interdependent.



The investment envelope

The total investment envelope of on-going and pipeline projects for Malawi (Table 2) is estimated at US\$843.7 million (23% of Malawi's GDP in 2013, Worldbank) of which US\$299.4 million is allocated to the rehabilitation of hydropower plants, US\$275.6 million to the development of small scale irrigation, US\$93.3 million to the rehabilitation/modernization of irrigation schemes, US\$63.5 million to the development of small/medium scale hydropower projects and US\$5.7 million to the development of large scale irrigation schemes. The others category is worth US\$106.2 million and is allocated for activities such as training, awareness

raising and strengthening of sector institutions. No funding is allocated to the development of large scale hydropower projects. The last on-going project is scheduled to be completed in 2018 whereas the last pipeline project will be in full operation at the end of 2025.

Table 2 shows that the majority of investment in water for agriculture and energy in Malawi is allocated to the rehabilitation of hydropower plants (Millennium Challenge Compact project and Energy Sector Support project, see Table 1.1 of Annex 1) and small scale irrigation development (most important projects are Shire Valley Irrigation project, PRIDE project and Smallholder Irrigation and Value Addition Project, see Table 1.1 and 1.2 of Annex 1).

The total amount of funding allocated to irrigation categories is US\$374.5 million (41.2% of the envelope) while the total amount of funding allocated to hydropower categories amount to US\$362.9 million (43% of the envelope).

Table 2. Total Investment Envelope in US\$ million and in percentage (On-going & Pipeline projects)

Time Frame	Short-term		Medium-term		Long-term		Total	
Size of project	M US\$	%	M US\$	%	M US\$	%	M US\$	%
Small scale irrigation development	208.5	24%	58.1	7%	9	1%	275.6	32%
Rehabilitation/modernization of irrigation schemes	62.8	7%	24.5	3%	6	1%	93.3	11%
Large scale irrigation development	5.7	1%	0	0%	0	0%	5.7	1%
Small/medium scale hydropower	63.5	8%	0	0%	0	0%	63.5	8%
Rehabilitation of hydropower plants	255.4	30%	44	5%	0	0%	299.4	35%
Large scale hydropower development	0	0%	0	0%	0	0%	0	0%
Others	94.9	11%	11.3	1%	0.00	0%	106.2	13%
Total	690.8	82%	137.9	16%	15	2%	843.7	100%

Majority of investment (82%) will take place in the short-term whereas 16% of the total investment will take place in the medium-term (Small Holder Irrigation and Value Addition project, Malawi Shire Basin Management Program project and the Shire Valley Irrigation project) and only 2% of the total investment is allocated for long-term projects (PRIDE project).

The investment envelope only accounts for costs to be invested with reference year 2014; costs that already have been invested before 2014 are therefore not taken into account. Relevance numbers (the relevance of the water component as a percentage of the total cost) have been used to develop this investment envelope.

Cost distribution

Figures 6 to 8 illustrate the distribution of project costs in time and by type of project for on-going, pipeline and the total of all projects combined. As aforementioned, it can be observed that the majority of investment will be spent in the short-term (Figure 6). There is only one long-term project in Malawi's portfolio; this trend is observed in many other countries and might be because governments tend to plan their budget with a timespan no longer than eight years. The underinvestment in the long-term in this analysis therefore does not necessarily hold up in reality.

Figure 6. Cost distribution in time per typology – All Projects (US\$ million)

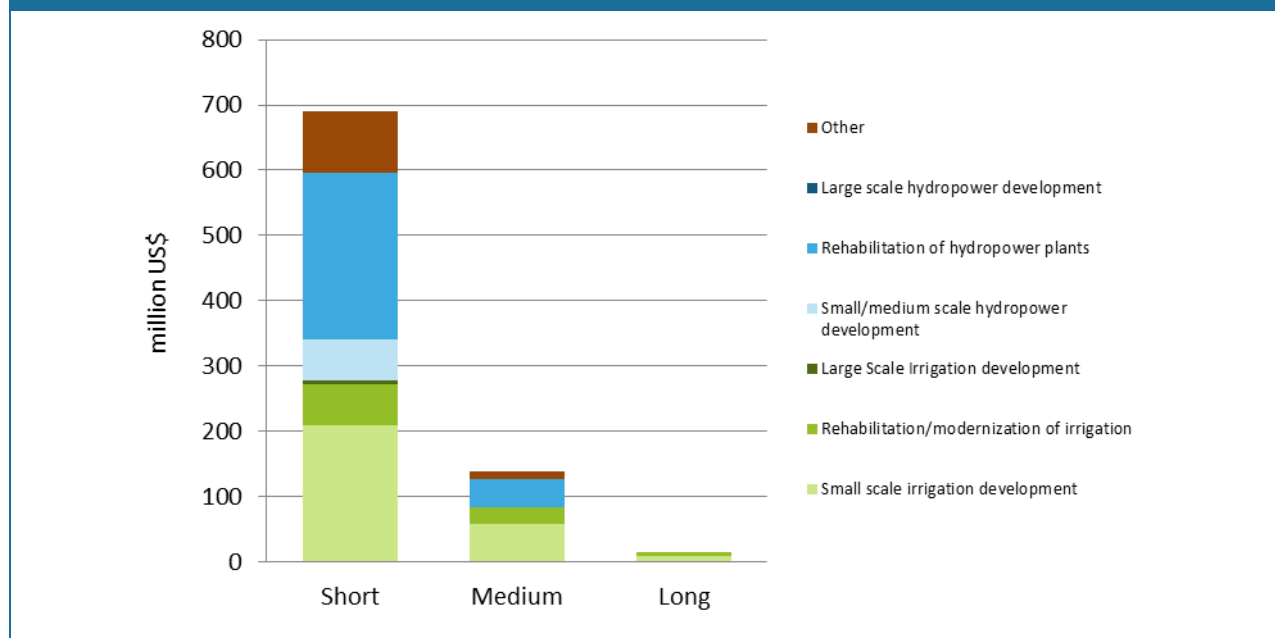
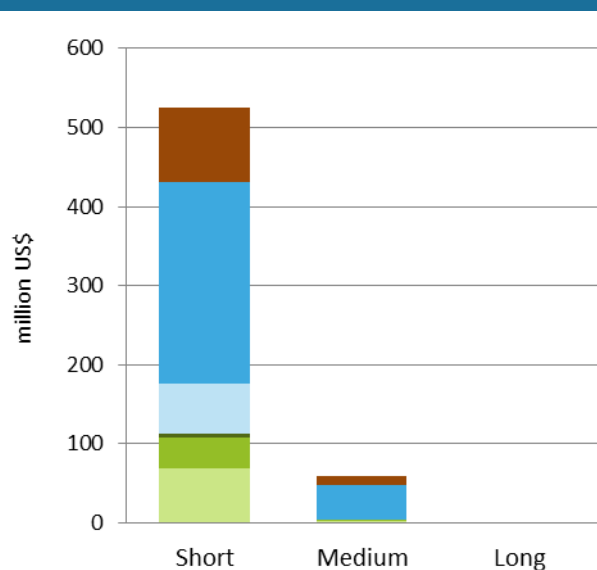
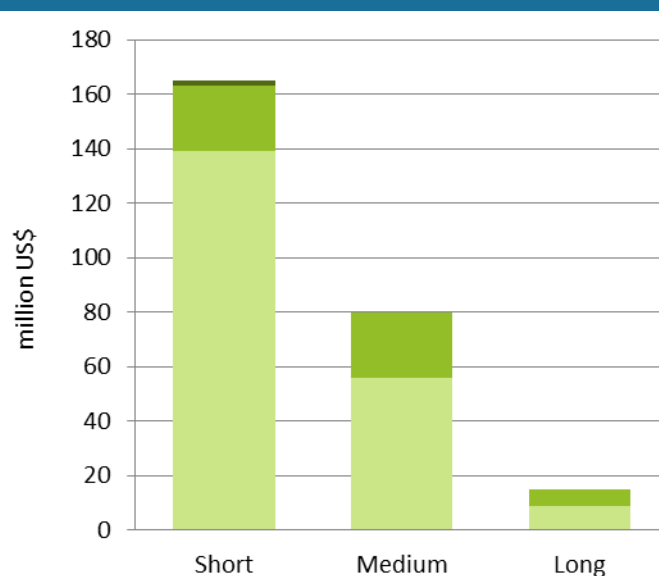


Figure 7. Cost distribution in time per typology – On-going Projects (US\$ million)**Figure 8. Cost distribution in time per typology – Pipeline Projects (US\$ million)**

The on-going projects of this envelope account for US\$584 million (69% of total envelope) while the pipeline projects add up to US\$259 million (31% of total envelope). There is a significant role for hydropower in the on-going projects (rehabilitation of hydropower plants and small/medium size hydropower development amount to 62% of all on-going projects, Figure 10) but this trend seems to change for the pipeline investments.

The distribution per typology for both on-going and pipeline projects stays constant over time. However, Figures 6, 7 and 8 do show a sharp negative relation between time and investment. This negative relation imposes an adverse effect on the sustainability of agricultural growth in Malawi. This negative relation between time and investment might be caused by governments that appear to not plan their budget for more than 8 years. Nevertheless, a longer planning horizon is advisable.

Figures 10 and 11 show that the short- and medium-term on-going investments are concentrated on the rehabilitation of hydropower plants (US\$299 million, 51%) followed by the others category (US\$106 million, 18%), while the pipeline projects show an investment pattern exclusively concentrated on irrigation projects with a focus on small scale irrigation development (US\$204 million, 79%). This shows that the GoM is changing its focus from

hydropower to irrigation projects which fosters food security (Figure 14), but hampers growth of hydropower projects.

Figures 10 and 11 show that an increasing focus for on-going projects on irrigation and for pipeline projects on hydropower is advisable, in order to foster the sustainability of irrigation and hydropower development.

Figure 9. Cost share per typology –All Projects (%)

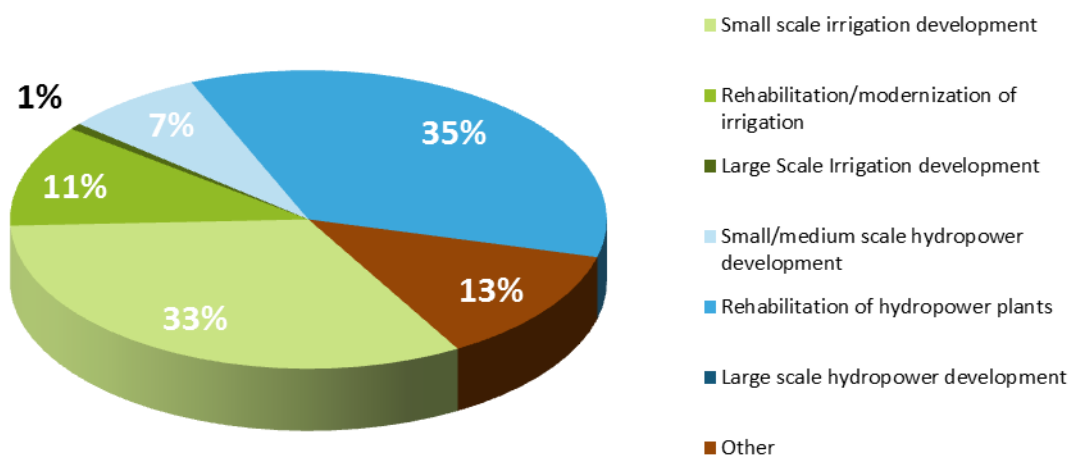


Figure 10. Cost share per typology – On-going Projects (%)

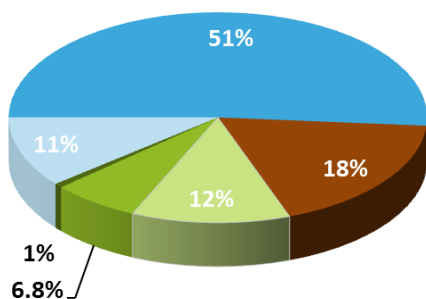
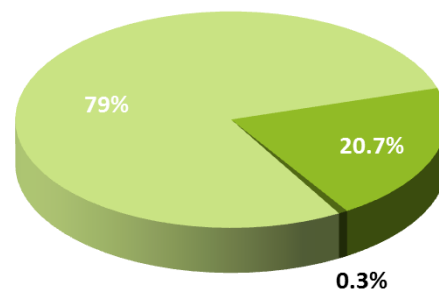


Figure 11. Cost share per typology –Pipeline Projects (%)



Source of funding

The 18 projects in this portfolio are, besides by the Government of Malawi, funded by a number of international donors. These donors are: the Millennium Challenge Corporation (MCC) of the United States of America, World Bank, African Development Bank (AfDB), International Fund for Agricultural Development (IFAD), the Arab Bank for Economic Development in Africa (BADEA), Global Agriculture and Food Security Program (GAFSP), Global Environmental Facility (GEF) through AfDB, Japan International Cooperation Agency (JICA), International Development Association (IDA), Least Developed Countries Fund (LDCF) and the European Investment Bank (EIB). The distribution of investment costs by source of financing (Figures 12 and 13) show the predominance of funding by donors in both on-going (97%) and pipeline projects (93%).

It is worth mentioning that the presence of private donors is always important as a source of financing in order to foster sustainability of funding. A high dependence on donor financing entails risks since withdrawal for any reason from financing these projects would mean an almost entire fallback of investment in irrigation and hydropower projects. An increase in public investment would also enhance the diversity of the source of funding in Malawi fostering sustainability of investment in irrigation and hydropower projects.

Figure 12. Cost share per funding partner for On-going Projects (%)

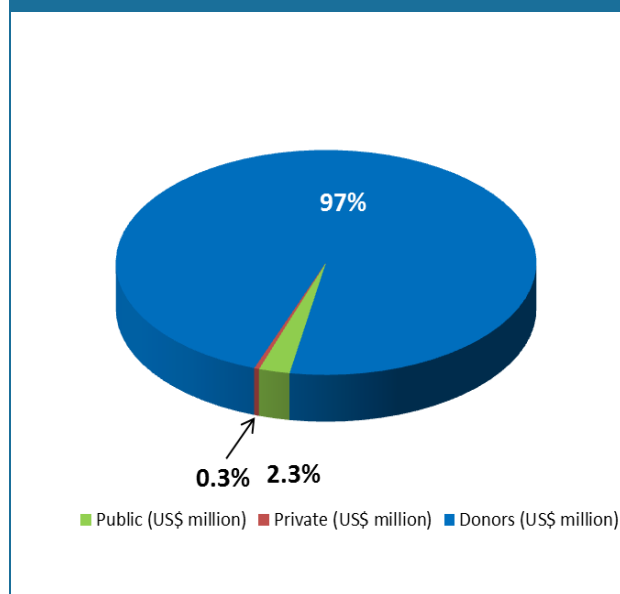
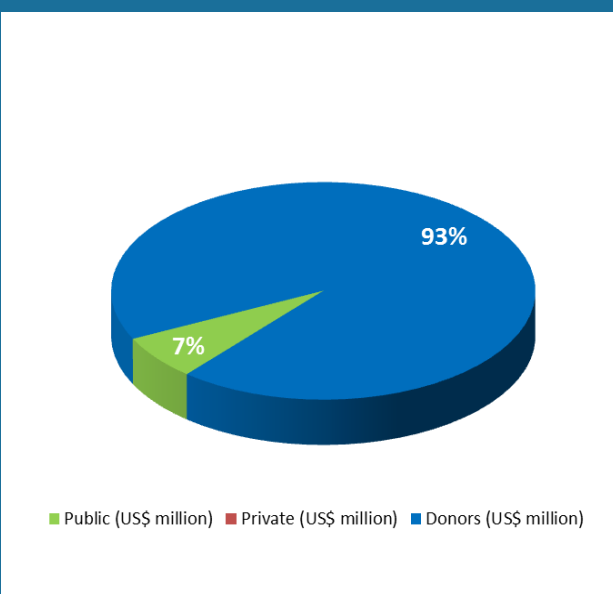


Figure 13. Cost share per funding partner for Pipeline Projects (%)



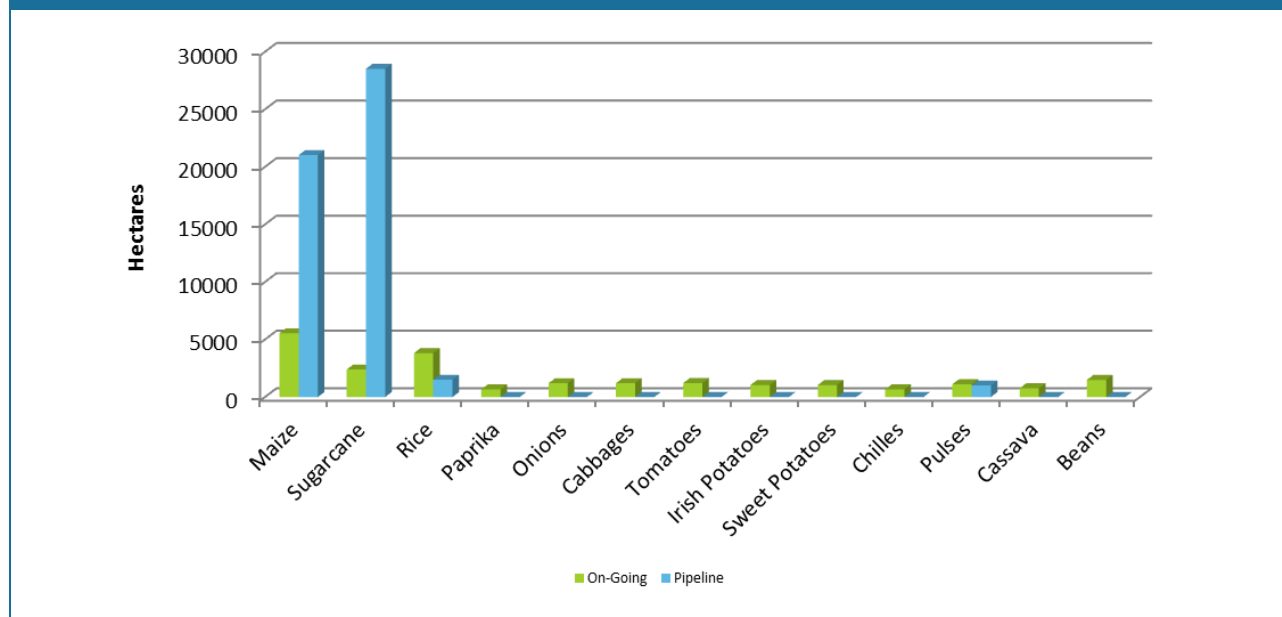
Hectares to develop or rehabilitate

The 18 projects of this investment portfolio will bring changes to about 74,217 hectares by 2025 of which 22,177 hectares will be developed or rehabilitated through on-going projects and 52,040 through pipeline projects (Figure 14). Of these projects approximately 30,915 hectares (41% of total number of hectares to be developed/rehabilitated) will be used for the cultivation of sugarcane and 26,564 hectares (36% of total number of hectares to be developed/rehabilitated) will be used for cultivation of maize (Figure 14). The remaining 16,738 hectares will be used for the cultivation of rice (5323 hectares or 7% of total number of hectares to be developed/rehabilitated) and all other crop types displayed in Figure 14 with an average of 1038 hectares per crop.

Figure 14 shows that the on-going and pipeline projects outline a different disaggregation per crop type. This is primarily caused by the Shire Valley Irrigation project which initiates in 2018 and will develop 42,500 hectares of irrigated land (57.3% of total number of hectares to be developed/rehabilitated) for the cultivation of maize (20,000 hectares) and sugarcane (22,500 hectares).

It is important to note that the current estimate of hectares is only based on the available data; data on the number hectares proved to be unavailable for 11% of all irrigation projects. The total number of hectares is thus likely to increase as more data becomes available.

Figure 14. Hectares to be developed/rehabilitated per crop



Internal Rate of Return

The Financial Diagnostic tool also allows calculating the Internal Rate of Return (IRR), i.e. the interest rate received for an investment consisting of payments (negative values) and income (positive values) that occur at regular periods. The IRR is closely related to the net present value: the rate of return calculated by IRR is the interest rate corresponding to a zero net present value. The calculation of an IRR evaluates the desirability of a project; in theory, all projects with an IRR that exceeds the cost of capital should be undertaken.

It is assumed that cash flows occur at regular annual intervals. All succeeding payments are discounted based on a 365-day year. An iterative process has been applied for calculating the IRR: starting with a pre-imposed guess, the function cycles through the calculation until the result is accurate within 0.00001 percent. It is also assumed that a project will “lead value” for a defined period (40 years) after the first year of implementation. Such restrictive assumption is dictated by simplicity in calculation and by the fact that detailed information on the life-time of each project was not fully available. Moreover, revenues only occur after the completion of the project and no variation is allowed over the years, as such variation would depend on infrastructural and managerial conditions that are project specific variables and could be generalized in a tool only including stochastic variability (leaving limited data availability out of consideration).

The IRR can be calculated for both agriculture projects, provided that at least the figures for the total areas to be developed are available, and for hydropower projects when the total megawatts to be generated are available. The calculation of the IRR for hydropower projects is straightforward and univocal, but for agricultural project it strongly depends on the type of crop planted, its yield and the net returns (which can vary significantly each year) that can be derived. Although 4 of the 18 projects reported in the portfolio have not yet entered into operation; for only 2 out of 18 projects the crop patterns are unknown. It is nevertheless important to note that a planned cropping pattern is not a guarantee to become reality.

To overcome this limitation of the dataset, it was decided to run the IRR calculation under a prudent food security driven scenario and an optimistic cash crop driven scenario. In practical terms, the prudent scenario hypothesises a cropping pattern based on maize, the main staple crop for Malawi, while the cash crop scenario hypothesises that tobacco is adopted as main cash crop. It is clear that such hypotheses are unrealistic simplifications and that they do not take into account agricultural practices and area specificities, but the derived values of the IRR are not to be meant as clear-cut estimates of the profitability of projects but rather as a lower and upper boundary to the rate of return for the various projects. This could also give an indication of the sensitivity of IRR to cropping decisions.

The results of the analysis, as reported in Table 3, show that both agriculture and hydropower projects yield, on average, a positive IRR. There is one hydropower project in this investment portfolio, which is on-going and generates an IRR of 44 percent; there are thus no pipeline projects that concern the generation of hydroelectric power. The calculation of the IRR of this hydropower project assumes an optimistic scenario (i.e. continuous year round operations, a capacity factor of 100% and a lifetime of 50 years) since the dam operations appeared unavailable; which explains the high IRR for hydropower. In the case of agriculture, on-going projects would, on average, yield a positive IRR that ranges between 1.42 percent and 7.80 percent while the pipeline projects appear to perform better, yielding superior rate of returns (between 2.92 percent and 10.05 percent).

Table 3. Average Internal Rate of return (IRR)

	Hydropower	Agriculture	
		Food Security	Cash Crop
On-going	44%	1.42%	7.80%
Pipeline	N/A	2.92%	10.05%

Figure 15 shows that, under the food security scenario, 33 percent of the projects (taking into consideration both on-going and pipeline) exhibit an IRR higher than 5 percent, while in the cash crop scenario (Figure 16), 42 percent of the projects have an IRR higher than 10 percent with an average of 18.4%. Similarly, looking at the upper queue of the distribution, 8 percent of the projects exhibit an IRR above 15 percent in the food security scenario, while the percentage of projects exceeding such return increases to about 33 percent in the cash crop scenario.

Figure 15. IRR- Food Security scenario (On-going and Pipeline projects)

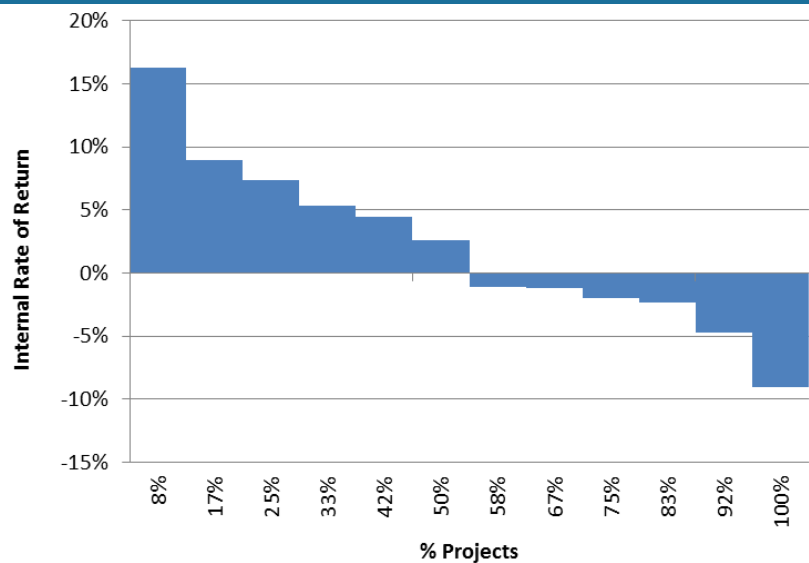
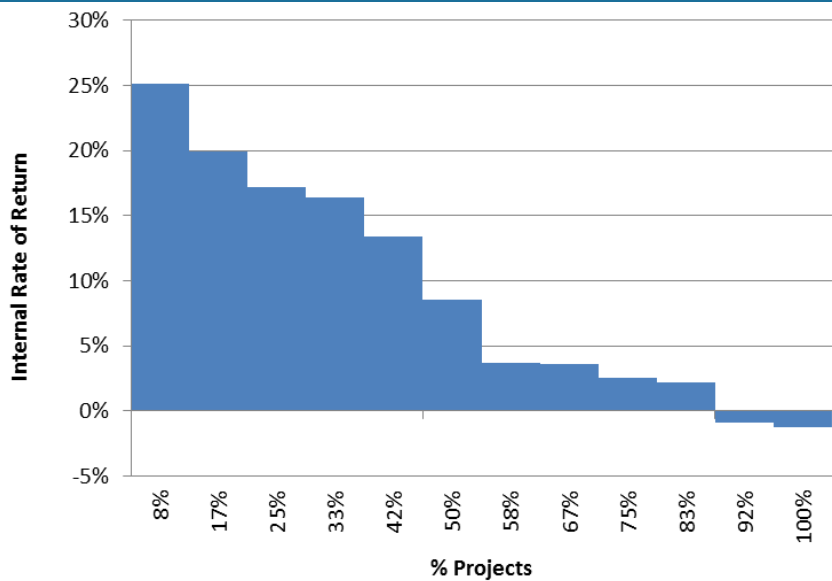


Figure 16. IRR- Cash Crop scenario (On-going and Pipeline projects)



4 CONCLUSIONS

Based on the information and analysis presented in this report, the following can be concluded:

- a) Malawi invests more in irrigation than in hydropower projects, with US\$374 million investment for the former and US\$363 million for the latter. Majority of the investment in irrigation will be allocated to small scale irrigation development, which is in line with government priorities. The focus on smallholder projects that have low unit costs and substantial community involvement fosters poverty eradication and agricultural growth.
- b) Majority of the investment takes place in the short-term (82%) and medium-term (16%) while only 2% of total investment takes place in the long-term. This highlights an insufficient long-term investment strategy.
- c) Donor funding is predominant in Malawi's investment envelope with donors such as the MCC, AfDB and IFAD. Malawi has to diversify the sources of funding of the investment envelope and mobilize public and private sources of funding to enhance financial sustainability.
- d) Most of the irrigated land of the projects in this portfolio will be used for the cultivation of maize and sugarcane, reflecting the need to achieve food self-sufficiency and poverty eradication and reduce dependence on rain-fed agriculture.
- e) Investment in operation and maintenance (O&M) of irrigation schemes has not been specified in the list of projects in the portfolio. The need to emphasize the importance of O&M for the correct functioning and performance of irrigation systems is critical.
- f) There are contradicting figures on current area under irrigation in the country. The evident lack of consensus on both the amount of land that is currently irrigated, and the irrigable potential of Malawi, is the result of a fundamental data limitation. None of the studies that have been carried out include both formal and informal irrigation, and therefore do not give a measure of irrigable potential. Furthermore, the data on land suitability, water availability, and the relative efficiencies of irrigation technologies—all key inputs to estimating irrigable potential—are outdated. There is urgent need for a new land and irrigation assessment in Malawi; good data will build a foundation for consensus about the potential of the sector and, therefore it's planning. Due to insufficient data, measurement of progress of the irrigation sector is difficult, although some reports offer some insight. Malawi's former President late Bingu Wa Mutharika set one million hectares as a target for area of land to be developed for irrigation in Malawi. FAO estimated that the total potential for irrigation for Malawi was 162,000 hectares while other estimates go up to 485,000 hectares. However,

the Ministry of Agriculture, Water and Irrigation estimates that the potential irrigable land area lies between 480,000 and 620,000 hectares. According to the Ministry of Agriculture and Water Development's Annual Report for 2014, the total area developed is about 97,000 hectares.

- g) Regardless of the figures provided as baseline, the area developed under irrigation by the projects identified in the portfolio are far behind established targets, since these only add up to 74,217 hectares.
- h) The overarching development issue facing Malawi agriculture is the low productivity and profitability of smallholder agriculture. The low and stagnant yields have been influenced by a dependence on rain-fed farming and low level of irrigation development, poor varietal selection, declining soil fertility, and overall poor agricultural practices. The Shire Valley Irrigation project aims to provide a solution to this issue by developing 42,500 hectares of irrigated land for smallholders improving lives of 100,000 households.
- i) The inputs of maize became unaffordable for the majority of smallholder farmers due to the escalation in the price of fertilizers and maize seed. Smallholder farmers therefore have diversified away from maize to other crops such as sugarcane which imposes a negative effect on food security. The International Food Policy Research Institute (IFPRI) states that the country will need 6.9% GDP growth and 7.6% agricultural growth (rather than the recommended CAADP 6%) if the country is to meet the 2015 poverty goal (Feed the Future 2010). IFPRI further argues that achieving these rates of growth will require national budget allocations between 20% and 24% for agriculture (doubling the recommended 10% for CAADP); whereas Malawi now invests approx. 0.001% of total public spending in agriculture. Malawi therefore needs to mobilize public funds to invest in agriculture.
- j) Achieving food security has been one of Malawi's major objectives in developing agricultural strategies since its independence in 1964. In Malawi, national food security is mainly defined in terms of access to maize, the main staple food. The Shire valley Irrigation project aims to satisfy this demand and will develop 20,000 hectares of irrigated land for the cultivation of maize. This serves as a step in the right direction.

ANNEX 1: PROJECT PORTIFOLIO

Table 1.1. On-going Projects

#	Project title	Funding Partners	Time Scale	Total Budget (million US\$/EUR)	Description
1	Agriculture Infrastructure Support Project (AISP)	Malawi Government and Beneficiaries, and AfDB	2011-2015	US\$24.8	<p>The project aims at supporting Malawi's efforts of increasing agriculture water efficiency and strengthening the irrigation potential in order to increase farmers income and enhance food security in addition to mitigating the effects of climate change.</p> <p>Typology: Small-scale irrigation development (40%) and large scale Irrigation development (60%)</p>
2	Second Additional Financing for the Irrigation and Rural Livelihood Agriculture Development Project (IRLADP)	Malawi Government, World Bank and IFAD	2013-2015	US\$50.0	<p>The project involves the rehabilitation of existing small-scale gravity irrigation schemes and the development of demand-driven new schemes. With respect to existing schemes, the project provides support for rehabilitation, upgrading and gradual management transfer of government-owned schemes. The project is also supporting a strategic study on the future of irrigation development and management in Malawi.</p> <p>Typology: Rehabilitation of irrigation systems (50%) and small scale irrigation development (50%)</p>
3	Rural Infrastructure	Malawi	2012-2015	EUR30	The Rural Infrastructure Development Programme Component I

	Development Programme – (RIDP II)	Government and European Union			<p>(RIDP I) is a Malawi Government initiative funded by the European Union (EU) contributing to poverty reduction in line with the Malawi Growth and Development Strategy (MGDS) II. RIDP 1 aims at enhancing the socio-economic situation of the rural/peri-urban population through improving small scale infrastructure and promoting productive activities. The guiding theme of RIDP 1 is “moving communities toward a better future.” The activities of RIDP 1 build upon the approaches, methods and achievements of the predecessor programmes Public Works Programme (PWP) and the Income Generating Public Works Programme (IGPWP), which were also funded by the EU and Malawi Government.</p> <p>Typology: Small-scale irrigation development (15%), large-scale irrigation development (20%), rehabilitation of irrigation schemes (15%) and others (50%)</p>
4	Smallholder Crop Production and Marketing Project (SCPMP)	Government of Malawi, AfDB and beneficiaries	2007-2015	US\$23.04	<p>The overall objective of the project is to contribute to poverty reduction and food security in rural Malawi. The specific objective of the project is to increase productivity and incomes of rural households in the project area. This will be achieved through the promotion of intensification and diversification of the existing cropping systems and an improvement to the marketing systems which will significantly increase production, productivity, and incomes of small farmers whilst improving household nutrition and environmental management of natural resources at the same time.</p> <p>Typology: Small-scale irrigation development (53%) and others (47%)</p>

5	Smallholder Irrigation and Value Addition Project (SIVAP)	GAFSP, AfDB, Malawi Government and Beneficiaries	2014-2018	US\$44.64	<p>The project development goal is to contribute to reducing poverty and ensuring sustainable food security. The specific project objectives are to (i) improve crop production and productivity, and (ii) improve net farm incomes of project beneficiaries.</p> <p>Typology: Small-scale Irrigation development (77%) and rehabilitation of irrigation schemes (23%)</p>
6	Malawi Irrigation Development Support Programme (MIDSUP)	Government of Malawi and Farmers	2011-2016	US\$9.4 (MWK1,473.8)	<p>The objectives of the project are to promote the design and construction of small scale irrigation schemes; Formation of Water User Associations; Farmer training on water management; Delivery and installation of drip irrigation kit.</p> <p>Typology: Small-scale irrigation development (60%) and rehabilitation of irrigation schemes (40%)</p>
7	Small Farms Irrigation Project II (SFIP Phase II)	Arab Bank for Economic Development in Africa (BADEA) and Malawi Government	2013-2015	US\$11.7	<p>The main objective of the project is to increase and improve family food security and incomes by enhancing the productivity of resource poor smallholder farmers with land holding size of about one hectare.</p> <p>Typology: Small scale irrigation development (60%) and rehabilitation of Irrigation schemes (40%)</p>
8	Climate Adaptation for Rural Livelihood and Agriculture (CARLA)	GEF through AfDB and Malawi Government	2011-2015	US\$3	<p>The objective of the project is increase resilience to current climate variability and future climate change by developing and implementing adaptation strategies and measures that will improve agriculture production and rural livelihoods.</p> <p>Typology: Small scale irrigation development (20%) and others</p>

					(80%)
9	Malawi Medium Scale Irrigation Project (MIDP)	JICA	2011-2014	US\$2	<p>The main characteristics of the MIDP approach are 1) direct involvement of farmers, irrigation officers, and extension officers in all the processes, 2) systematic training of irrigation officers, extension officers and farmers, and 3) introduction of low cost and grassroots technology. This differs from common practices in Malawi where consultants and contractors are procured to conduct all the work. Because of its simple and low-cost design, MIDP has enhanced farmers' participation in construction and their contribution of materials...</p> <p>Typology: Small scale irrigation development (70%) and rehabilitation of irrigation systems (30%)</p>
10	Energy Sector Support Project	World Bank	2012-2017	US\$84.7	<p>The project will finance feasibility studies for several potential hydropower sites over a range of capacities and geographical locations and a back bone transmission line. These studies are prerequisites for expansion of Malawi's installed generation capacity as well as for diversification of generation sources. The focus on renewable energy investments will contribute to the continuation of a low carbon development trajectory. These studies will pave the way for expansion of electricity generating capacity in Malawi, which would ultimately address the load shedding problems and enable electricity access expansion for a greater share of the Malawian population.</p> <p>Typology: Small and medium scale hydropower (80%) and rehabilitation of hydropower and dams (20%)</p>

11	Millennium Challenge Compact	US Government through the Millennium Challenge Corporation (MCC)	2014-2018	US\$350.7	<p>The main objectives of the project are to improve the availability, reliability, and quality of the power supply by increasing the throughput capacity and stability of the national electricity grid and increasing the efficiency of the hydropower generation through the investment in infrastructure development project; creating an enabling environment for the future expansion of the power sector by strengthening sector institutions and mitigating the growing problems of aquatic weed infestation and excessive sedimentation in the Shire River Basin that will reduce the costly disruptions to the hydropower generation.</p> <p>Typology: Rehabilitation of hydropower (81%) and others (19%)</p>
12	Malawi Shire River Basin Management Project	IDA, GEF and LCDF	2013-2018	US\$131.5	<p>The objectives of the project are to increase sustainable social, economic and environmental benefits by effectively and collaboratively planning, developing and managing the Shire River Basin's natural resources. The program duration is 15 years.</p> <p>Typology: Small scale irrigation development (10%) and others (90%)</p>
13	Strengthening Safety Nets Systems Project (MASAF IV)	World Bank	2014-2016	US\$32.8	<p>The project supports Productive Community Driven Public Works under Component I. It will finance public works and multiple community driven assets through investments in productive community driven public works and temporary employment. Community driven productive public works will create assets and provide temporary employment in the same communities for multiple years designed to increase impact on household level incomes and food security and reduce households' exposure to</p>

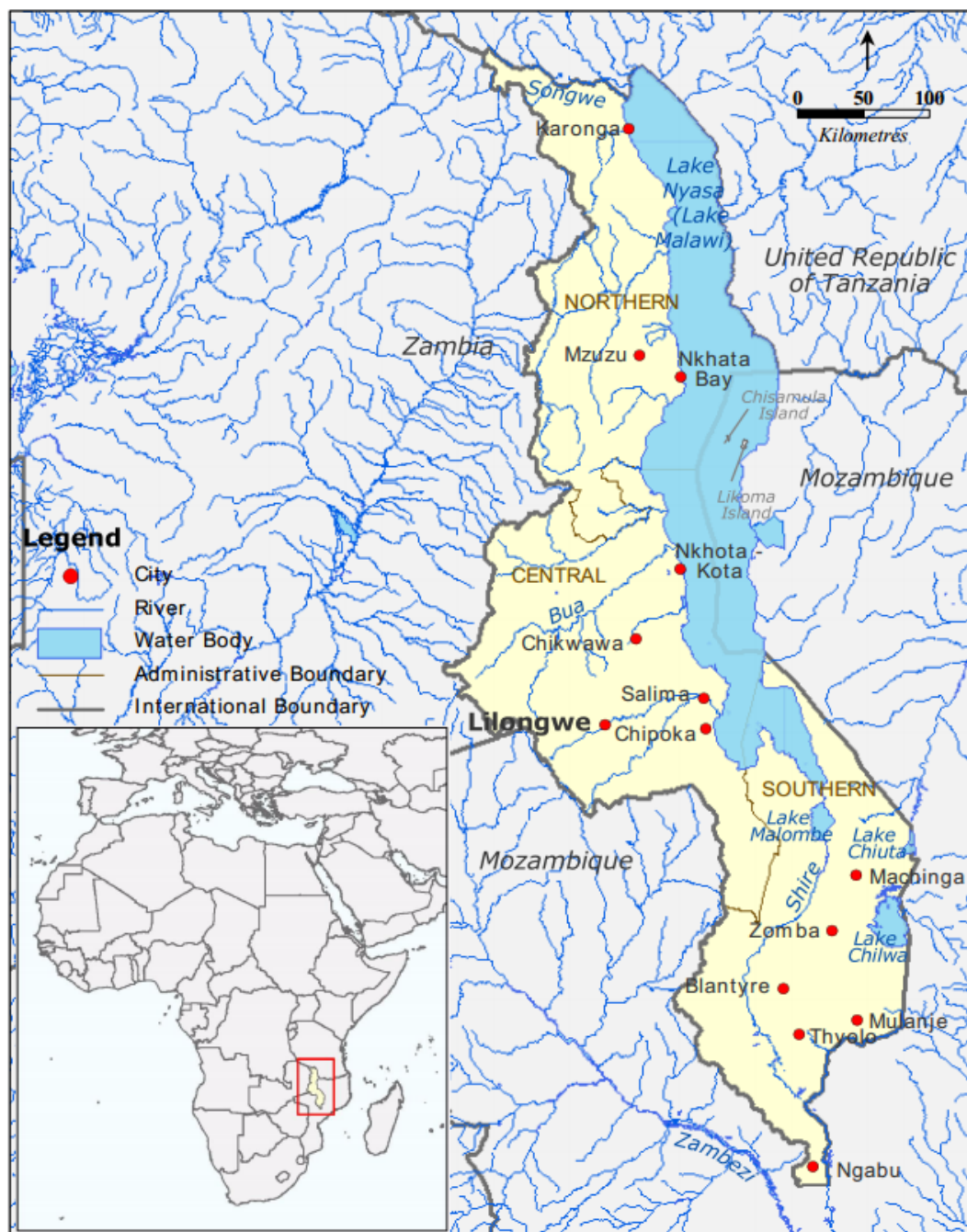
					<p>risks associated with climate change and other disasters. The will project specifically target irrigation development, more specifically, it will target small to medium scale irrigation schemes.</p> <p>Typology: Small scale irrigation development (25%), rehabilitation of irrigation systems (25%) and others (50%)</p>
14	Kholombidzo Hydropower Plant	AfDB and Malawi Government	2014-2015	US\$2.16	<p>The intervention will produce a feasibility study project for the future development of the power generation project to contribute to the expansion of electricity generating capacity in Malawi which will ultimately lead to addressing shortages and enabling the delivery of reliable energy and electricity access expansion in Malawi.</p> <p>Typology: Small and medium scale hydropower development</p>

Table 1.2. Pipeline Projects

#	Project title	Funding Partners	Time Scale	Total Budget (million US\$)	Description
1	Shire Valley Irrigation Project	AfDB and World Bank	2018-2022	US\$100	<p>The project will sustainably enhance incomes and hence food security of about 100 000 households in Chikhwawa and Nsanje Districts through increased agricultural productivity and profitability by establishing market-linked smallholder farming ventures and professionally operated irrigation services in 42 500 hectares of lands.</p> <p>Typology: Small scale irrigation development.</p>

2	Programme for Rural Irrigation Development (PRIDE)	IFAD, EIB and Government of Malawi	2015-2023	US\$134.2	<p>The project will develop or upgrade irrigation schemes to enable the smallholder farmer members of the respective Water User Associations (WUAs) to transition from low value to high value crops and from subsistence to commercial farming. In each WUA the members will have secure land tenure through a medium to long-term lease or granting of a permanent customary use right and adequate water to produce three crops a year.</p> <p>Typology: Small scale Irrigation development (60%) and rehabilitation of irrigation systems(40%)</p>
3	Greenbelt Initiative (GBI)	Malawi Government	2015-2025	US\$2.3 (MWK1 billion)	<p>The Green Belt Initiative will utilize water from lakes and perennial rivers to enhance the country's production of a variety of crops, livestock and fisheries. Through this project the government will develop irrigation infrastructure, enhancing technical capacity in irrigated agriculture, rehabilitation of irrigation schemes and dams, promoting research in irrigation technologies, developing potential groundwater sources, establishing piped water systems, rehabilitating water facilitates throughout the country, and promoting user friendly water resource conservation and utilization technologies.</p> <p>Typology: Small scale irrigation development (20%) and large scale irrigation development (80%)</p>
4	Irrigation Development Project	AfDB	2015-2017	US\$23.07	<p>The main objective of the project is to contribute to reducing poverty and ensuring sustainable food security for beneficiaries at both household and national levels by increasing crop production and diversification.</p> <p>Typology: Small scale irrigation development</p>

ANNEX 2: MAP OF MALAWI



FAO - AQUASTAT, 2005

MALAWI

Disclaimer

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

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