



NATIONAL INVESTMENT PROFILE



**WATER FOR
AGRICULTURE
AND
ENERGY**

-FINAL DRAFT-

TANZANIA

EXECUTIVE SUMMARY

Tanzania's vision for using water resources for agriculture and energy are firmly embedded in both irrigation and hydropower development policies respectively. These issues are both part of the Tanzania poverty eradication agenda in line with the Tanzania Development Vision 2025 and the five year National Strategy for Growth and Reduction of Poverty, commonly known as MKUKUTA I (2005-2010) and MKUKUTA II (2010-2015) which is currently underway. The key policies which are followed for agriculture and hydropower are further supported by the Continental movement towards Africa's Green revolution.

Tanzania has signed the Comprehensive Agriculture Development Programme (CAADP) compact and has initiated a number of programs and reforms to increase the investment in the agricultural sector. These programs have a strong emphasis on irrigation. Despite a total irrigation development potential in Tanzania of 29.4 million ha, only 450 392 ha have been irrigated thus demonstrating the need to develop the sector. Furthermore, irrigation practices in Tanzania show low water use efficiency, low water productivity and over dependency on surface water as a major source for irrigation development. The increased investment via the CAADP Compact should be able to support the development of the sector.

Hydropower in the country contributes almost 50 percent of the energy produced. On a large scale, hydropower is being developed as a combined hydro-thermal system. On a smaller scale, hydropower is used as a source of renewable energy and a way to increase rural electrification. Frameworks have been developed to encourage the development of small hydropower power plants.

To translate those goals into reality, Tanzania is currently implementing and planning to implement a number of irrigation and hydropower projects for a total of US\$1 303 million, where US\$106.26 million are allocated to the development of small scale irrigation systems, US\$183 million to the rehabilitation and modernization of irrigation schemes, US\$50 million to large scale irrigation development, US\$2.26 million to the rehabilitation of hydropower plants and US\$952 million to the development of large scale hydropower (Table 3). There is a total of almost US\$10 million dedicated to the category Others, which in the case of Tanzania mainly refers to topographic studies, environmental impact assessments and other studies to conduct prior to project implementation.

These figures show that the country is supporting small holders by placing more emphasis in investing in small scale irrigation as opposed to large scale irrigation. When looking into hydropower project the opposite trend is observed, since Tanzania is only investing in large scale projects. Investment figures also show a balance between irrigation development and rehabilitation. The financial analysis of projects highlighted that investment is mostly executed by public sources and that the country has a short term standpoint for irrigation projects, since investment in the long term is not planned.

It would be important for the country to ensure that the institutional and political environment is adequate for the success of these investments. In addition to this, it is recommended that mechanisms are put in place to encourage the participation of the private sector in developing water resources and to support project formulation in the longer term.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
TABLE OF CONTENTS.....	3
1. CONTEXT	4
1.1 AGRICULTURE AND FOOD SECURITY.....	4
Agriculture	4
Irrigation and Water Control	4
Food security.....	5
Food self sufficiency.....	6
1.2 WATER RESOURCES AND HYDROPOWER	7
1.3 CLIMATE CHANGE	9
2 NATIONAL STRATEGIES FOR WATER, AGRICULTURE AND ENERGY	9
3 INVESTMENT ENVELOPE	13
4 PROJECT PORTFOLIO AND THE AGRICULTURE AND FOOD SECURITY INVESTMENT PLAN ..	19
5 CONCLUSIONS.....	20
ANNEX 1. PROJECT PORTFOLIO	21
TABLE 1.1. ON-GOING PROJECTS.....	21
Table 1.2. PIPELINE PROJECTS	28
ANNEX 2. MAP OF TANZANIA	40
REFERENCES.....	41

1. CONTEXT

1.1 AGRICULTURE AND FOOD SECURITY

Agriculture

The overall agriculture sector comprises of crops, livestock, fisheries, forestry and hunting sub sectors however the focus of this report will be on crop production. Tanzania is endowed with about 44 million hectares of land suitable for agricultural production, which represents almost half of the country's area (94.5 million ha). Of the total cultivable land, about 10.8 million hectares (equivalent to 24 percent), is under crop production (Tanzania National Website 2013). The Tanzanian economy is highly dependent on agriculture, contributing to 27 percent of the GDP, with crop production alone contributing to about 17.6 percent (MAFC 2013). The sector continues to be fundamental to the country's economic development. From 2011 to 2012, growth in the agriculture sector increased from 3.6 percent (2011) and 4.3 percent (2012) (Ministry of Finance, 2012).

The sector employs over 75 percent to the working population (Tanzania National Website, 2013). Farmers in Tanzania can be placed in three categories:

1. Small-scale subsistence crop producers: They compromise more than 90 percent of the farming population cultivating between 0.2 and 2 hectares.
2. Medium-scale farmers (also known as commercial farming).
3. Large-scale farmers (also known as commercial farming).

The major staples include maize, sorghum, millet, rice, wheat, pulses (mainly beans), cassava, potatoes, bananas and plantains. Maize production dominates much of the country, particularly the highlands in north and south. The tropical coastal belt is dominated by cassava, with rice also grown in an area spreading westwards from Dar es Salaam. Drought resistant millet and sorghum are grown in the central plateau where temperature and rainfall are highly variable, although aside from these arid plains, rainfall is fairly well spread throughout the year, peaking between March and May, with another, shorter rainy season between November and early January. Additionally, Tanzania's farmers grow a huge variety of fruit, vegetable and spice crops (Ministry of Finance 2009).

Irrigation and Water Control

Tanzania's National Irrigation Master Plan (URT 2002) identifies a total irrigation development potential in Tanzania of 29.4 million ha. Of this total area, 2.3 million ha are classified as high potential, 4.8 million ha as medium potential and 22.3 million ha as low potential. FAO's AQUASTAT provides a more conservative figure of 2.1 million ha derived from an early

Tanzanian government assessment. The current irrigated area is about 450 392 ha (URT 2013). Less than 5 percent of farming households use irrigation (URT 2013).

Tanzania's current irrigation typology as per National Irrigation Policy 2010 (URT 2010) is below:

1. **Traditional Irrigation Schemes:** These schemes are characterized by poor infrastructure, poor water management and low yields. The existing infrastructure are all temporal, poorly constructed and pose difficulty in overall water management resulting in low water use efficiencies.
2. **Rain Water Harvesting (RWH) Irrigation Schemes:** These are schemes whereby farmers either directly tap rain water in bunded fields or diversion of rainwater run-offs from seasonal and ephemeral rivers. The farmers irrigating using these techniques suffer from poor infrastructure for diverting harvested water, lack control of water in the bunds and further suffer from unreliable rainfall. These are characterized by poor water management and low yields or complete crop failure.
3. **Improved Irrigation Schemes:** These schemes are mainly improvements of traditional irrigation schemes by mainly improving the infrastructure and organizing the beneficiaries into formally registered entities. These include but are not limited to permanent structures and facilities for irrigation, drainage and flood protection and have been designed with full water control and measurement to assist in water delivery and management.

The benefits of improved irrigation schemes are significant. For example paddy yields through traditional irrigation schemes are 1.8-2.0 t/ha while the yields from improved irrigation schemes have average yields of 4.0-5.0 t/ha though they are known to have achieved up to 10 t/ha.

4. **Large Scale Commercial Irrigated Farms:** These schemes center around private sector involvement, covering the investment and management of commercial farms and estates as well as the provision of support services and facilities. The contribution of the private sector has increased significantly in the recent years particularly in the service provision of irrigation equipment particularly water pumps, drip and sprinkler equipment.

Water control has been included as part of the National policies that influence irrigation. The National Water Policy (NAWAPO – 2002) and the Water Resources Management Act 2010 which recognize irrigation accounts for 85 percent of total water withdrawals thus being the dominant consumptive user of Tanzania's water resources. Of the irrigation schemes in place, 80 percent are traditional irrigation schemes and a large majority use surface water.

Food security

According to FAO (2013), levels of undernourishment in Tanzania for the 2011-2013 period were about 33 percent. Although these levels are still high, the country has been making progress for the past 10 years when undernourishment reached almost 41 percent. As is usually

the case, rural households are being considered more exposed to food insecurity than urban households.

With the national population increasing at an average national rate of 2.7 percent (NBS 2012) it is crucial to develop the agricultural system to keep up with the increasing population. In the National Agricultural Policy (URT 2013), it is noted that even though the growth in agriculture is higher than the average annual population growth, it is insufficient to attain poverty alleviation at the current rate. It is further noted that Tanzanians are increasing a consumption of rice which needs more water to grow (MAFC, 2010).

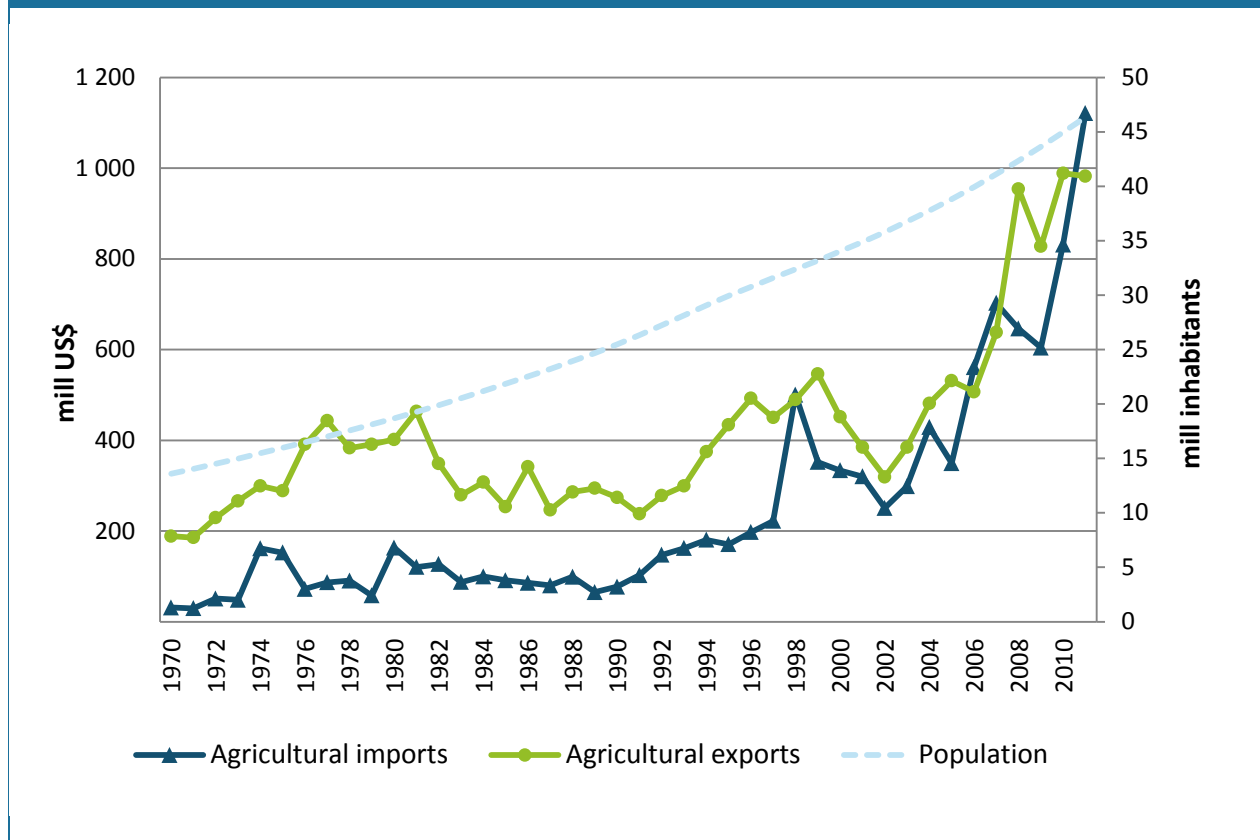
Food self sufficiency

The agricultural sector provides 95 percent of the country's food demand, meaning that the country is self-sufficient most years (URT 2013). However it is noted that there is a clear difference in the supply capabilities of staple-food crops among the regions (FAO 2005), something that could explain the significant undernourishment levels.

It can be said that Tanzania has been traditionally a net exporter of agricultural products (Figure 2). However in the past years, the country's bill of imports has exceeded that of exports. In 2011, imports amounted to about US\$1 121 million, while exports totaled around US\$982 million.

The main imported products (in value) for the period 2009-2011 were wheat, palm oil, sugar, barley and rice.

Main exported products (in value) for the period 2009-2011 were green coffee, tobacco, cashew nuts (unmanufactured) and sesame seeds.

Figure 2. Trade in agricultural¹ products in value 1970-2011

1.2 WATER RESOURCES AND HYDROPOWER

Tanzania has nine water basins, namely the Pangani water basin, Rufiji water basin, Lake Victoria basin, Wami / Ruvu basin, Lake Rukwa basin, Lake Tanganyika basin, Ruvuma and the Southern Coast basin and Lake Nyasa basin, although six of them are international drainage basins (FAO 2005). These water Basins are good sources of water for domestic use to people surrounding them and for agriculture through irrigation schemes.

According to FAO-Aquastat 2005, total renewable water resources for the country have been estimated at 93 km³/yr, of which 84 km³/yr arise internally while the balance, 9 km³/yr, comprises flows along the Tanzania/Mozambique border. Renewable groundwater resources are estimated at 30 km³/yr, of which all but 4 km³/yr are considered to be overlap between surface water and groundwater. Annual withdrawals in 2002 were estimated at 5.142 million m³. The agricultural sector dominates water use with some 86 percent of withdrawals being used for mainland irrigation. About 99.8 percent of the water withdrawn for irrigation is was surface water.

¹ Refers to crop and livestock products

Water resources are especially important for the hydropower sector. About 47 percent of installed power generating facilities in Tanzania are hydro-based (TANESCO 2013). The hydropower potential of the country is estimated to be about 4700 MW however only about 565 MW (only 10 percent) have been exploited as of 2012. The International Energy Agency estimates 2615 GWh was produced as of 2011 (IEA 2011). The major hydropower plants and their corresponding dams are owned by TANESCO (The Government Power Utility) and are presented in Table 1.

Table 1. Hydropower Plants and their corresponding dams (Ministry of Energy and Minerals 2013)

Plant Name	Nominal Capacity (MW)	Active storage volume (mill. m ³)	Normal Service life-years	Installation year
Mtera	80	3187.00	50	1988
Kidatu	204	127.00	50	1975
Hale	21	0.00	50	1967
Kihansi	180	1.00	50	2000
Pangani Falls	68	0.81	50	1995
Nyumba ya Mungu	8	871.40	50	1968
Mwenga	4	Run of the river	15	2012

TANESCO 2013

TANESCO owns four small hydropower plants of Kikuletwa in Kilimanjaro (1.16 MW), Tosamaganga in Iringa (1.2 MW), Mbalizi in Mbeya (0.3 MW), and Uwemba in Njombe (0.72 MW). With the exception of Uwemba Plant, the other three SHPs are currently not operational. They have not been in operation since 1989 (Kikuletwa), 1995 (Tosamaganga), and 1984 (Mbalizi). Discussions on rehabilitation have been underway however these have not been undertaken yet. There are six off grid small hydropower plants that are under discussion however there is no definite investment plan as of yet (Ewura 2012).

The supply of electricity is mostly focused in the urban areas. As of 2011, electricity was available to only about 15 percent of the population (World Bank 2014), with more than 80 percent supplied in the urban areas (Ewura 2013).

1.3 CLIMATE CHANGE

The expected effects of climate change in Tanzania were reviewed in detail in the Tanzania's national communication for Climate Change (UNFCCC 2002). Climate change will cause variations in rainfall patterns and soil moisture as well as increases in temperature in various areas of between 2°C and 4°C. Generally, climate change will shift agro-climatic zones and affect river runoff.

Changes in runoff of three major rivers; Pangani, Ruvu and Rufiji rivers, are expected (UNFCCC 2002). The Ruvu and Pangani rivers are expected to experience reduced runoff. This will have a significant impact on the energy sector as the rivers provide an economically important supply of water for hydropower in the country. Furthermore, these rivers will be less reliable to supplement water for lowland small-scale rain fed cultivation, as they currently do. The Rufiji river is expected to have an increase in rainfall and thus, flooding is expected which will cause damage to the major hydropower stations along the river and also to the farms and human settlements within the basin.

Climate change is expected to have a significant impact on the national agricultural sector (UNFCCC 2002). Rain-fed agriculture accounts for a significant amount of crop production thus the exacerbated vagaries of weather including increased droughts, floods and changing seasonal patterns will have a significant impact on the sector (Munishi 2009). Tanzanian farmers already suffer from low crop production due to the overdependence on the existing inadequacies and erratic rainfall. The result will increase vulnerability of smallholder farmers to food insecurity and further impact the national economy.

From the foregoing brief introduction, it is therefore evident that climate change impacts have adverse impacts to the energy sector in general and to the electricity sector in specific. Therefore Climate Change impacts need to be addressed through mitigation and adaptation initiatives.

2 NATIONAL STRATEGIES FOR WATER, AGRICULTURE AND ENERGY

Overall development strategies

The national flagship programmes for guiding growth in the country are the **Tanzania Development Vision (TDV-2025)** and the **National Strategy for Growth and Reduction of Poverty II (MKUKUTA II / MKUZA²)**, covering 2010/11 to 2014/15, with the objective of increasing agricultural growth from 2.7 percent in 2009 to 6 percent in 2015. The TDV and the NSGRP are aligned with the MDGs and aim to transform Tanzania into a middle income economy by 2025. The **MKUKUTA and MKUZA** identify three "clusters of outcomes": 1)

² MKUKUTA II refers to the acronym in Kiswahili. MKUZA is the equivalent plan for Zanzibar.

economic growth and the reduction of income poverty, (2) improvement in the quality of life and social well-being, and 3) governance and accountability.

Agriculture and Energy are key parts of the long term national level macro policies and short term initiatives. In order to implement the TDV-2025, the country has prepared the **Long Term Perspective Plan 2011/12-2025/26** which had been divided into the three five year development plans (FYDPs) whereby the country is currently implementing FYDP 2011/12-2015/16. A short term fast growth presidential initiative known as Big Results Now (BRN) was introduced in 2013 with the aim of producing significant step change results in the short term in six key sectors in the country, including agriculture and energy. The goals for agriculture include an irrigation component, by promoting 25 commercial farming deals and enhancing 78 smallholder rice irrigation schemes. The goals for energy are to increase generation capacity from 1 010 to 2 260 MW and to increase access to 5 million more Tanzanians, however the BRN goals do not include a hydropower component.

Agriculture and irrigation

The government and stakeholders in agriculture envisage an agricultural sector that by 2025 is modern, commercial, highly productive and profitable, utilizes natural resources in an overall sustainable manner and acts as an effective basis for inter-sectoral linkages.

The government aims to transform agriculture to be the backbone of the economy, as it generates reasonably high incomes and ensures food security and food self-sufficiency. Currently, the sector depends mainly on rainfall and mechanization levels are low. The constraints to agricultural growth are largely related to low productivity of land, labour and production inputs, underdeveloped irrigation potential, limited capital and access to financial services, inadequate agricultural technical support services, poor rural infrastructure; infestations and outbreaks of crop pests and diseases; erosion of natural resource base and environmental degradation (MAFC 2013). The policies, strategies and programmes that have been developed are direct responses to these challenges.

The Tanzanian government and relevant stakeholders signed the **Comprehensive African Agriculture Development Programme (CAADP)**, the African Union initiative for revamping agricultural development in Africa through the New Partnership for Africa's Development (NEPAD), on the 8th July 2010 (URT 2011). The Compact details the policies, strategies, and priority areas for agricultural and rural development and provides an opportunity for achieving the goals of **Vision 2025 for the mainland** and **Vision 2020 for Zanzibar**, as well as the economic growth and poverty reduction objectives specified in **MKUKUTA/MKUZA**.

In order to address the stagnating growth of the sector, a number of policy reforms and programs tied to the CAADP have been initiated with the support of MKUKUTA/MKUZA. The goals of CAADP fit within MKUKUTA/MKUZA.

The **National Agricultural Policy of 2013** is based on the understanding that agricultural area under cultivation can be expanded for small, medium and large-scale farming in areas with available land, while intensive farming can be applied in more densely populated areas. The **National Irrigation Policy of 2010** has the objective of ensuring sustainable availability of irrigation water and its efficient use for enhanced crop production, productivity and profitability that will contribute to food security and poverty reduction.

Tanzania has also developed the **Agricultural Sector Development Programme (ASDP)**, and for Zanzibar, the Agricultural Strategic Plan (ASP), (FAO 2008). The ASDP is a more detailed plan to achieve MKUKUTA goals, by raising the agricultural growth rate to 10 percent per year over the program period, using the implementation of a decentralization policy at local level.

In the next five years, strategic interventions in agriculture under the ASDP will focus on: expanding and improving irrigation infrastructure; easing availability and enhancing utilisation of modern agricultural inputs and mechanisation; improving and strengthening availability of scientific production methodologies through research, training, and provision of extension services; improving market access; promoting agro-processing and value addition activities; and promoting climate-compatible agriculture (URT 2011, Ministry of Finance).

More recently, the government with the support of various stakeholders has formulated the **Tanzania Agriculture and Food Security Investment Plan for 2011-12 to 2020-21 (TAFSIP)**, which includes irrigation among its six investment priority areas. The main goals in the sector are to expand the area under irrigation (although no specific target is mentioned) and to improve existing traditional irrigation schemes and promoting water use efficiency.

There is also an additional strategy for a Tanzanian public-private sector-led agricultural strategy, *Kilimo Kwanza*. Emphasizing markets and value chains, it was launched in 2008. It also has some official status, but the CAADP/TAFSIP plan is now dominant and has been endorsed by the US/G8 “New Alliance for Food Security and Nutrition;” it is the vehicle for substantial international support (Cooksey 2013³).

By signing the CAADP, Tanzania has committed to allocate at least 10 percent of their budget resources to agricultural development (URT 2011). The increased investment in agricultural programs has already taken place whereby budget allocations have significantly increased from 3 percent in 2005-2006 to nearly 9 percent in 2010-2011 (UNESCO 2012). Agricultural growth was to reach 10 percent by 2010 under MKUKUTA with the push from the ASDP but

Water resources

The **National Water Policy (NAWAPO 2002)** and the **National Water Sector Development Strategy (NWSDS 2006)** both aim to develop a comprehensive framework for sustainable

³ Cooksey 2013 is a critic of this development, claiming it places much greater emphasis on promoting large-scale commercial agriculture, not smallholder agriculture. We do not address this controversy here.

development of the country's water resources. To implement objectives of NAWAPO 2002 and NWSDS 2006, the **Water Sector Development Programme (WSDP 2006-2025)** was prepared. The country has made substantive progress in the implementation of various planned interventions in the **WSDP 2006-2025**.

Energy and hydropower

The Tanzania's **Power System Master Plan 2008 – 2031** is the guiding document for the development of energy in the country. On a large scale, energy production is envisioned as a mixed hydro-thermal system (URT 2012).

Small Power Projects, especially around renewable energy sources, are being supported by the Government of Tanzania (GoT) through the Ministry of Energy and Minerals (MEM). The MEM is preparing an enabling framework for small power development, with a focus on rural electrification, that also include small hydropower projects. Eligible Small Power Projects are those of capacity ranging from 100 kW to 10 MW and utilizing renewable energy source, intended to supply commercial electricity to the National Grid or isolated grids in Tanzania. The framework is being developed pursuant to the Electricity Act, 2008. The framework will reduce negotiation time and cost, and opens the possibility of implementing rural electrification projects (EWURA 2013).

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 a **Financial Diagnostic Tool**. This tool processes project-based information (section 4) to derive the investment estimates at country level. The necessary project information to plug in the tool includes: project description, funding partners, time-scale, total cost, type of project, etc. Project types that are included in the tool are the following:

1. Small scale irrigation development
2. Rehabilitation/modernization of irrigation
3. Large Scale Irrigation development⁴
4. Small/medium scale hydropower development
5. Rehabilitation of hydropower plants
6. Large scale hydropower development⁵
7. Others (drinking water supply, etc)

The Financial Diagnostic Tool incorporates a number of assumptions amongst which are the project cost distribution over time and the relevance of the water component as a percentage of the total cost. A conversion rate (yearly average) to change to US dollars any other base currency has also been applied and projections have been made for the period after 2013 with the use of an exponential regression.

The tool also helps conducting **complementary financial analysis** including: investment by type of project, contribution of different sources of financing, hectares to develop/rehabilitate by crop, etc. This complementary financial analysis is also presented in this section in Figures 5 to 11.

The investment envelope is can be found in Table 2. It present investment estimates according to the project typologies mentioned above and three time scales: short term (less than 4 years), medium term (between 4 and 8 years), and long term (more than 8 years)⁶.

In the case of Tanzania, the investment envelope has been calculated based on 58 on-going projects and 152 pipeline projects that are listed in Annex 1. The on-going projects range from a cost of about US\$50 000 to about US\$111 million. The pipeline projects have, on average, have

⁴ Large scale irrigation is considered over 1000 ha.

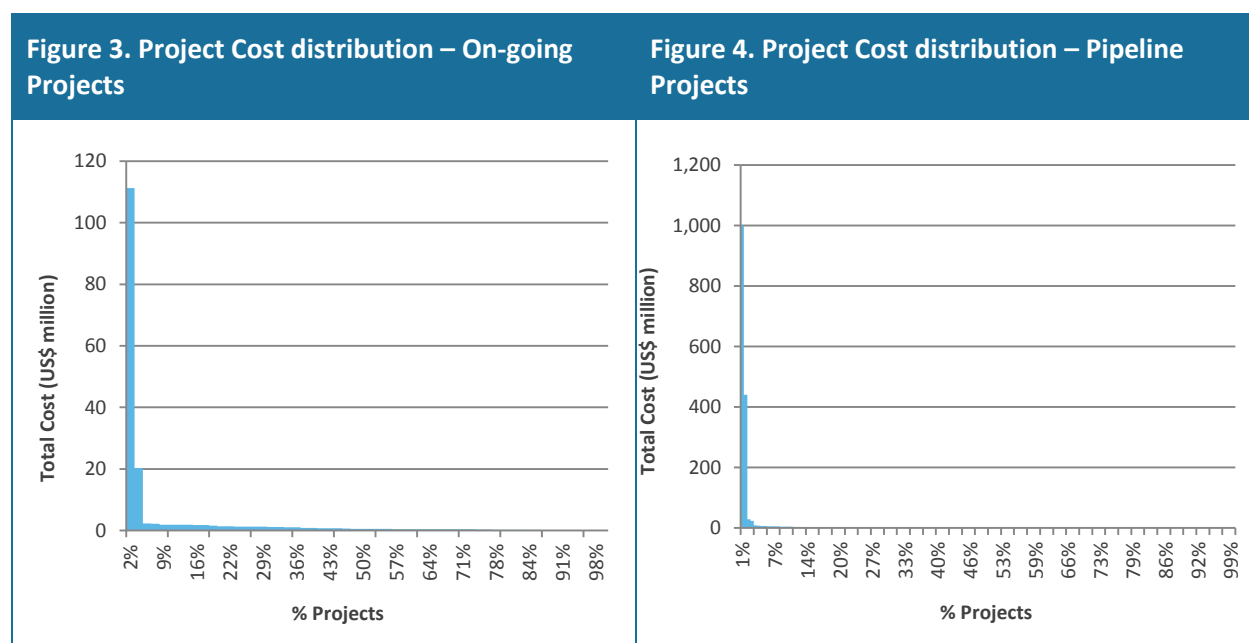
⁵ Large scale hydropower is considered when installed capacity is over 10 MW.

⁶ The baseline year considered for the analysis is 2013. 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.

much higher average investment costs and range between a minimum of about US\$110 000 and a maximum of US\$1000 million (Table 2).

Table 2. Summary statistics of the Projects Portfolio		
	On-going	Pipeline
Number of Projects	58	152
Min (million US\$)	0.05	0.11
Max (million US\$)	111	1000
Average (million US\$)	3	11
Mode (million US\$)	0.1	0.6

A close look at the distribution of costs amongst on-going projects (Figure 3) shows that there is only one project (2 percent of the on-going) that has costs above US\$100 million. There are 20 projects (34 percent) with costs between US\$100 million and a US\$1 million and 36 projects (62 percent) that have investment costs between US\$1 million and US\$100 000. There is only one remaining project with a cost below US\$100 000.



As for projects in the pipeline (Figure 4), it can be noted that maximum costs are much higher. The reason behind is that there are two hydropower projects with very high costs. One of them, the *Ruhudji hydropower project* costs over 1 billion and the second (*Regional Rusumo Falls Hydro Power Project*) about US\$440 million. From the remaining projects, 45 have costs

between US\$30 million and US\$1 million. The remaining 105 have costs within US\$1 million and US\$100 000.

The total investment envelope for Tanzania has been estimated at US\$1 303 million, where US\$106.26 million are allocated to the development of small scale irrigation systems, US\$183 million to the rehabilitation and modernization of irrigation schemes, US\$50 million to large scale irrigation development, US\$2.26 million to the rehabilitation of hydropower plants and US\$952 million to the development of large scale hydropower (Table 3). There is a total of almost US\$10 million dedicated to the category *Others*, which in the case of Tanzania mainly refers to topographic studies, environmental impact assessments and other studies to conduct prior to project implementation.

Time Frame	Short-term		Medium-term		Long-term		Total	
	M US\$	%	M US\$	%	M US\$	%	M US\$	%
Small Scale irrigation development	106.03	8%	0.22	0%	0.00	0%	106.26	8%
Rehabilitation/modernization of irrigation schemes	148.20	11%	34.73	3%	0.00	0%	182.93	14%
Large Scale Irrigation development	50.03	4%	0.00	0%	0.00	0%	50.03	4%
Small/ medium scale hydropower	0.00	0%	0.00	0%	0.00	0%	0.00	0%
Rehabilitation of hydropower plants	2.26	0%	0.00	0%	0.00	0%	2.26	0%
Large scale hydropower development	352.18	27%	113.40	9%	486.41	37%	952.00	73%
Others	9.95	1%	0.00	0%	0.00	0%	9.95	1%
Total	668.67	51%	148.36	11%	486.41	37%	1,303.44	100%

The total amount of the three irrigation categories is almost US\$339 million (26 percent of the envelope), while the hydropower categories would add up to US\$954 million (73 percent) coming from the two large scale hydropower projects.

Investment for irrigation projects is expected to take place mostly in the short term with few of them extending into the medium term (until 2018 or 2019).

As for hydropower projects, investment in the short and long term are much higher than in the medium term. This is because one of the projects will be fully implemented in the short term (2014-2017) and the other won't finish its implementation until 2025.

Cost distribution

Figures 5 to 7 illustrate the distribution of project costs in time by type of project for those on-going and in the pipeline. As it was mentioned before, it can be seen that for irrigation projects most of the investment would take place in the short term. As for hydropower projects, they dominate investment in the long term.

Figure 5. Cost distribution in time per typology – All Projects (US\$ million)

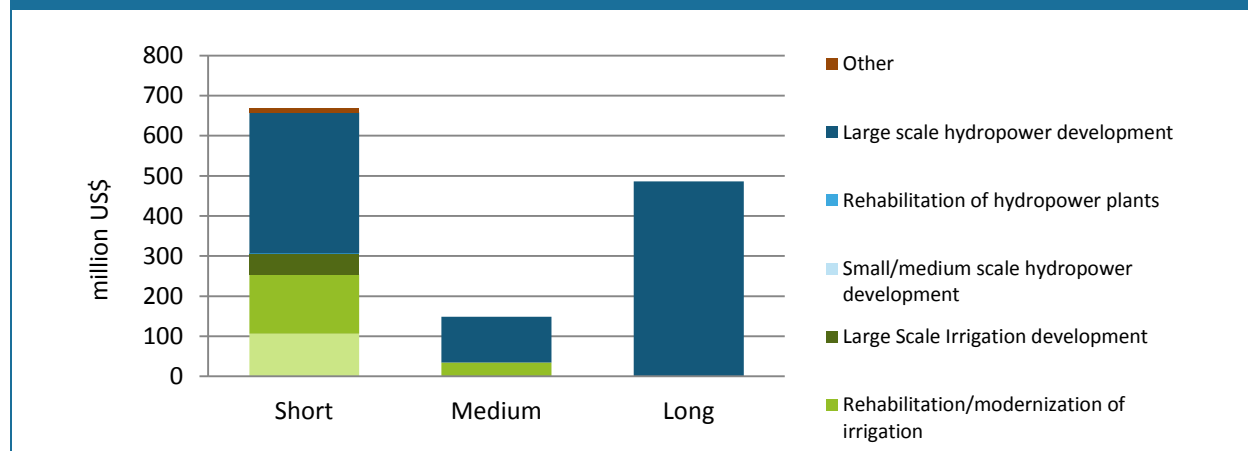


Figure 6. Cost distribution in time per typology – On-going Projects (US\$ million)

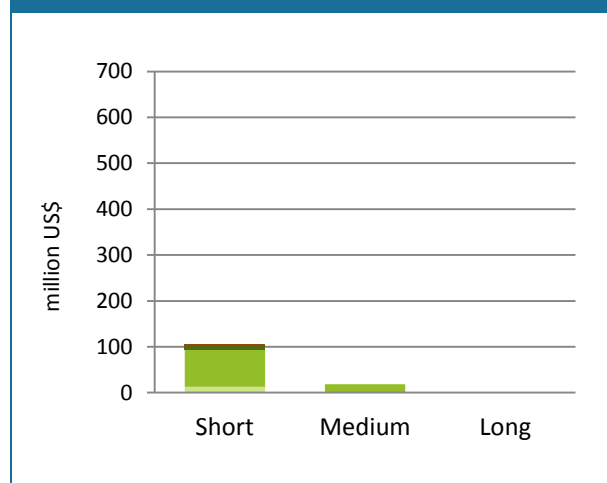
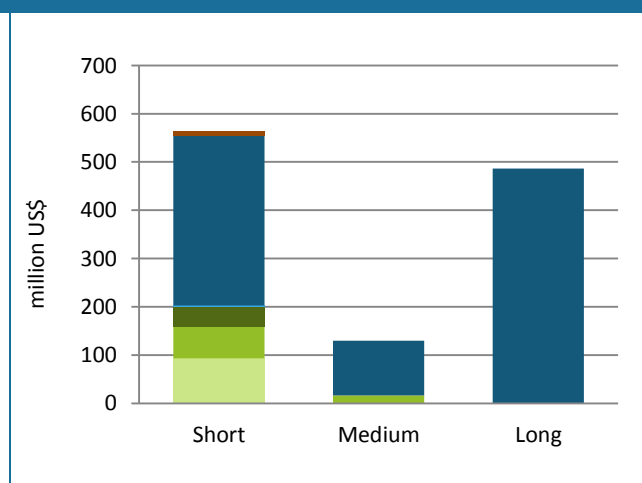


Figure 7. Cost distribution in time per typology – Pipeline Projects (US\$ million)



Figures 8 to 10 show the distribution of costs by type of project. Hydropower projects account for around 73 percent of the total investment envelope. When looking into on-going projects (Figure 9) the envelope is fully dedicated to irrigation projects, with almost 82 percent spent on rehabilitation and modernization of schemes. Regarding the pipeline, the two projects dedicated to hydropower account for 81 percent of the investment envelope.

Figure 8. Cost share per typology – All Projects (percent)

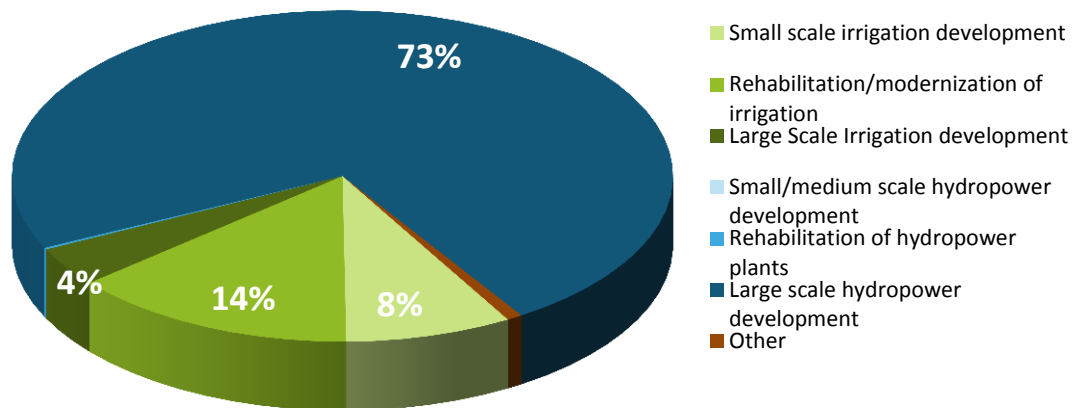


Figure 9. Cost share per typology – On-going Projects (percent)

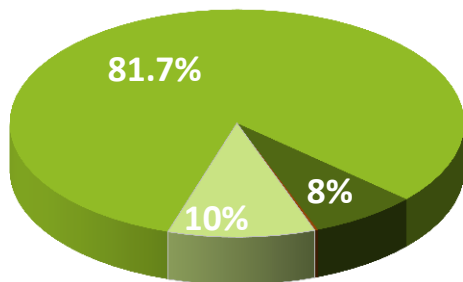
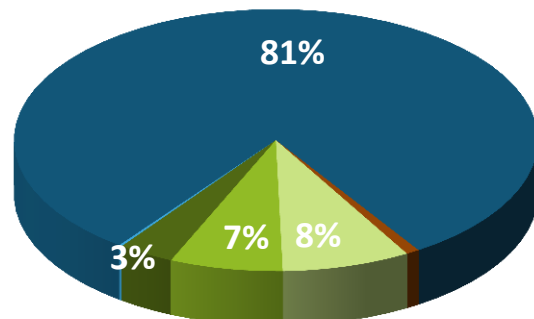


Figure 10. Cost share per typology – Pipeline Projects (percent)



Source of funding

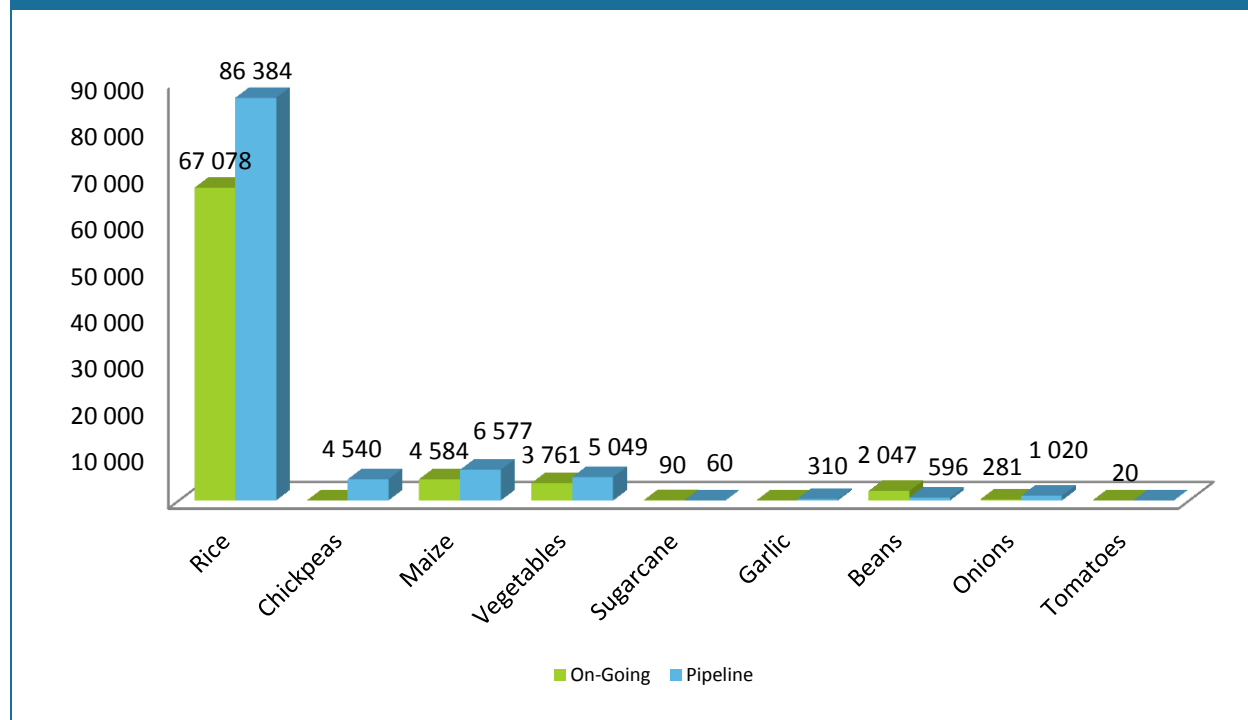
Projects in the portfolio will be mostly funded by public sources, although donors like the World Bank (WB), the Japan International Cooperation Agency (JICA), the African Development Bank (AfDB), USAID, the British Department for International Development (DFID), Netherlands Organization for International Cooperation, etc, are also contributing financially in some of them. Some investment from the private sector is also expected.

Hectares to develop/rehabilitate & modernize

The project portfolio is bringing changes to about 158 629 ha of land in the country, 68 901 ha from on-going projects and 89 728 ha from projects in the pipeline. Projects dedicated to irrigation development cover 87 163 ha; those targeted at the rehabilitation/modernization of irrigation schemes would be implemented in 54 380 ha and those that have both development and rehabilitation purposes cover 17 086 ha.

Figure 11 shows the expected area to be harvested ⁷ after the implementation of the projects portfolio. Rice is the predominant crop in both on-going and pipeline projects. Other crops covered are chickpeas, maize, vegetables, sugarcane, garlic, beans, onions and tomatoes.

Figure 11. Distribution of expected harvested area by crop (ha)



⁷ It refers to the area from which a crop is gathered. For example, in an irrigation scheme covering 100 ha it may be possible to crop 100 ha of rice during the rainy season and 100 ha of beans during the dry season. In this case the harvested area would be 200 ha.

4 PROJECT PORTFOLIO AND THE AGRICULTURE AND FOOD SECURITY INVESTMENT PLAN

As it was explained before, the investment envelope was built with information from a national inventory of irrigation and hydropower projects currently on-going or in the pipeline. These projects are presented in Annex 1 (table 1.1 for on-going projects and 1.2 for pipeline projects). As it was explained before, the investment envelope was built with information from a national inventory of irrigation and hydropower projects currently on-going or in the pipeline. These projects are presented in the tables 4.1 (on-going) and 4.2 (pipeline). The main sources used to obtain the information presented are the zones offices where projects would be implemented, also the World Bank and the Ministry of Energy and Minerals.

When looking into irrigation/agriculture water management (AWM) projects, the portfolio in this report reflects those goals included in the investment plan, i.e. to expand area under irrigation and to rehabilitate irrigation schemes. However, since the plan does not include specific targets on irrigation development/rehabilitation it is difficult to measure the effectiveness of irrigation planning in the country.

5 CONCLUSIONS

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

- a) The envelope shows that there is higher emphasis in investing in small scale irrigation (US\$106 million) rather than large scale irrigation (US\$50 million). It seems that the country is not forgetting about small holders.
- b) There is a balance between irrigation development and rehabilitation. The former accounts for US\$183 million in the total investment envelope and the second for US\$156 million.
- c) Most of the investment for irrigation projects will take place in the short term (until 2017). This highlights the lack of long-term strategic investment in the country in contrast with its vision 2025.
- d) The totality of the investment in hydropower is dedicated to develop large scale facilities, which can raise environmental concerns that the country may wish to consider.
- e) Public sources of funding are predominant in the Tanzanian investment envelope, thus the country seems to be neglecting the potential role of the private sector⁸ (i.e. small farmers as well as more commercial ones). This would contradict the country's goals of increasing the role of the private sector in investment in agriculture. Mechanisms should be put in place to reverse this trend.
- f) Irrigation projects are mostly targeting rice production, both in rehabilitation and expansion. Tanzania's dependency on imports for rice is already very low, thus it seems that the country is targeting at full self-sufficiency.
- g) Investment/expenditure in operation and maintenance (O&M) of irrigation schemes has not been specified in the list of projects in the portfolio. Countries should not forget about the importance of O&M for the correct functioning and performance of irrigation systems.
- h) The policy documents consulted do not include specific targets on areas to develop under irrigation or to rehabilitate. This makes it more difficult to assess progress in achieving the goals set in investment plans.
- i) The main scope of this profile was to conduct a financial analysis of on-going and planned projects to develop/rehabilitate irrigation and hydropower infrastructure in Tanzania. Although the supporting policy and institutional environment is very much necessary to make sure this type of investments are successful, the available time and financial resources did not allow for such an analysis. The authors also wish to acknowledge the importance of undertaking additional investments in research and capacity building in order to promote innovation and optimize returns.

⁸ The reader has to take into account that it is generally more difficult to track investments undertaken by the private sector, thus the envelope maybe biased towards public investment.

ANNEX 1. PROJECT PORTFOLIO

TABLE 1.1. ON-GOING PROJECTS

#	Project title	Funding Partners	Time Scale (Start End)		Total Budget (million US\$)	Description
1	Zignali irrigation scheme (Morogoro Zone)	GOT ⁹	2013	2014	0.530	The project has several components: main canal lining (260 m), construction and lining of a secondary canal (3720 m) and tertiary canals (6696 m), construction of main drain (7000 m), farm service roads (4100 m) and 33 farm structures.
2	Kinyope irrigation Scheme (Mtwara Zone)	GOT,JICA	2013	2016	0.526	The project includes the construction of secondary canals and farm structures for a command area of 600 ha where rice (in the wet season), maize and vegetables (in the dry season) will be grown.
3	Lumpungu Irrigation Scheme	GOT	2013	2016	0.059	The project is located at the valley of Nyarugusu village (Mabamba division). The scheme to develop will cover 206 ha of rice targeting 443 farmers and 2658 beneficiaries.
4	Construction of Earth Dam for Mahiga Irrigation Scheme (Mwanza)	GOT	2011	2014	0.001	The project will include the construction of a dam and on farm infrastructures to irrigated 220 ha of rice. The number of beneficiaries is 180.
5	Inala Dam & Irrigation Scheme	GOT	2011	2018	0.657	The project is located at Inala village, in Tabora Municipality. The scheme is owned by 296 farmers and is to cover 400 ha of rice. The Inala dam will have a capacity of 1 376 000 m3 when completed .
6	Mgondogondo Irrigation Scheme	GOT	2011	2016	0.003	Located at Lusohoko village, in Kibondo division, the project is to develop an irrigation scheme of 212 ha for rice and targeting 468 farmers and 2809 beneficiaries. The main source of water is Mpemvyi river.
7	Njage irrigation scheme (Morogoro Zone)	GOT	2010	2016	1.283	The project includes the construction and some rehabilitation of secondary canals and farm structures to irrigate 325 ha of rice (250 ha) and maize (75 ha).

⁹ GOT: Government of Tanzania

8	Lengawaha irrigation scheme (Morogoro Zone)	GOT	2010	2015	0.049	The project includes the lining of main canal (2500 m) and the construction of three aqueducts to irrigate 60 ha of rice.
9	Makomelo Irrigation Scheme	GOT	2010	2017	0.015	The project is located at Makomelo village, East of Igunga District Headquarters. The scheme to be developed is owned by 660 farmers (3959 beneficiaries) and will cover 1500 ha of rice. The feasibility study and design was from 2010 - 2012. The construction will start when funds are released. The source of water is Mbutu river.
10	Bugunga Irrigation Scheme	GOT	2010	2016	0.002	Located at Kiyobera village, Kakonko division, the scheme will cover an area of 138 ha of rice targeting 775 farmers and 4655 beneficiaries. The source of water is the Muhwazi river.
11	Kigugu irrigation scheme (Morogoro Zone)	GOT	2009	2016	0.000	The project includes the construction of a secondary canal, a syphon, a protection dyke for a command are of 40 ha of rice. Farm roads will also be constructed.
12	KahamaNhalanga Dam & Irrigation Scheme	GOT	2009	2014	0.804	Located at Kahamanhalanga village (West of Nzega District Headquarters), this scheme will cover 153 ha of rice. It is owned by 400 farmers (1800 beneficiaries). The source of water is the Kahamanhalanga Dam.
13	Nyaronga Irrigation Scheme	GOT	2008	2017	0.160	Located at Nyamtukuza village (North - West of Kakonko District Headquarters), this scheme covers 153 ha of rice, targeting 369 farmers and 2212 beneficiaries. The source of water is Mwiruzi perennial river.
14	Mwiruzi Irrigation Scheme	GOT	2008	2016	0.082	Located at Rumashi village (North - West of Kakonko District Headquarters), this scheme covers 152 ha of rice, targeting 449 farmers and 2692 beneficiaries. The source of water is the Mwiruzi river.
15	Mkula irrigation scheme (Morogoro Zone)	GOT/JICA	2007	2014	1.368	The project includes the construction and some rehabilitation of: main canal (60 m), secondary canals (2300 m), culverts, farm roads (5600 m), drains (6000 m) and tertiary canals (6910 m)
16	Chanzuru irrigation scheme (Morogoro Zone)	GOT	2006	2016	0.784	The project includes: lining of main canal (500 m), construction of flood dyke (2850 m), secondary canals (9100 m), drains (10000 m) and farm service (9400 m)
17	Ulyanyama Dam Irrigation Scheme	GOT	2006	2015	1.440	Located at Ulyanyama sub village (Sikonge District), this scheme is to cover 400 ha of rice during the wet season and vegetables during the dry season. It is owned by 991 farmers (5945 beneficiaries). The source of water is Ulyanyama Dam with a capacity of 2 070 000 mill m3

18	Rungwe mpya Irrigation Scheme	GOT	2006	2017	0.776	Located at Rungwe Mpya village (Kasulu District), this scheme is to cover 300 ha to grow rice during the wet season and beans and maize during the dry season. The number of beneficiaries is 1170, of those 195 are farmers. The source of water is Nyamgongo perennial river.
19	Igurubi Irrigation Scheme	GOT	2013	2016	0.030	The project consists in the rehabilitation of an irrigation scheme located at Igurubi village (Igunga District). The scheme was constructed in 2005-2006 and is owned by 443 farmers (6150 beneficiaries). The current irrigated area covers 334 ha of rice but there is the potential to irrigate 400 ha. The source of water is Mwaombwa river.
20	Katengera Irrigation Scheme	GOT	2013	2014	0.051	The project consists in the rehabilitation of an irrigation scheme located at Katengera village (Kakonko District). The scheme covers 209 ha of rice and was developed in 2005-2008 with 665 farmers (3987 beneficiaries). The source of water is Katengera river.
21	Nkiniziwa Dam & Irrigation Scheme	GOT	2004	2015	0.135	The project is located at Nkiniziwa village (Nzega District). The scheme currently covers 50 ha but has the potential to irrigate 120 ha. The main crops grown are rice during the rainy season and vegetables during dry season. The source of water is Nkiniziwa dam.
22	Nkonkwa Irrigation Scheme	GOT	2003	2015	0.155	The project is located at Nkonkwa village (Uvinza District). It consists on the rehabilitation an extension of an irrigation scheme established in 2003-2005 to cover 320 ha. Main crops are: paddy grown in rainy season and maize and beans during dry season. The source of water is Kibezi river.
23	Msambara Irrigation Scheme	GOT	2000	2017	0.410	Located at Msambara village (Kasulu District), this scheme is to cover 90 ha to grow rice, during the wet season, and maize, vegetables and sugar cane during the dry season. The source of water is Ruchugi perennial river.
24	Lusu Irrigation scheme	GOT	2010	2014	0.062	The project consists in the rehabilitation of an irrigation scheme located at Mwaluzwilo (East of Nzega District). The scheme, established in 1995, is owned by 144 farmers (1000 beneficiaries) and covers 300 ha of rice.
25	Budushi Dam & Irrigation Scheme	GOT	2010	2014	0.247	The scheme is located at Budushi village (Nzega District). It is owned by 137 farmers (9300 beneficiaries) and covers 100 ha (with the potential of irrigating 400 ha). The main crops are paddy, grown during rainy season, and vegetables, grown during dry season. The scheme was established in 1987-1994. The source of water is Budushi.

26	Minepa irrigation scheme (Morogoro Zone)	GOT	2012	2016	0.788	The project includes: the construction and lining of the main canal (1250 m), secondary canals (13200 m), tertiary canals (12 110 m), the main drain (1000 m), service roads (8120 m) and 52 farm structures.
27	Mwega irrigation scheme (Morogoro Zone)	GOT	2012	2016	0.465	Construction and rehabilitation of catchment conservation structures (soil erosion control check structures) and catchment area conservation measure
28	Alquadria Salama irrigation scheme (Morogoro Zone)	GOT	2012	2014	0.818	The project includes: construction of stoplog grooves over weir; lining of main canal (1000 m); construction of 5 turnouts; installation of 25 culverts, construction of farm road (12 000 m); excavation of drains (9000 m); excavation of field drains (9000 m).
29	Chanjale irrigation scheme (Morogoro Zone)	GOT	2012	2014	0.000	Improvement of the water distribution system (3 secondary canals 2700 m, 18 field turnouts) and 5000 m access road.
30	Ruvu NAFCO (CHAURU) (Morogoro Zone)	GOT	2012	2014	1.314	The project includes: main canal lining 2500 m, secondary canals 3000 m, purchase of standby pump & booster pumps and rehabilitation of the service roads 18 km.
31	Changanyikeni irrigation scheme (Morogoro Zone)	GOT	2012	2014	0.275	The project includes: the construction of a distribution tank, the main pipe system (1200 m), sub-main pipe system (2500 m) and drip system for 21 ha.
32	Dakawa rice farm (Morogoro Zone)	GOT	2009	2015	20.266	The project includes: the rehabilitation of the main canal (lining 7500m), secondary canals 1-5 (lining); remodeling secondary canals 6-8, the main drain, farm service roads 35800 m, and 17 check & drop structures; repairing all gates, replacing pumps building renovation and extension of the farm by 500 ha.
33	Dakawa rice farm (Morogoro Zone)	GOT	2013	2016	1.016	The project includes: rehabilitation of main canal (lining 7500 m), secondary canals 1-5 (lining) & remodeling secondary canals 6-8, main drain, farm service roads (35800 m), and 17 check & drop structures, repair all gates & replace 9 gates, replacement of 6 pumps, pumps building renovation and extension of the farm by 500 ha.
34	Bagamoyo BIDP (Morogoro Zone)	GOT	2009	2014	0.197	The project includes: lining of main canal(2500 m) and secondary canals (3000 m), purchase of standby pump and booster pumps and rehabilitation of the service roads (18 km).
35	Kasyabone - Busokelo District (Mbeya Zone)	GOT, DFID	2011	2015	0.496	Construction of irrigation scheme for rice involving 359 farmers

36	Mbaka - Busokelo District (Mbeya Zone)	GOT, DFID	2013	2015	0.305	Construction of irrigation scheme for rice (wet season) and maize (dry season) involving 1 300 farmers
37	Katela Ntaba - Busokelo District (Mbeya Zone)	GOT, DFID	2012	2015	0.430	Construction of irrigation scheme for rice (wet season) and maize (dry season) involving 437 farmers
38	Lwanyo Dam - Mbarali District (Mbeya Zone)	NIDF,GOT	2012	2015	1.923	Construction of irrigation scheme for rice (wet season) and maize and vegetables (dry season)
39	Mwendamtitu - Mbarali District (Mbeya Zone)	GOT, DFID	2012	2015	0.440	Rehabilitation and extension of irrigation scheme for rice targeting 1,700 farmers
40	Iyendwe - Momba District (Mbeya Zone)	NIDF, GOT	2013	2016	0.427	Construction of irrigation scheme for rice involving 450 farmers
41	Naming'ongo - Mbozi District (Mbeya Zone)	NIDF, GOT	2013	2015	1.124	Construction of irrigation scheme for rice involving 685 farmers
42	Simboya - Mbeya District (Mbeya Zone)	GOT	2013	2015	0.140	Construction of irrigation scheme for maize, beans and vegetables
43	Imezu - Mbeya District (Mbeya Zone)	GOT, DFID	2013	2015	0.140	Construction of irrigation scheme for maize, beans and vegetables involving 255 farmers
44	Mkuyuni- Mbeya District (Mbeya Zone)	GOT	2013	2015	0.140	Construction of irrigation scheme for maize, beans and vegetables
45	Karema - Mpanda District (Mbeya Zone)	GOT, DFID	2012	2014	0.460	Rehabilitation and extension of irrigation scheme for rice targeting 670 farmers
46	Kakese - Mpanda District (Mbeya Zone)	GOT, DFID	2012	2014	0.428	Rehabilitation and extension of irrigation scheme for rice targeting 179 farmers
47	Sakalilo/Isanga - Sumbawanga District (Mbeya Zone)	GOT, DFID	2012	2014	0.107	Construction of irrigation scheme for rice, involving 117 farmers

48	Katuka - Sumbawanga District (Mbeya Zone)	GOT, DFID	2012	2014	0.474	Construction of irrigation scheme for maize, beans and vegetables involving 351 farmers
49	Singiwe - Sumbawanga District (Mbeya Zone)	GOT, DFID	2013	2015	0.491	Construction of irrigation scheme for maize, beans and vegetables involving 470 farmers
50	Lwanji/ Ng'ongo - Sumbawanga District (Mbeya Zone)	GOT, DFID	2013	2015	0.397	Construction of irrigation scheme for rice, involving 72 farmers
51	Ulumi - Sumbawanga District (Mbeya Zone)	FACF	2010	2015	0.173	Construction of irrigation scheme for maize, beans and vegetables involving 1996 farmers
52	Lwafi - Nkasi District (Mbeya Zone)	GOT, DFID	2012	2015	0.341	Construction of irrigation scheme for rice, involving 672 farmers
53	Katongolo - Nkasi District (Mbeya Zone)	GOT, DFID	2013	2015	0.214	Construction of irrigation scheme for rice, involving 1 389 farmers
54	Itambo - Nkasi District (Mbeya Zone)	FACF	2013	2015	0.159	Construction of irrigation scheme for maize, beans and vegetables involving 194 farmers
55	Izimbili Dam & Irrigation Scheme	GOT	2012	2016	0.023	The project is located at Izimbili village (Urambo District) and includes the construction of an irrigation scheme and a dam to irrigate 1500 ha of rice.
56	Goweko Dam & Irrigation Scheme	GOT	2012	2016	0.007	The project is located at Goweko village (Uyui District) and includes the construction of an irrigation scheme that will cover 200 ha involving 785 farmers and 4713 beneficiaries. 200Ha undeveloped, the potential area is 200Ha and beneficiaries are 4713. The main crops are rice grown during the rainy season and vegetables grown during the dry season. The source of water will be Goweko dam.
57	Kashagulu Irrigation Scheme	GOT	2010	2016	0.030	The project is located at Kashagulu village (Kalya ward). The scheme to develop will cover 1000 ha of rice targeting 250 farmers. The source of water is Kampisa river.
58	Kasuga Dam & Irrigation Scheme	GOT	2012	2015	0.384	Located at Kasuga village (Kakonko District), this scheme area will cover 20 ha, involving 526 farmers. Main crops are onion and tomatoes. The source of water is Kasuga dam.

59	Mgambazi Irrigation Scheme	GOT	2013	2016	0.020	Located at Mgambazi village, Igalula ward, Buhingu division in Uvinza District. The scheme area is 1500 ha with 240 farmers and beneficiaries are 40. The scheme is at design stage. Main crops are paddy grown in the rainy season and maize and beans during dry season. The source of water is Rwegere river.
60	Mpanga Ngalimila (Morogoro Zone)	GOT/USAID	2013	2018	111.215	Rehabilitation of irrigation scheme for rice production

Table 1.2. PIPELINE PROJECTS

#	Project title	Funding Partners	Time Scale (Start End)		Total Budget (million US\$)	Description
1	Mgugwe (Morogoro Zone)	GOT	2015	2018	9.079259252	The project consists in the rehabilitation of an irrigation scheme that covers 2270 ha of rice
2	Udagaji (Morogoro Zone)	GOT/ USAID	2015	2018	1.199902104	The project consists in the rehabilitation of an irrigation scheme that covers 1950 ha of rice
3	Kisegese (Morogoro Zone)	GOT/ USAID	2014	2015	8.322930357	The project consists in the rehabilitation of an irrigation scheme that covers 7200 ha of rice
4	Kiberege (Morogoro Zone)	GOT	2015	2016	28.79765049	The project consists in the rehabilitation of an irrigation scheme that covers 500 ha of rice
5	Sonjo (Morogoro Zone)	GOT/ USAID	2014	2019	0	The project consists in the rehabilitation of an irrigation scheme that covers 740 ha of rice
6	Maki (Morogoro Zone)	GOT	2014	2019	0.967809719	The project consists in the rehabilitation of an irrigation scheme that covers 340 ha of rice
7	Lupiro (Morogoro Zone)	GOT	2014	2019	23.47493178	The project consists in the rehabilitation of an irrigation scheme that covers 4000 ha of rice
8	Lubasazi (Morogoro Zone)	GOT	2015	2018	0.914754736	The project consists in the rehabilitation of an irrigation scheme that covers 100 ha of rice
9	Mbogo (Morogoro Zone)	CVT	2015	2018	6.060826271	The project consists in the rehabilitation of an irrigation scheme that covers 3000 ha of rice
10	Mgongola (Morogoro Zone)	GOT	2014	2015	5.070585264	The project includes: the construction of a main canal (2000 m), a secondary canal, a syphon, a protection dyke and farm roads to irrigate 620 ha of rice
11	Chamoto Batania - Mbarali District (Mbeya Zone)	GOT	2015	2016	0.495184599	Construction of irrigation scheme to irrigate 530 ha of rice involving 208 farmers
12	Chimba chimba- Mpolo - Mbarali District (Mbeya Zone)	GOT	2014	2015	0.51218033	Construction of irrigation scheme to irrigate 702 ha of rice involving 296 farmers
13	Chosi - Mbarali District (Mbeya Zone)	GOT	2015	2016	0.375284382	Construction of irrigation scheme to irrigate 570 ha of rice involving 202 farmers

14	Gonakuvagologo - Mbarali District (Mbeya Zone)	GOT	2014	2015	0.328942482	Construction of irrigation scheme to irrigate 150 ha of rice involving 800 farmers
15	Gwiri - Mbarali District (Mbeya Zone)	GOT, DFID	2015	2016	0.375122697	Construction of irrigation scheme to irrigate 500 ha of rice involving 800 farmers
16	Herman - Mbarali District (Mbeya Zone)	GOT	2014	2015	0.461847728	Construction of irrigation scheme to irrigate 530 ha of rice involving 151 farmers
17	Ibohora - Mbarali District (Mbeya Zone)	GOT	2015	2016	0.389968184	Construction of irrigation scheme to irrigate 200 ha of rice involving 334 farmers
18	Igomelo - Mbarali District (Mbeya Zone)	GOT, DFID	2014	2015	0.473625875	Construction of irrigation scheme to irrigate 530 ha of rice (in rainy season) and maize and vegetables (in the dry season) involving 294 farmers
19	Igumbilo - Mbarali District (Mbeya Zone)	GOT	2015	2016	0.32125379	Construction of irrigation scheme to irrigate 475 ha of rice involving 230 farmers
20	Ipatagwa - Mbarali District (Mbeya Zone)	GOT	2014	2015	0.506845118	Construction of irrigation scheme to irrigate 550 ha of rice involving 304 farmers
21	Kapyo - Mbarali District (Mbeya Zone)	GOT, DFID	2014	2015	0.905274948	Construction of irrigation scheme to irrigate 329 ha of rice involving 517 farmers
22	Kapunga Small holder - Mbarali District (Mbeya Zone)	GOT	2014	2015	0.516845972	Construction of irrigation scheme to irrigate 875 ha of rice involving 769 farmers
23	Mbuyuni-Kimani - Mbarali District (Mbeya Zone)	GOT	2014	2015	3.536913209	Construction of irrigation scheme to irrigate 1500 ha of rice involving 1105 farmers
24	Chang'ombe - Mbarali District (Mbeya Zone)	GOT	2014	2015	0.661566259	Construction of irrigation scheme to irrigate 162 ha of rice involving 102 farmers
25	Lyanyula - Mbarali District (Mbeya Zone)	GOT	2014	2015	5.551002964	Construction of irrigation scheme to irrigate 768 ha of rice involving 494 farmers
26	Madibira - Mbarali District (Mbeya Zone)	GOT, DFID	2014	2015	6.066954986	Construction of irrigation scheme to irrigate 3300 ha of rice involving 3400 farmers
27	Maendeleo - Mbarali District (Mbeya Zone)	GOT	2014	2015	0.839544229	Construction of irrigation scheme to irrigate 795 ha of maize and vegetables involving 210 farmers
28	Mahango - WIA - Mbarali District (Mbeya Zone)	GOT	2014	2015	0.423082293	Construction of irrigation scheme to irrigate 764 ha of rice involving 450 farmers

29	Majengo - Mbarali District (Mbeya Zone)	GOT	2016	2017	0.503323377	Construction of irrigation scheme to irrigate 550 ha of rice involving 440 farmers
30	Mashala - Mbarali District (Mbeya Zone)	GOT, DFID	2016	2017	1.223271583	Construction of irrigation scheme to irrigate 400 ha of rice (during the rainy season) and maize and vegetables (during the dry season) involving 350 farmers
31	Matebete - Mbarali District (Mbeya Zone)	GOT	2015	2017	0.394967776	Construction of irrigation scheme to irrigate 470 ha of rice involving 56 farmers
32	Mayota - Mbarali District (Mbeya Zone)	GOT	2015	2017	0.289976342	Construction of irrigation scheme to irrigate 150 ha of rice involving 45 farmers
33	Motombaya - Mbarali District (Mbeya Zone)	GOT	2015	2017	0.554228782	Construction of irrigation scheme to irrigate 600 ha of rice involving 700 farmers
34	Mswiswi-Azimio - Mbarali District (Mbeya Zone)	GOT	2015	2016	0.770385547	Construction of irrigation scheme to irrigate 300 ha of rice involving 134 farmers
35	Kongolo Mswiswi - Mbarali District (Mbeya Zone)	GOT	2016	2017	0.720991494	Construction of irrigation scheme to irrigate 600 ha of rice involving 130 farmers
36	Mwendamtitu - Mbarali District (Mbeya Zone)	NIDF, GOT	2016	2018	7.058775407	Construction of irrigation scheme to irrigate 3000 ha of rice involving 1700 farmers
37	Njalalila - Mbarali District (Mbeya Zone)	GOT	2016	2018	0.728857939	Construction of irrigation scheme to irrigate 320 ha of rice involving 165 farmers
38	Njombe - Mbarali District (Mbeya Zone)	GOT	2015	2016	0.280977076	Construction of irrigation scheme to irrigate 519 ha of rice involving 210 farmers
39	Ruanda majenje - Mbarali District (Mbeya Zone)	GOT	2015	2016	0.474961249	Construction of irrigation scheme to irrigate 371 ha of rice involving 63 farmers
40	Isenyela - Mbarali District (Mbeya Zone)	GOT	2016	2017	0.730873276	Construction of irrigation scheme to irrigate 1000 ha of rice involving 267 farmers
41	Mpunga Mmoja - Mbarali District (Mbeya Zone)	GOT	2016	2018	4.640573141	Construction of irrigation scheme to irrigate 2500 ha of rice involving 1,250 farmers
42	Mhwela - Mbarali District (Mbeya Zone)	GOT	2016	2017	0.542705266	Construction of irrigation scheme to irrigate 223 ha of rice involving 117 farmers
43	Msesule - Mbarali District (Mbeya Zone)	GOT	2014	2017	1.203623775	Construction of irrigation scheme to irrigate 1500 ha of rice involving 480 farmers

44	Uturo - Mbarali District (Mbeya Zone)	GOT, DFID	2014	2017	1.128850279	Construction of irrigation scheme to irrigate 900 ha of rice involving 1,700 farmers
45	Cherehani Mkoga - Iringa District (Mbeya Zone)	GOT, DFID	2014	2017	0.892910494	Construction of irrigation scheme to irrigate 300 ha of maize, beans and vegetables
46	Idodi - Iringa District (Mbeya Zone)	GOT	2014	2017	2.123414283	Construction of irrigation scheme to irrigate 250 ha of rice involving 200 farmers
47	Ipwasi Ndorobo - Iringa District (Mbeya Zone)	GOT, DFID	2014	2017	1.452807901	Construction of irrigation scheme to irrigate 100 ha of rice (in the rainy season) and maize (in the dry season) involving 315 farmers
48	Mafuruto - Iringa District (Mbeya Zone)	GOT	2014	2017	0.922799035	Construction of irrigation scheme to irrigate 30 ha of rice involving 105 farmers
49	Magozi - Iringa District (Mbeya Zone)	GOT, DFID	2014	2017	1.18708337	Construction of irrigation scheme to irrigate 400 ha of rice involving 302 farmers
50	Makuka - Iringa District (Mbeya Zone)	GOT	2016	2017	1.550369387	Construction of irrigation scheme to irrigate 112 ha of rice
51	Mapogoro - Iringa District (Mbeya Zone)	GOT	2016	2017	0.815645393	Construction of irrigation scheme to irrigate 112 ha of rice involving 152 farmers
52	Mapogoro-Kibaoni - Iringa District (Mbeya Zone)	GOT	2016	2017	0.500397214	Construction of irrigation scheme to irrigate 200 ha of rice
53	Mlambalasi - Iringa District (Mbeya Zone)	GOT, DFID	2016	2017	0.660773795	Construction of irrigation scheme to irrigate 200 ha of rice involving 75 farmers
54	Pawaga Mlenge - Iringa District (Mbeya Zone)	GOT, DFID	2016	2017	1.022762917	Construction of irrigation scheme to irrigate 2000 ha of rice involving 750 farmers
55	Mkombozi - Iringa District (Mbeya Zone)	GOT	2015	2016	3.05650063	Construction of irrigation scheme to irrigate 2000 ha of rice involving 600 farmers
56	Urwira - Mpanda District (Mbeya Zone)	GOT, DFID	2015	2016	0.300327281	Construction of irrigation scheme to irrigate 250 ha of rice (during the rainy season) and maize and vegetables (during the dry season) involving 115 farmers
57	Mwamapuli - Mpanda District (Mbeya Zone)	GOT, DFID	2015	2016	6.99971122	Construction of irrigation scheme to irrigate 3000 ha of rice involving 540 farmers
58	Ugalla - Mpanda District (Mbeya Zone)	GOT, DFID	2015	2016	0.312841686	Construction of irrigation scheme to irrigate 225 ha of rice involving 97 farmers

59	Karema - Mpanda District (Mbeya Zone)	GOT, DFID	2014	2016	2.613797253	Construction of irrigation scheme to irrigate 1000 ha of rice involving 670 farmers
60	Iloba - Mpanda District (Mbeya Zone)	GOT	2014	2016	0.640225412	Construction of irrigation scheme to irrigate 702 ha of rice involving 789 farmers
61	Mwamkulu - Mpanda District (Mbeya Zone)	GOT	2014	2016	4.57949563	Construction of irrigation scheme to irrigate 2150 ha of rice involving 216 farmers
62	Kakese - Mpanda District (Mbeya Zone)	GOT, DFID	2014	2016	1.483536408	Construction of irrigation scheme to irrigate 2534 ha of rice involving 176 farmers
63	Ngana - Kyela District (Mbeya Zone)	GOT, DFID	2015	2016	1.113399727	Construction of irrigation scheme to irrigate 209 ha of rice involving 114 farmers
64	Makwale - Kyela District (Mbeya Zone)	GOT	2015	2016	0.33143096	Construction of irrigation scheme to irrigate 200 ha of rice
65	Sakalilo - Sumbawanga District (Mbeya Zone)	GOT, DFID	2015	2016	0.603126495	Construction of irrigation scheme to irrigate 250 ha of rice (in the rainy season) and maize and beans (in the dry season) involving 117 farmers
66	Itagata Irrigation Scheme (Dodoma Zone)	GOT	2014	2015	0.478155772	Construction of irrigation scheme to irrigate 160 ha of rice
67	Kambi ya Chokaa Irrigation Scheme (Dodoma Zone)	GOT	2014	2015	0.347292087	Construction of irrigation scheme to irrigate 300 ha of rice
68	Lemkuna Irrigation Scheme (Dodoma Zone)	GOT	2014	2015	0.415240539	Construction of irrigation scheme to irrigate 430 ha of rice
69	Ngage Irrigation Scheme (Dodoma Zone)	GOT	2014	2015	0.578820145	Construction of irrigation scheme to irrigate 740 ha of rice
70	Mangisa Irrigation Scheme (Dodoma Zone)	GOT	2014	2015	0.407690711	Construction of irrigation scheme to irrigate 180 ha of rice (120 ha) and garlic (60 ha)
71	Chamkoroma Irrigation Scheme (Dodoma Zone)	GOT	2014	2015	0.362391743	Construction of irrigation scheme to irrigate 160 ha of maize (80 ha), vegetables (20 ha) and sugar cane (60 ha)
72	Mtazamo Irrigation Scheme (Dodoma Zone)	GOT	2014	2015	0.432856804	Rehabilitation of irrigation scheme to irrigate 230 ha of rice
73	Kisangaji Irrigation Scheme (Dodoma Zone)	GOT	2014	2015	0.490738818	Construction of irrigation scheme to irrigate 540 ha of rice

74	Mbwasa Dam (Dodoma Zone)	GOT	2014	2015	1.207972476	Construction of dam embankment and spillway to irrigate 560 hectares of rice
75	Dongobesh Dam (Dodoma Zone)	GOT	2014	2015	0.666901471	Construction of dam embankment and spillway to irrigate 250 hectares of garlic
76	Mang'onzi Dam (Dodoma Zone)	GOT	2014	2015	0.981477636	Construction of dam embankment and spillway to irrigate 400 hectares of rice (350 ha), maize (30 ha) and vegetables (20 ha)
77	Gidahababieg Dam (Dodoma Zone)	GOT	2014	2015	0.792731937	Construction of dam embankment and spillway to irrigate 80 hectares of rice
78	Kidoka Irrigation Scheme (Dodoma Zone)	GOT	2014	2015	0.307026338	Installation of drip irrigation system for 60 ha of vegetables
79	Rehabilitation of Bugorola Irrigation Scheme (Mwanza)	GOT	2014	2014	0.00014093	The project includes: pump replacement, installation, replacement of damaged pipes, lining of canals and the installation of grid electricity. The number of beneficiaries is 171.
80	Construction of Mwisu Irrigation Scheme (Mwanza)	GOT	2014	2014	0.000679485	Construction of irrigation scheme to irrigate 300 ha of rice. The number of beneficiaries is 910.
81	Construction of Kyakakera Irrigation Scheme (Mwanza)	GOT	2014	2014	0.000553654	The project consists in the rehabilitation of an irrigation scheme (including canals) to cover 60 ha of rice. The number of beneficiaries is 81
82	Construction of Earth Dam for Katunguru Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000956312	Construction of earth dam and on farm infrastructures to irrigate 600 ha of rice and chickpeas. The number of beneficiaries is 81.
83	Construction of Earth Dam for Kasoli Irrigation Scheme (Mwanza)	GOT	2014	2015	0.001209482	Construction of earth dam, spillway, pipe work and steeling basin to irrigate 490 ha of rice and chickpeas. The number of beneficiaries is 700.
84	Construction of Ikungulyambeshi Irrigation Scheme (Mwanza)	GOT	2014	2015	0.00059392	Construction of intake weir and on farm infrastructures to irrigate 452 ha of rice and chickpeas. The number of beneficiaries is 350.
85	Lining of Main Canal at Nyatwali Irrigation Scheme (Mwanza)	GOT	2014	2014	0.000267636	Lining of Main Canal for Nyatwali to irrigate 120 ha. The number of beneficiaries is 150.
86	Construction of Earth Dam for Kisangwa Irrigation Scheme and irrigation system (Mwanza)	GOT	2014	2015	0.000634689	Construction of dam and on farm infrastructure to irrigate 220 ha of rice. The number of beneficiaries is 180
87	Construction of Spillway for Mesaga Irrigation Dam (Mwanza)	GOT	2014	2015	0.000905979	Construction of Masega dam and irrigation scheme to cover 250 ha of rice and maize. The number of beneficiaries is 375.

88	Construction of Earth Dam for Masengwa Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000243859	Construction of Earth Dam for Masengwa Irrigation Scheme existing scheme to irrigate 337 ha of rice and chickpeas. The number of beneficiaries is 430.
89	Rehabilitation of Intake Weir and Lining of Canals for Iwelyangula Irrigation Scheme (Mwanza)	GOT	2014	2014	0.000402657	The project consist in the lining of canals and extension of a scheme to irrigate 200 ha of rice and chickpeas. The number of beneficiaries is 160.
90	Construction of Weir and Irrigation Network for Mwamashele Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000654318	Construction of weir and Irrigation infrastructures to irrigate 339 ha of rice and chickpeas. The number of beneficiaries is 160.
91	Construction of Weir and Irrigation Network for Bugelenga (Mwanza)	GOT	2015	2015	0.000377328	Construction of weir and Irrigation infrastructures to cover 250 ha of rice and chickpeas. The number of farmers involved is 510.
92	Construction of Buyaga Irrigation Scheme (Mwanza)	GOT	2014	2014	0.000329676	Construction of pumping station, installation of drip system and canal net woks to cover 90 ha of rice and chickpeas
93	Construction of Buhangaza Irrigation Scheme (Mwanza)	GOT	2014	2015	0.00045148	Construction, installation of drip system and canal net works to irrigate 80 ha of rice and chickpeas. The number of beneficiaries is 225
94	Construction of Kyota Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000603986	Construction of pumping station including canal networks to irrigate 90 ha of rice and chickpeas. The number of beneficiaries is 208
95	Construction of Earth Dam for Maliwanda Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000418135	Construction of irrigation system including on farm infrastructure to irrigate 220 of rice and chick peas. The number of beneficiaries is 200
96	Construction of Lutubiga Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.000632676	Dam rehabilitation and construction of canal networks including on farm structures to irrigate 200 ha of rice and chickpeas.
97	Construction of Sukuma Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.000609019	Construction of a dam and irrigation system and Irrigation infrastructures to irrigate 425 of rice and chick peas.
98	Construction of Miyogwezi Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.000202335	Construction of weir and Irrigation infrastructures to irrigate 120 ha of rice. The number of farmers involved is 600
99	Construction of Mwagwila Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.000823938	Construction of weir and Irrigation infrastructures to irrigate 150 ha of chickpeas and maize. The number of farmers involved is 840
100	Construction of Mwasubuya Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.00056976	Construction of a dam, irrigation system and on farm infrastructure to irrigate 280 ha of rice and chick peas. The number of farmers involved is 420

101	Construction of Masinono Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.00058637	Dam Rehabilitation, irrigation system and on farm infrastructure to irrigate 75 ha. The number of farmers involved is 588
102	Construction of Nyamitita Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.000727803	Construction of a dam, irrigation system and on farm infrastructure to irrigate 100 ha of rice and chick peas. The number of farmers involved is 900
103	Construction of Nyisanzi Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.000603986	Construction of a dam, irrigation system including on farm infrastructure to irrigate 100 ha of rice and chick peas
104	Construction of Kahanga Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.000603986	Construction of weir and Irrigation infrastructures to irrigate 56 ha of rice . The number of farmers involved is 600
105	Construction of Ishololo Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.000632172	Construction of a dam, irrigation system including on farm infrastructures to irrigate 60 ha of rice and chickpeas. The number of farmers involved is 900
106	Construction of Baraki Sisters Irrigation Scheme (Mwanza)	GOT	2015	2015	0.000188664	Rehabilitation of an earth dam, spillway and lining of canals to irrigate 50 ha of rice. The number of farmers involved is 40
107	Construction of Irienyi Irrigation Scheme (Mwanza)	GOT	2015	2015	0.000419777	Construction of Earth Dam . Beneficiaries 176
108	Construction of Ochuna Irrigation Scheme (Mwanza)	GOT	2015	2015	0.000117915	Dam embankment rehabilitation to irrigate 100 ha of rice. The number of beneficiaries is 200
109	Construction of Bisarwi Irrigation Scheme (Mwanza)	GOT	2015	2015	0.000132065	The project consists in the lining of the main canal to irrigate 300 ha of rice. The number of beneficiaries is 210
110	Construction of Isole/Kishinda Irrigation Scheme (Mwanza)	GOT	2015	2016	0.001037651	Construction of a dam, irrigation system including on farm infrastructures to irrigate 600 ha of rice and chickpeas. The number of beneficiaries is 161
111	Construction of Magurukenda Irrigation Scheme (Mwanza)	GOT	2015	2016	0.000848987	Construction of Earth Dam and on farm infrastructures to irrigate 120 ha of rice. The number of farmers beneficiaries is 80
112	Construction of Nyenze Irrigation Scheme (Mwanza)	GOT	2014	2015	0.00044544	Construction of a pumping station including canal networks to irrigate 120 ha of rice and chickpeas. The number of farmers involved is 1137
113	Construction of Ngongwa Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000387558	Construction of an irrigation scheme to cover 60 ha of rice. The number of beneficiaries is 500
114	Construction of Nzera/Nyamboge Irrigation Scheme (Mwanza)	GOT	2015	2016	0.000754655	Construction of dam, irrigation system including on farm infrastructure, to irrigate 250 ha of rice. The number of beneficiaries is 412

115	Construction of Mpanyula Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000835514	Topographic survey, soil survey, EIA, Social survey, geotechnical and design. Beneficiaries 311
116	Construction of Ngaganulwa Irrigation Scheme (Mwanza)	GOT	2015	2016	0.000999918	Conducting topographical survey, social study, agronomical study, soil study and design. Farmers 375
117	Construction of Migango Irrigation Scheme (Mwanza)	GOT	2015	2016	0.001063121	Topo survey, soil survey, EIA, Social survey, geotechnical and design. Farmers 345
118	Construction of Buligi Irrigation Scheme (Mwanza)	GOT	2015	2017	0.003112954	The project includes: topographic survey, soil survey, EIA, social survey, design, construction of dam, construction of irrigation system including on farm infrastructure to cover 250 ha of chickpeas and maize. The number of beneficiaries is 1497
119	Construction of Suguti Irrigation Scheme (Mwanza)	GOT	2015	2017	0.001749857	Completion of feasibility studies, ie, EIA, Design and economic justification. Farmers 5200
120	Construction of Usiulize Irrigation Scheme (Mwanza)	GOT	2014	2015	0.002438594	Conducting topographical survey and design. Farmers 253
121	Construction of Ibanda Irrigation Scheme (Mwanza)	GOT	2015	2017	0.000113198	Conducting Topo survey for dam and farm development, EIA, social study, agronomical study, soil study and design work. Farmers 620
122	Construction of Kafunzo Irrigation Scheme (Mwanza)	GOT	2015	2017	0.000981052	To complete scheme topo-survey and design. Farmers 310
123	Construction of Amani Irrigation Scheme (Mwanza)	GOT	2015	2017	0.001697975	Construction of earth dam and on farm development to irrigate 700 ha of rice and chickpeas. The number of farmers involved is 380
124	Construction of Lunguya Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000257952	Construction of earth dam and on farm development to irrigate 350 ha of rice and chickpeas. The number of farmers involved is 230
125	Construction of Ngeme Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000301993	Construction of Weir and on farm development. to irrigate 200 ha of rice and chickpeas. The number of farmers involved is 625
126	Construction of Lowa Irrigation Scheme (Mwanza)	GOT	2015	2017	0.001009352	The project includes: completion of studies, construction of earth dam and on farm development to irrigate 600 ha of rice and chickpeas. The number of farmers involved is 1500
127	Construction of Matongo Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000201329	Geophysical studies to identify availability of water and studies. Beneficiaries 120
128	Completion of studies, Construction of Mkula Irrigation Scheme (Mwanza)	GOT	2015	2017	0.001391612	The project includes: completion of studies, construction of earth dam and on farm infrastructure to irrigate 220 ha of rice and chickpeas. The number of beneficiaries is 215

129	Construction of Chereche - Singita Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000553654	The project includes pump installation and on farm development to irrigate 400 ha of rice. The number of beneficiaries is 360
130	Construction of Nansimo Irrigation Scheme (Mwanza)	GOT	2014	2015	0.000362392	Construction of a weir and on farm development to irrigate 300 ha of rice The number of beneficiaries is 230
131	Construction of Kyamyolwa Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.000671935	Construction of a dam and an irrigation system including on farm infrastructures to irrigate 400 ha of rice and maize. The number of farmers involved is 588
132	Construction of Nampangwe Irrigation Scheme (Mwanza)	GOT (DASIP)	2014	2015	0.000458023	Construction of a weir and on farm structures to irrigate 200 ha of rice and maize. The number of farmers involved is 960
133	Ilonga irrigation scheme (Morogoro Zone)	GOT	2015	2017	5.658293075	The project includes: feasibility studies, project design and dam construction to irrigate 180 ha of rice, vegetables, beans and onions
134	Rudewa irrigation scheme (Morogoro Zone)	GOT	2015	2016	1.509393363	Construction and lining of main canal (4500 m) and on farm infrastructures to irrigate 400 ha of rice
135	Msola Ujamaa irrigation scheme (Morogoro Zone)	GOT	2014	2015	1.853986089	Construction of secondary canal (10975 m), farm roads (1950 m), drains (17375 m), flood dyke (100 m) and farm structures to irrigate 50 ha of rice
136	Lumuma irrigation scheme (Morogoro Zone)	GOT	2014	2015	1.189319367	Improvement of main canals by lining (4000 m) and farm roads (30 km) to irrigate 988 ha of rice, maize, beans and onions
137	Mvumi irrigation scheme (Morogoro Zone)	GOT/JICA	2014	2015	0.863196998	The project includes: main canal lining (1500 m), secondary canal lining (2680 m), construction of main drain (4000 m), tertiary canals (13465 m) and farm roads (8000 m)
138	Mbalangwe irrigation scheme (Morogoro Zone)	GOT/JICA	2014	2015	4.011475263	The project includes: feasibility study, detail design and construction of a dam to irrigate 230 ha of rice, maize, vegetables and beans
139	Mkindo irrigation scheme (Morogoro Zone)	GOT/NETHERLANDS	2014	2015	0.477675603	Construction of a lined main canal (1100 m) and two division boxes to irrigate 150 ha of rice
140	Mbalangwe irrigation scheme (Morogoro Zone)	GOT/JICA	2014	2015	4.335111222	The project includes: a feasibility study, project design and construction of a dam to irrigate 200 ha of rice
141	Narunyu irrigation Scheme (Mtwara Zone)	GOT,JICA	2014	2016	0.989530786	Construction of headwork ,canals and farm structures to irrigate 1200 ha of rice (during the rainy season) and maize and vegetables (during the dry season)
142	Ngongowele irrigation Scheme (Mtwara Zone)	GOT,JICA	2014	2016	0.905979357	Construction of secondary canals and farm structures to irrigate 500 ha of rice (during the rainy season) and maize and vegetables (during the dry season)

143	Mtawatawa irrigation Scheme (Mtwara Zone)	GOT,JICA	2014	2016	0.427823585	Construction of secondary canals and farm structures to irrigate 500 ha of rice (during the rainy season) and maize and vegetables (during the dry season)
144	Mtawango irrigation Scheme (Mtwara Zone)	GOT,JICA	2014	2016	0.377491399	Construction of headwork, canals and farm structures
145	Mitumbati irrigation Scheme (Mtwara Zone)	GOT,JICA	2014	2016	0.286390141	Construction of secondary canals and farm structures to irrigate 120 ha of rice (during the rainy season) and maize and vegetables (during the dry season)
146	Matekwe irrigation Scheme (Mtwara Zone)	GOT,JICA	2014	2016	0.326152568	Construction of secondary canals and farm structures to irrigate 480 ha of rice (during the rainy season) and maize and vegetables (during the dry season)
147	Ngongo irrigation Scheme (Mtwara Zone)	GOT,JICA	2014	2016	0.470555611	Construction of secondary canals and farm structures to irrigate 120 ha of rice (during the rainy season) and maize and vegetables (during the dry season)
148	Kitandi irrigation Scheme (Mtwara Zone)	GOT,JICA	2014	2016	0.604439228	Construction of headwork, canals and farm structures
149	Chikoko irrigation scheme (Mtwara Zone)	GOT,JICA	2014	2016	0.430289862	Construction of secondary canals and farm structures and river training
150	Nkowe dam irrigation scheme (Mtwara Zone)	GOT,JICA	2014	2016	1.157640289	Construction of dam ,canals and farm structures and godown
151	Chinokole irrigation scheme (Mtwara Zone)	GOT/ TASAF	2014	2016	0.161062997	Construction of headworks, canals and farm structures

152	TZ- Ruhudji HPP Guarantee and SIL	World Bank and IDA	2014	2025	1000	<p>The project aims to construct a 358 MW hydropower scheme to generate 2,000 GWh of electricity per annum. Component 1 includes the design, construction and operation of the hydropower plant by a private investor company, which will be located on the Ruhudji River some 75 km south-east of the town of Njombe (southern Tanzania). The scheme will include a reservoir and power plant (downstream from the dam). The project will have a 16.3 square kilometer reservoir surface area, an underground power station, an estimated 7.3-km headrace tunnel, an estimated 1.1 km long steel-lined pressure shaft and an estimated 3.1-km tailrace tunnel. This component will be financed and implemented by the private sector. Component 2 will involve the design, construction and operation of a transmission line to evacuate the power generated from the power station to the nearest tapping point of the main grid system. There are several line routing alternatives, which still need further economic, technical and environmental study. This component is likely to be financed and implemented by TANESCO.</p>
153	Regional Rusumo Falls Hydropower Project	World Bank and AfDB	2014	2017	440	<p>The Regional Rusumo Falls Hydro Power Project (80 MW) is a regional project which is developed jointly by three countries, namely, Burundi Rwanda and Tanzania. The project will involve the construction of a dam, with run of river design.</p>

ANNEX 2. MAP OF TANZANIA



FAO - AQUASTAT, 2005

UNITED REPUBLIC OF TANZANIA

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.

REFERENCES

- Cooksey, B. 2013. The Comprehensive Africa Agriculture Development Programme (CAADP) and agricultural policies in Tanzania: Going with or against the grain? FAC Political Economy of Agricultural Policy in Africa (PEAPA) Working Paper. www.futures-agriculture.org.
- FAO 2008. Tanzania: National Investment Brief. Prepared for the High-Level Conference on: Water for Agriculture and Energy in Africa: the Challenges of Climate Change, Sirte, Libyan Arab Jamahiriya, 15-17 December 2008. Rome: FAO. Available at: <http://www.sirtewaterandenergy.org/>
- FAO 2013. Food security indicators. Available at: <http://www.fao.org/economic/ess/ess-fs/ess-fadata/en/#.UwN6hWJdXAk>
- FAO 2014. FAOSTAT database. Available at: <http://faostat.fao.org/site/291/default.aspx>
- FAO-Aquastat 2005. Aquastat country profile: Tanzania. Available at: http://www.fao.org/nr/water/aquastat/countries_regions/TZA/index.stm
- Ministry of Energy and Minerals 2013. Power system master plan 2012. Available at: http://www.tanzania.go.tz/egov_uploads/documents/0062_10072013-Power_System_Master_Plan_2012_sw.pdf
- Ministry of Finance 2009. National Bureau of Statistics: Tanzania - Agriculture Sample Census Survey 2007/08. Available at: <http://nbs.go.tz/tnada/index.php/catalog/16>
- Ministry of Finance 2012. 'Speech by the Minister for Finance Hon. Dr. William Augustao Mgimwa (MP.), introducing to the National Assembly, the Estimates of Government Revenue and Expenditure for the Fiscal Year 2012/2013'
- Ministry of Water 2013. 'Water Sector Development Programme: Water Sector Status Report' November 14th 2013
- Munishi, P. 2009. *Analysis of Climate Change and its Impacts on Productive Sectors, Particularly Agriculture in Tanzania*. Available at: http://www.tzdp.org.tz/uploads/media/CLIMATE_CHANGE_AND_ITS_IMPACTS_DRAFT_REPORT.pdf
- Tanzania National Website 2013. Government Portal: Agriculture. Available at: <http://www.egov.go.tz/home/pages/92>
- UNdata 2014. Available at: <http://data.un.org/Data.aspx?d=EDATA&f=cmID%3aEC%3btrID%3a1332>

UNFCCC 2002. United Republic of Tanzania Vice President's Office: Initial National Communication Under the United Nations Framework Convention on Climate Change (UNFCCC). Available at: <http://unfccc.int/resource/docs/natc/tannnc1.pdf>

URT 2002a. National Irrigation Master Plan.

URT 2002b. National Water Policy.

URT 2010. Water Resources Management Act

URT 2010. National Irrigation Policy.

URT 2011. President's Office, Planning Commission: The Economic Survey 2011. Available at:

URT 2013. National Agricultural Policy. Available at:
<http://www.agriculture.go.tz/publications/NATIONAL%20AGRICULTURAL%20POLICY%20-2013.doc>

URT 2013. Big Results Now

World Bank 2014. The World Bank Group: Access to electricity (% of population). Available at:
<http://data.worldbank.org/indicator/EG.ELC.ACCS.ZS>

WB 2014. World Bank Indicators. Available at: <http://data.worldbank.org/indicator>