Republic of Uganda

MINISTRY OF AGRICULTURE, ANIMAL INDUSTRY AND FISHERIES

AND

MINISTRY OF WATER AND ENVIRONMENT

NATIONAL IRRIGATION POLICY

Agricultural Transformation Through Irrigation Development

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FOREWORD

Irrigated land produces 40% of global food (IFAD, 2015). Currently, Uganda's ratio of cultivated area under irrigation to the irrigation potential is only 0.5%. This compares lowly to 3.6% for Tanzania, 2.0% for Kenya and 1.6% for Burundi. The comfort of receiving rains to sustain two cropping seasons in a year has provided little impetus to Government to invest extensively in irrigation. Little attention has been accorded to technological and human capacity development in irrigation. Despite the advantages that the country holds in the ease of undertaking irrigation development, the potential has not been harnessed. Uganda's rain-fed agriculture has progressively been constrained by frequent threats of, and actual occurrence of, droughts and floods affecting efforts for increased production; fight against hunger and poverty. Uganda's vulnerability to climate change is exacerbated by a rapidly growing population, a factor that has increased pressure on natural resources (mainly wetlands and forest covers) leading to environmental degradation.

The gradual impacts of climate change and population pressure on land use, are beginning to have a remarkably adverse impact on agricultural productivity in particular and on the entire economy as a whole. In 2010, alone, drought accounted for 38% and 36% loss in production for beans and maize respectively. In, 2014, the country registered Uganda shillings 2.8 trillion (8%) loss of Gross Domestic Product (GDP) and 87% loss to agro-industries (Mwaura *et al* 2014). These conditions translate into the country's food consumption gaps, high Global Median Acute Malnutrition (GAM) rates, with many people marginally able to meet their minimum food needs especially during dry spells (NAP-Ag report, 2017). In 2011 alone, the Department of Disaster Management of the Office of the Prime Minister estimated the damage and production losses as a result of climate change at UGX 4.3 Trillion which translates to about 7.5% of GDP.

Uganda has one the highest irrigation potential in the world with over 15% of her surface area covered by fresh water resources. The sum of the external and internal renewable surface water resources (the average annual river flow generated from precipitation) in Uganda amounts to 43.3 billion cubic meters per year, while the dependence ratio (proportion that originates outside the country) was about 69% as of 2013. The present utilization rate of the internal renewable water resource is low (2.8%). The utilization rate of the entire renewable surface water resources stood at 0.01% as of 2013. If the full irrigation potential was to be exploited, the demand for water would be increased by over 400% by 2030 translating into a utilization rate of renewable surface water resource of 0.05%.

Aware of both the challenges and opportunities, Government has elaborated this Policy to direct the implementation of irrigation interventions to ensure optimal use of available land and water resources for agricultural production and productivity to contribute effectively towards food security, wealth and employment creation, and export promotion. This policy is in line with Uganda's international commitments including the Sustainable Development Goals, and Agenda 2063 as

well as the Vision 2040 notes that: “the Uganda aspires to transform agriculture from subsistence to commercial agriculture through both mechanization and introduction of modern irrigation systems”.

To undertake this ambition, Government will invest in both micro, medium and large scale irrigation systems as public investments to mitigate challenges related to water shortages mainly as a result of prolonged droughts, and provide much needed relief to farmers. Well managed irrigation can mitigate effects of climate change and increase yields by 2-5 times for most crops. With developed/improved irrigation infrastructure and water management, paddy yields on an average can increase from 1.8 tons per hectare to 4.5 tons per hectare. In other trials, irrigation enhanced maize production from 2.0 tons per hectare to 8 tons; 15.6 tons for vegetables to over 30 tons per hectare, on average, and in just two seasons.

Government will implement well thought-out public private partnership mechanism for irrigation development by unlocking constraints related to agricultural financing by the private sector mainly occasioned by agricultural risks including unpredictability of rainfall. Advancing irrigated agriculture would attract agricultural insurance and encourage financial institutions pay more attention to the sector. Government will support individual progressive farmers and organized farmer groups with feasible irrigated agriculture enterprises with purpose to ensure their progression into model farmers and reference to other farmers. This is consistent with the need for transformation of the 68% subsistence farmers that Government has been concerned about. Implementing this policy is critical to improving farm productivity and contributing immensely to household incomes as a driver towards attainment of a middle income status by 2020.

Implementation of this policy shall be a joint responsibility of ministries in charge of agriculture and water. The Ministry in charge of agriculture shall be responsible for on-farm aspects of implementation which refers to development of hydraulic infrastructure, associated engineering works and irrigation accessories comprising of conveyance from farm gates to farmers’ fields and water use management. The Ministry in charge of water shall be responsible for off-farm interventions which refers to development of hydraulic infrastructure and associated engineering works comprising of water abstraction and conveyance to farm gates. Both ministries will jointly provide guidelines to support implementation.

We thank all Ministries, Departments and Agencies (MDA); District Local Governments, Civil Society Organizations; and the Private Sector for their active participation. We will lean on these partnerships for the successful implementation of this policy.

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Hon. VINCENT BAMULANGAKI SSEMPIJJA	Hon. SAM CHEPTORIS
Minister of Agriculture, Animal Industries and Fisheries	**Minister of Water and Environment**

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LIST OF ACRONYMS AND ABBREVIATIONS

AgWA	Agricultural Water for Africa
AMCEN	African Ministerial Conference on the Environment
AMCOW	African Ministers Council of Water
ASSP	Agriculture Sector Strategic Plan
ASWG	Agriculture Sector Working Group
AWM	Agricultural Water Management
CAADP	Comprehensive Africa Agricultural Development Programme
CBD	Convention on Biodiversity
CBO	Community Based Organisation
CSOs	Civil Society Organisations
DRC	Democratic Republic of Congo
DSIP	Agricultural Sector Development Strategy and Investment Plan
EAC	East African Community
FAO	Food and Agricultural Organization
GAM	Global Median Acute Malnutrition
GAM	Global Median Acute Malnutrition
GAPR	Government Annual Performance Report
GDP	Gross Domestic Product
GhG	Green House Gas
GoU	Government of Uganda
ICSC	Implementation Coordination Steering Committee
ICTs	Information and Communication Technologies
IMTC	Inter-Ministerial Technical Committee
IPCC	Inter-governmental Panel on Climate Change
IWRM	Integrated Water Resource Management
KPIs	Key Performance Indicators
M&E	Monitoring and Evaluation
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MDAs	Ministries Departments and Agencies
MIS	Management Information System
MoES	Ministry of Education and Sports
MoFPED	Ministry of Finance Planning and Economic Development
MoLG	Ministry of Local Government
MoLHUD	Ministry of Lands Housing and Urban Development
MTIC	Ministry of Trade Industry and Cooperatives
MWE	Ministry of Water and Environment

NAADS	National Agricultural Advisory Services
NAP-Ag	National Adaptation Plans (on climate change) for Agriculture
NARO	National Research Organization
NBI	Nile Basin Initiative
NDP	National Development Plan
NELSAP	Nile Equatorial Lakes Subsidiary Action Programme
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
NGOs	Non-Governmental Organization
NIP	National Irrigation Policy
NPA	National Planning Authority
O&M	Operations and Maintenance
PBB	Performance Based Budgeting
PPP	Public Private Partnership
PPPP	Producer, Public and Private Partnership Arrangements
R&D	Research and Development
RATP	Regional Agricultural Trade and Productivity Project
ROI	Return on Investment
SIGS	Special Interest Groups
UBOS	Uganda Bureau of Statistics
UN	United Nations
WfAP	Water for Agricultural Production
WUA	Water User Association

GLOSSARY

Some of the common irrigation terminologies, unless otherwise specified in the text, have been defined hereunder for the purpose of this policy document:

Agricultural Water Management is a continuum of activities from rainfall water harvesting, field water conservation practices, supplementary and primary irrigation aquaculture and livestock watering and agricultural processing.

Bulk water is water supplied in large amounts of over 400,000 cubic metres per day through associated infrastructure including dams and reservoirs, surface water (lakes and river) and groundwater intakes, pumping stations, and transmission mains to point of use.

Dam: is an impermeable structure built to across a waterway from rivers, runoff and/or direct rainfall to impound water in a reservoir for flow regulation and use during the period of water shortages

Drainage System: is a series of infrastructures including the main, secondary, tertiary and field drainage canals necessary for the removal of excess water and salts from the irrigation scheme in order to allow effective agricultural operations and to prevent water logging.

Environmental flows: is the water flow within a river ecosystem or released into it necessary to ensure the sustenance of the ecological system within a river ecosystem.

Irrigation is the application of a specific amount of water in order to meet the requirements of a crop growing in amounts that are appropriate to the crop s stage of growth. It can also mean the application of water in amounts necessary to bring soil to the desired moisture level prior to planting.

Irrigation Associations: means the organization to accommodate the joint interests and activities of all the farmers on an irrigation scheme primarily for ensuring increased crop productivity through optimal management of irrigation water and the operation and maintenance of their scheme.

Irrigation Efficiency: is a ratio between the amounts of water effectively used for crop growth to the amount diverted from the source. Scheme irrigation efficiency is obtained by combining the efficiencies in the entire irrigation scheme which include: conveyance, distribution and on-farm application efficiencies.

Irrigation Potential is total area which is technically, socially, economically and financially feasible as

well as environmentally acceptable that can be brought under irrigation. It takes into consideration water availability, distance from water source, and accessibility to transportation; terrain and soil suitability.

Irrigation Systems are composed of infrastructure, water, enterprise management, institutional arrangements and human resources for irrigation. The system can be referred to as **Irrigation Scheme** which supplies irrigation water to farmers, so that they can obtain higher yields than they could without irrigation.

Irrigation Schemes are categorized into four types:- **Micro Scale Irrigation Schemes** with less than 5 **hectares**; **Small Scale Irrigation Schemes** with **5- 100 hectares**, **Medium Scale Irrigation Schemes** with **100 – 1,000 hectares** and **Large Scale Irrigation Schemes** with greater **than 1,000 hectares** of irrigated land.

Irrigation works*:* is a physical infrastructure developed/installed in an irrigation system for the purpose of facilitating availability of irrigation water from a water source for crop production. It includes abstraction structures, conveyance structures, distribution structures, drainage structures and on-farm service roads. Such works may include structures on a river stream, pumping system or works at a dam or water reservoir.

Integrated Water Resources Management: is an approach in water resources management and development which holistically considers all users of the resource upstream and downstream of the system including the ecology.

Smallholder farmers: are defined as farmers owning/allocated a plot of up to 5 ha for irrigation of crops within an irrigation scheme.

Off-farm: refers to development of hydraulic infrastructure and associated engineering works comprising of water abstraction and conveyance to farm gates.

On-farm: refers to development of hydraulic infrastructure, associated engineering works and irrigation accessories comprising of conveyance from farm gates to farmers' fields and water use management.

Water Users Associations: are organizations of water users using a common source of water. The different water users are domestic water supply, irrigation, livestock watering, fisheries, hydropower generation, industries, mining and wildlife watering.

1. INTRODUCTION

1.1 Background

Agriculture is the mainstay of Uganda's economy as a source of livelihood for over 80% of the population. It has contributed between 24.7% and 22.2% of Gross Domestic Product (GDP) between 2011/12 and 2015/16. The sector has grown at only 2.5% per annum over the last five years mainly due to a decline in factor productivity. The agriculture sector is dominated by small holder farmers who own on average 1-2 hectares of farmland. Women dominate farm employment in a sector that has limited mechanization and heavily dependent on rain and relatively fertile soils whose productivity is also declining due to over cultivation and low fertilizer application. Overall per capita agriculture production has been declining due to high population growth rate of (inasmuch as it dropped from an average 3.2% - 3.0% per annum) leading to annual food production deficits (UBOS 2014). This scenario falls short of the minimum 6% annual agricultural sector growth target agreed upon under the Comprehensive Africa Agriculture Development Programme (CAADP) protocol.

According to the Economic Assessment of the Impacts of Climate Change in Uganda report, 2015, drastic changes in weather patterns have altered crop, livestock and fisheries performance causing unpredictability and unreliability in agricultural output particularly over the last decade. This in part informed the warning that Uganda's development prospects will be achieved if actions were taken early enough to support climate change adaptation. This led to the elaboration of the National Adaptation Plan on Climate Change with specific program designed to implement these plans for the agriculture sector. This is part of the broader implementation of the National Climate Change Policy that was passed by Cabinet in April 2015.

As the impact of climate change emerges as a serious challenge as evidenced by prolonged droughts and severe flooding in most parts of the country, emergent response was required to put in place a policy framework on irrigation as core public investment to mitigate these effects and prevent the agriculture sector from further loss. It is against this background that Government of Uganda through the Ministry of Agriculture, Animal Industry and Fisheries and the Ministry of Water and Environment and in consultation with other key stakeholders have jointly developed this National Irrigation Policy. This policy is aimed at increasing efficient water use in irrigation and contribute to agricultural production and productivity. This policy is complementary to the National Water Policy and shall be implemented in tandem with it. It takes into consideration the aspirations of the National Agricultural Policy, National Environment Management Policy, Wetland Management Policy, National Climate Change Policy, National Land Use Policy and National Cooperative Policy; among others.

1.2 Policy Context

Global Context

The Inter-governmental Panel on Climate Change (IPCC) released its Fifth Assessment Report (AR5) for 2013/14 that confirmed that the earth's climate has been warming since the 1950s and that the rate of global warming has been unprecedented, compared to previous decades and millennia. Each of the last three decades has been warmer than all previous ones since 1850. The first decade of the twenty-first century (2001-2010) has been the warmest since 1850.[1] The report also confirms human responsibility in the climate change process, mainly through Greenhouse Gas (GHG) emissions.

Changes in many extreme weather and climate events have been observed since about 1950. It is very likely that the number of cold days and nights has decreased and the number of warm days and nights has increased on the global scale. It is likely that the frequency of heat waves has increased in large parts of Europe, Asia and Australia. There is evidence that warming over land across Africa has increased over the last 50–100 years. Surface temperatures have already increased by 0.5–2°C over the past one hundred years. Based on simple extrapolations, the costs of the impacts of extreme weather alone could reach 0.5 - 1% of world GDP per annum by the middle of the century, and will keep rising if the world continues to warm. With 5-6°C warming - which is a real possibility for the next century - existing models that include the risk of abrupt and large-scale climate change estimate an average 5-10% loss in global GDP; with poor countries likely to suffer costs in excess of 10% of GDP (Nicholas Stern Review: The Economics of Climate Change).

Regional Context

African countries, are bearing the brunt of climate risks and hazards and thus there is need for a coordinated approach to address the related vulnerabilities. Adaptation and building climate resilience remains Africa's priority response to climate change. This has been affirmed by the African Ministerial Conference on the Environment (AMCEN) that has reiterated the call 'for a global goal for adaptation, which takes into account adaptation needs and associated costs. The AMCEN call also advocates for mechanisms for facilitating adaptation actions; including support for developing. There are examples in the Africa region that have shown that this is possible. Egypt where 90% of the land is a desert has only 14% of the population severely affected by food shortages. The Egyptian agriculture of only 3% of the 1 million square km total land area is almost entirely dependent on irrigation but is able to feed its nearly 90 million people (NBI, 2012). Most areas of Africa lack sufficient observational data to draw conclusions about trends in annual rainfall over the past century. Where data are available, these indicate a very likely decrease in annual rainfall over the past century in parts of the Western and Eastern Sahel region in northern Africa and very likely increases over parts of eastern and southern Africa.

[1] IPCC (2013). Climate Change 2013: The Physical Science Basis. Headline Statements from the Summary for Policymakers.

National Context

According to available meteorological data, mean countrywide annual temperatures have risen by 1.3ºC since 1960, averaging a 0.28ºC increase per decade. The number of average hot days and hot nights has increased significantly, while that of cold days has decreased. The increase in temperature is particularly notorious in January and February (averaging a 0.37ºC increase per decade), and in the southwest of the country. Annual and seasonal rainfalls have decreased significantly across the country since 1960. Rainfall has also become more unpredictable and poorly distributed. Onsets and cessation of rainfall seasons have become more erratic and rainfall has been heavier and more violent in recent years. Extreme events such as droughts, floods and landslides are increasing in frequency and intensity. The impacts of climate change can therefore already be felt in Uganda, in particular in the agriculture, water and environment sectors (Uganda NAP-Ag Report 2017).

Water for productive use is estimated to account for 60–70% of the total national water requirements. Uganda has enormous fresh water endowments covering about 15% of the total area (37,000 sq. km out of the total area of 241,559 sq. km), thus providing great opportunity for increased agricultural production and productivity leading to wealth creation. The renewable fresh water resources are however declining, while in 1995 total water endowment was estimated at 66.6m3 (billion), it had declined to 43.3 m3 (billion) by 2013 on account of unsustainable human activities. Of the renewable fresh water, only 1% is used for irrigation, yet world over 70% of water is used for irrigation.

Ugandan agriculture has progressively been constrained by frequent threats of and actual occurrence of droughts and floods affecting efforts for increased production; fight against hunger and poverty. Poverty level is currently estimated at 24.5% (World Bank, 2010); DSIP, 2010, UBOS 2011 and over 20% of the population has been perpetually food insecure. In 2010, drought accounted for 38% and 36% loss in production for beans and maize respectively. The country registered Uganda shillings 2.8 trillion (8%) loss of Gross Domestic Product (GDP) and 87% loss to agro-industries (Mwaura et al 2014). These conditions translate into the country's food consumption gaps, high Global Median Acute Malnutrition (GAM) rates, with many people marginally able to meet their minimum food needs especially during dry spells. Another geo-political challenge is that up to 69% of Uganda's natural fresh water resources, originates from outside Uganda's boarders (MWE 2013) implying little control on the part of Uganda except through regional and internal cooperation.

1.3 A Situational Analysis

Low levels of Investment in Planning, and Irrigation Investment

Overall, the historical stability of Uganda's rain fed agriculture limited the momentum by Government to invest in irrigated agricultural development. Little attention was accorded to technological and human capacity development in irrigation. However with gradual impacts of climate change and population pressure on land use, there is now a realization that these changes are beginning to have a remarkable negative impact on agricultural productivity. The irrigation sub-sector for long has been characterized by low investments in planning, development, operation and maintenance by both the public and private sectors. This is aggravated by limited access to agricultural finance by farmers and high initial capital investment requirements for development of irrigation infrastructure. This is coupled with low average Returns on Investment (ROI) that has made agriculture remain not to be highly prioritized in comparison to other sectors like energy and roads sector. Without well thought out investment by public, and private in irrigation, the country cannot harness the fresh water endowment that occupies about 15% of total area. Irrigated agriculture and contract farming would attract agricultural insurance and encourage financial institutions pay more attention to the sector. There is a great constraint to its financing by the private sector in general and banks in particular. This is due to risks occasioned by unpredictability of weather especially rainfall. Financial institutions find it difficult to lend to farmers because of the many risks involved.

The Potential for Irrigation in Uganda

Uganda has enormous fresh water endowments covering about 15% of the total area (37,000 sq. km out of the total area of 241,559 sq. km), thus providing great opportunity for increased agricultural production and productivity leading to wealth creation. Of the renewable fresh water, only 1% is used for irrigation, yet world over 70% of water is used for irrigation. The renewable fresh water resources are however declining, while in 1995 total water endowment was estimated at 66.6m^3 (billion), it had declined to 43.3 m^3 (billion) by 2013 on account of unsustainable human activities. The current potential for irrigation in Uganda was determined based on the "Assessment of Irrigation Potential study conducted in 2011-12 through the Regional Agricultural Trade and Productivity Project (RATP) under the Nile Equatorial Lakes Subsidiary Action Program (NELSAP) of the Nile Basin Initiative (NBI). The irrigation potential was determined by combining five factors: Terrain suitability, Soil suitability, Water availability, Distance to water source and Accessibility to transportation. The Ugandan irrigation potential is 3.03 million hectare (NELSAP 2012), an increment from 278,000ha, 476,000ha and 560,000ha earlier determined by Hydromet, FAO and MWE respectively.

Loss in Productivity as a Result of Limited Irrigation Performance

Healthy rains spanning 8-9 months a year provided Uganda with an advantage to grow a variety of food and cash crops, expand livestock farming and increase investments in both capture fisheries and aquaculture. With climate change, rains have become shorter (averaging 6-7 months a year since 2010) and droughts longer (with Uganda hitting a high monthly average of 33.8 ^{0}C in March 2016 the highest in its history). The comfort of receiving rains to sustain two cropping seasons in a year provided little impetus to invest extensively in irrigation. As a consequence, despite the advantages that the country holds in the ease of undertaking irrigation development, Uganda's level of irrigation is very low compared to its potential in relation to other East African Countries (EAC). Uganda by 2005 had recorded nil annual increase in irrigation compared to 11.4% rate of increase in Rwanda, 2.7% increase in Burundi and 4.1% increase in Kenya. Currently, the ratio of cultivated area under irrigation to the irrigation potential is only 0.5% against an irrigation potential of 15%. This compares lowly to 3.6% for Tanzania, 2.0% for Kenya and 1.6% for Burundi. Using agricultural statistics in 2015, yields from irrigated farmlands recorded much higher output compared to non-irrigated farms. For instance, irrigation enhanced maize production from 2.0 tons per hectare to 8 tons; 15.6 tons for vegetables to over 30 tons per hectare, on average, and in just two seasons.

Inadequate Human, Technological Capacity and Research on Irrigation

Limited education and training on irrigation practices has curtailed advancements in irrigation and its appreciation of its contribution to productive sectors of the economy. For a long time, Uganda has not had specific curriculum and institutions at various levels of the education system to specifically address irrigated agricultural development and management. Inevitably, there is inadequate institutional capacity and supply of highly competent personnel in the country to plan and implement irrigation systems in line with national aspirations. There has been limited research and development work on technologies and best practices for irrigation. The National Agricultural Research Organization (NARO) has yet to develop a dedicated irrigation institute as it has done for many other disciplines of agricultural development.

Impact of low levels of Irrigation on Food Security

The World Hunger Education Service (2013) points out that, globally, nearly 870 million of 7.1 billion (one in eight) people are suffering from hunger and 1,372 million people are poor (live on US$1 a day). This level of poverty and hunger, is partly due to climate change. The phenomenon, can be mitigated through irrigated agriculture that intensity food, fibre production and increase incomes. Well managed irrigation can mitigate effects of climate change and increase yields by 2-5 times for most crops. It is noteworthy that irrigated land produces 40% of global food (IFAD, 2015). Ugandan agriculture which is over 96% rain fed has progressively been constrained by frequent *threats* of and *actual* occurrence of droughts and floods affecting efforts for increased production; fight against

hunger and poverty. Poverty level is currently estimated at 19.7% has been in part caused by severe crop failures that have caused food and income insecure. The country registered Uganda shillings 2.8 trillion (8%) loss of Gross Domestic Product (GDP) and 87% loss to agro-industries (Mwaura *et al* 2014). These conditions translate into the country's food consumption gaps, high Global Median Acute Malnutrition (GAM) rates, with many people marginally able to meet their minimum food needs especially during dry spells. This compares unfavourably with countries like Egypt where 90% of the land is a desert and yet only 14% of the population suffers from food insecurity.

Complexities in Land User Rights

Access to land, security of land rights, wetland and dammed water use limitations are among the most important unresolved issues. Exclusive user rights of water resources for hydropower dams or for irrigation have been a constraint in harnessing benefits of integrated and multi-purpose use of water that would lead to speedy irrigated agricultural development. These national land and water user rights coupled with riparian water sharing agreements have also affected the attractiveness for investment in irrigated agricultural development.

Degradation of the Environment and Natural Resources

Agriculture practices in Uganda have been characterised by poor environment and natural resources management leading to degradation. These include poor soil and water conservation practices, deforestation, drainage of wetlands, pollution through use of pesticides and fertilisers. Pollution through use of fertilisers occurs when it results into Nitrous oxide (N_2O) emissions adding to greenhouse effects. Whereas irrigation has potential to increase agricultural productivity by up to five times (IFAD), if not well managed, it leads to environmental deterioration including water pollution from nutrients and pesticides; Damage to habitats and aquifer exhaustion by abstraction of irrigation water; displacing formally high value semi-natural eco-systems; gains to bio-diversity and landscape from certain traditional or leaky irrigation systems in some localized areas.

Trends of the Renewable Water Resources

According to the National Water Resources Assessment Report (2013) of the Ministry of Water and Environment, the sum of the external and internal renewable surface water resources (the average annual river flow generated from precipitation) in Uganda amounts to 43.3 billion cubic meters per year, while the dependence ratio (proportion that originates outside the country) was about 69% as of 2013. The present utilization rate of the internal renewable water resource is low (2.8%). The utilization rate of the entire renewable surface water resources stood at 0.01%. If the full irrigation potential was to be exploited, the demand for water would be increased by over 400% by 2030 translating into a utilization rate of renewable surface water resource of 0.05%.

The estimated quantity of renewable ground water (for the year 2030) which a function of the rate of re-charge will generally exceed the projected demand for domestic water supply by a considerable margin. With an average utilization rate well below 15% other uses of ground water including drinking water for livestock and irrigation can considered.

Poor Governance and Coordination Mechanisms

The existing institutional and legal frameworks in Uganda provide inadequate coverage of irrigation issues. Complexities of irrigation sub-sector with its activities transcending a number of sectors; public, private and civil society has tended to create difficulty in sharing roles and responsibilities. This has propelled uncertainty as to who plays what function in irrigation and affected national efforts in irrigation capacity building. Irrigation activities have been implemented by different MDAs and private sector with minimum or no coordination between the different key players in the sub-sector resulting into conflicts and roles overlaps. Limited coordination has delayed national integrated planning in irrigation infrastructure development and thus little attention towards exploitation of benefits that accrue from efficient and effective irrigated agriculture. This in turn has constrained investment in the irrigation sub-sector creating “economic scarcity” amidst plenty of fresh water and arable land.

1.4 Problem Statement

Irrigation development includes provision of irrigation infrastructure, institutional arrangements and capacity building both technical and financial that is consistent with irrigated area expansion and intensification; respond to the decentralized, demand driven, service oriented paradigm; and engagement of the private sector participation in terms of investment and service delivery. Over the years, increase in Uganda’s population has put pressure on water and land resources leading to degradation of the environment and natural resources. Gradually, this has contributed to climate change, which has manifested in unreliable rainfall, prolonged drought and floods. The impact of these trends are evident in reduced agricultural productivity that has compromised food security. In addition, poor governance characterised by weak coordination mechanisms have allowed land and water user rights to become complex over the years. Coupled with inadequate human capacity, government and other non-stakeholders have been unable to address water resources management concerns leading to under-utilized and unsustainably exploited natural resources.

Dependence on rain alone will not sustain Uganda’s agricultural sector. As long as agriculture continues to be rain fed its vulnerability to climate shocks will continue to adversely impact its performance in the short medium and long term. The estimate of loss and damages caused by climate change was US$ 1.2 billion (about 7.5% of Uganda’s GDP) in 2011 alone – higher than the investment in agriculture out of the national budget in that year. If the current farming practices in Uganda remain unchanged in the face of the changing climate, agriculture yields will fall drastically and the resultant

impact will be increased food insecurity and high poverty levels. It therefore imperative for Government to support agriculture to enable it make the necessary contribution to the transformation of Ugandan society that is heavily dependent on agriculture.

1.5 Policy Justification and Rationale

Sustainable irrigation development will enhance food and livelihood security and reduction of poverty. Irrigated agriculture can significantly reduce key production risks associated with unreliable rainfall and hence raise farmer incomes. With developed/improved irrigation infrastructure and water management, paddy yields on an average can increase from 1.8 tons per hectare to 4.5 tons per hectare. In other trials, irrigation enhanced maize production from 2.0 tons per hectare to 8 tons; 15.6 tons for vegetables to over 30 tons per hectare, on average, and in just two seasons. Higher production rates can be realized. In addition, reliable irrigation service delivery can also persuade farmers to invest in better production practices and to diversify into higher value farming systems. It is estimated that about 3 million hectares of land could be brought under irrigated agriculture if the full potential of irrigation was exploited. This would increase agricultural productivity and mitigate climate change effects. In essence, extensive adoption of appropriate irrigation technologies and best practices by agricultural entrepreneurs is urgent not only because of threats to food security and increased incomes but also to mitigation of impacts of climate change. Government will step-up collective voluntary and state coordination; strengthen land rights, promote multi-purpose and integrated irrigation systems and ensure an efficient and effective management of irrigated agriculture.

While the general warming trend of the global climate, predicted by most global circulation models would lead to an increase in the evaporation rate, its possible impact on rainfall on the equatorial plateau has not yet been established. However, most models suggest that there may be a slight increase in precipitation. Climate change is expected to increase climatic variability by shifting and intensifying extremes which could lead to more severe drought and flood events. Climate change adaptation including irrigation requires a multi-sectoral approach using the integrated water resource management guiding principles.

The focus of this policy will also include supporting individual progressive and organized farmer groups with feasible irrigated agriculture enterprises. Government will support them to harness irrigation potential and progress into model farmers and reference to other farmers. Government will achieve this through a contribution to capital investments for the development for the requisite infrastructure for irrigation. MAAIF and MWE will produce guidelines to operationalize this arrangement. This will attract and stimulate private sector investment into irrigation. This is consistent with the need for transformation of the 68% subsistence farmers that Government has been concerned about.

There are the new markets in which Uganda, given an expanded irrigation sub-sector, can begin to compete in terms of both volume and quality. These markets are not limited to the immediate region, but include South Asia and other areas facing food security crises in part caused by growing populations, land-use change in traditional producing areas and sea level rise. Uganda is well placed to exploit the demand this will create by increasing irrigation supported agricultural output with a surplus for export. It is against this background that Government has developed this National Irrigation Policy as a point of reference for planned interventions for improved agricultural production and productivity through addressing the water scarcity.

1.6 Policy Outcomes

This policy will serve as the overarching instrument for regulation of irrigation development in the country. It will create an enabling framework for a clearer system with streamlined services and processes for promotion of irrigation; improving technical information sharing and simplifying decision making in this regard. The following will be the major outcomes of this policy: I) increased yields; ii) enhanced agronomic potential by permitting the growth of crops that would not have been grown under a rain-fed environment; iii) increased opportunities for farmers to indulge in year-long agricultural production; iv) enhanced income because farmers can select crops that are not produced by a large number of other farmers; v) increased opportunities to access reliable markets because farmers are assured of consistence in production; vi) enhanced returns to production inputs (labour, capital and land); vii) enhanced food security; viii) increased opportunities for employment; and ix) enhanced natural resource management through the adoption of agro- forestry).

2. VISION, MISSION, GOALS, OBJECTIVES AND GUIDING PRINCIPLES

This policy is in line with Uganda's international commitments as well as the Vision 2040 under the Comprehensive National Development Planning Framework. This policy is supported by Vision 2040 Pg. 46 that notes that: "the Uganda aspires to transform agriculture from subsistence to commercial agriculture through both mechanization and introduction of modern irrigation systems". It further states under paragraph 173 that "to mitigate local shortages large and medium water resourvers will be developed".

2.1 Policy Vision

The Policy Vision is ***Agricultural Transformation through Irrigation Development***

2.2 Mission Statement

The policy mission statement is ***Promotion of irrigation development and management to enhance water use efficiency for increased and sustainable agricultural production and productivity and profitability to ensure food security and wealth creation***

2.3 Policy Goal

The Policy goal is to ensure sustainable availability of water for irrigation and its efficient use for enhanced crop production, productivity and profitability that will contribute to food security and wealth creation.

2.4 Policy Target

The policy target is to achieve an additional one Million, Five Hundred Thousand Hectares (1,500,000 Ha) under irrigated agriculture (constituting 50% of irrigation potential) by 2040.

2.5 Policy Objectives

The objectives of this policy are to:

i. Enhance investments for irrigation development by public, private and other players;
ii. Promote Integrated Water Resources Management approach in irrigation planning, development and management;
iii. Ensure that irrigation planning and development is technically feasible, economically viable, socially desirable and environmentally sustainable;
iv. Strengthen institutional capacity at all levels for coordination, planning, development and

management of irrigation systems to ensure efficient water use and functionality of irrigation schemes;

v. Promote the generation and utilization of irrigation research, innovations, technologies and technical support services; and

vi. Ensure reliable water for irrigation to optimize, intensify and diversify crop, livestock and fisheries production and productivity.

2.6 Policy Guiding Principles

The following will be the main policy guiding principles:

i. **Integrated Water Resource Management (IWRM):** The policy will support integrated planning, development and management of water resources for multiple uses. This will be based on Integrated Water Resource Management (IWRM) principles.

ii. **Demand Driven Irrigation Development and Management:** The government shall ensure provision of irrigation services through demand driven approaches in which users are fully involved and contribute to the cost of facilities and services to promote ownership and sustainability. Government will prioritise provision of support with feasible investment profiles through a targeted subsidy for progressive and organized farmers groups.

iii. **Commercial and Market Orientation:** Government shall ensure that irrigation technologies support commodity value chain development of strategic commodities in the different zones in order to develop viable agro industrial centres. Government shall continue to increase awareness and mobilize communities on the value of commercial agriculture to change mind set to achieve a common goal and foster socio-economic transformation by focusing on specific enterprises of maximum opportunity for wealth creation in a particular zone.

iv. **Producer, Public and Private Partnership (PPPP) Arrangements:** The Government of Uganda is pursuing a private sector led and market oriented economy. Government shall support existing and form new partnerships with the producers and private sector. Government interventions shall ensure involvement and participation of all key Stakeholders in irrigation at all stages right from formulation of interventions, implementation, monitoring and evaluation of the strategies, programmes and projects. This will foster ownership and sustainability of irrigation infrastructure.

v. **Environmental Principles:** Government shall ensure that key natural resources including water resources, air, wetlands, land/soils and environment are sustainably protected, used and managed to support irrigation and other uses. The focus shall be on precautionary, preventive

and mitigation approaches to pollution and other adverse environmental conditions associated with human activities and climate change. The policy shall ensure that best practicable environmental options including water/wastewater reuse, recycling, reduction and precautionary measures to minimize potential risks. Emphasis shall be made on pollution prevention at the point of use (on-farm) and control (after water use).

vi. **Gender and Equity:** Government interventions in irrigation will promote balanced growth across different regions, gender[2], establishing large, medium and small scale schemes in different parts of the country and agricultural zones. Government shall pay special attention to parts of the country with special needs (water stressed areas) and to vulnerable or marginalized groups.

vii. **Water use Efficiency:** Promotion of water use efficiency, irrigation system efficiency of producing with less water and economic measures. The use of water efficient irrigation technologies and practices shall be promoted.

viii. **International Obligations in use of shared Water Resources:** Irrigation development shall conform to international obligations on shared water resources.

[2]This includes women, youths, persons with disabilities and those affected and infected with HIV/AIDS.

3. POLICY PRIORITY AREAS AND STRATEGIC INTERVENTIONS

Government of Uganda is committed to increase agricultural production and productivity for social economic transformation through enhanced investment in irrigation development and management. This aims at providing adequate resources and application of cost efficient and effective technologies to harness the county's irrigation potential. This policy shall apply to all aspects of irrigation activities in Uganda and address water provision, management and utilisation, institutional strengthening, and investment in irrigated agriculture to enhance expanded and intensified agricultural production and productivity. The following are the policy's priority areas and corresponding strategic interventions to be implemented.

Priority Area 1: To enhance investments for irrigation development by public, private and other players

Policy Statement: Government will set up an investment arrangement that will facilitate a working collaboration with the private sector and other non-state actors as well as incentives for setting up strategic irrigation infrastructure under a Public Private Partnership.

Strategic Interventions

The Government will implement the following strategic interventions under this priority area:

i. Development of mechanisms to enhance general resource mobilization from external sources for irrigation.
ii. Make budgetary allocation from government sources for implementation of irrigation development plan.
iii. Establish criteria for allocation and priority setting of water for irrigation that will ensure fairness and equity.
iv. Promote public investments for irrigation targeting development of irrigation infrastructure, agricultural water harvesting and storage.
v. Extend affordable credit facilities and bank loans for development of irrigation projects, especially small-scale irrigation schemes to be executed by local community groups and individual progressive farmers.
vi. Provide incentives to encourage private sector investment in the irrigation schemes.
vii. Invest in strategic infrastructure and support services for development of irrigated agriculture.
viii. Identify potential irrigation investments portfolio with special emphasis on those that could attract private sector investors and/or progressive farmers including smallholders.

ix. Promote Producers Public Private Partnership (PPPP) arrangements for resource mobilization, development and effective Operation and Management (O&M) of irrigation systems.

x. Support affordable access to inputs and other incentives for irrigation infrastructure development both for bulk water supply and on farm development.

xi. Promote development of rainwater harvesting including runoff, flood management and water smart agriculture.

xii. Rehabilitate existing community/farmers based irrigation systems, establish new strategic systems and support private irrigation systems

xiii. Support agro-tourism activities to augment financial resources to run irrigation systems

Priority Area 2: Promote Integrated Water Resources Management approach in irrigation planning, development and management

Policy Statement: Government will support implementation of comprehensive catchment management plans, as well as best practices to minimize unsustainable exploitation of water resources using an IWRM approach to irrigation planning, development and management

Strategic Interventions

The Government will implement the following strategic interventions under this priority area:

i. Establish catchment based planning, development and management frameworks with full participation of all stakeholders.

ii. Prepare and implement comprehensive catchment management plans; and promote irrigated agriculture based on the plan.

iii. Allocate water for irrigation based on economic, social and environment values of water. All water uses requiring more than 400m^3 per day, motorized pumps and use of the wetland shall require a permit.

iv. Promote best practices to minimize and control pollution of water resources from irrigated agriculture. All discharges to the water, land and environment shall require a permit.

v. Promote the multiple use and reuse of water resources for irrigated agriculture.

Priority Area 3: Ensure that irrigation planning and development is technically feasible, economically viable, socially desirable and environmentally sustainable

Policy Statement: Government shall support development of irrigation schemes based on technically, financially and environmentally sound approaches to ensure sustainability and maximization of value for investment for all players along the agriculture value chains

Strategic Interventions

The Government will implement the following strategic interventions under this priority area:

i. Promote development of irrigation schemes based on demand, cost sharing and cost recovery with an emphasis on micro irrigation projects.

ii. Demonstrate and promote irrigation technologies that are efficient, cost effective and affordable.

iii. Promote prioritization of irrigation of high value crops to ensure higher returns on investment.

iv. Encourage nucleus estate/out-grower or contract farming modalities and support the momentum gained in high value crops.

v. Develop analysis and forecasting tools to assess impacts of changes in irrigation practice on profit, lifestyle, productive and environmental assets to enhance better irrigation decision making.

vi. Promote interventions which support more profitable farming practices and profitable investments in irrigation development.

vii. Adopt appropriate hydrological and irrigated agriculture land use planning procedures to take strategic view of national water provision and trends in water for irrigation demand and supply;

viii. Ensure improved water conveyance efficiency for irrigation through implementing agronomic, engineering demand management, and economic measures based on detailed studies and analysis.

ix. Share irrigation development cost with other sectors like electricity, road, health, education, water, agriculture, tourism and others.

Priority Area 4: Strengthen institutional capacity at all levels for coordination, planning, development and management of irrigation systems to ensure efficient water use and functionality of irrigation systems.

Policy Statement: Government will strengthen the institutional capacity of all players both at national and local levels to ensure good governance of irrigation development investments, deliver efficiency in water use and maintain the functionality of all irrigation systems.

Strategic Interventions

The Government will implement the following strategic interventions under this priority area:

i. Promote formulation of management structures for beneficiaries within a common catchment, sub-catchment or water supply facility to oversee effective and equitable distribution of water for irrigation and sustainable management.

ii. Establish users' fee according to the related level of cropping seasons, farm acreage, and scheme efficiency contributing to costs for operation and maintenance of the irrigation scheme.

iii. Encourage equitable access to irrigation production opportunities for the marginal and vulnerable groups

iv. Develop standards, procedures and criteria for quality control in design, supply, operation and maintenance of irrigation systems

v. Regulate guide and manage the importation of irrigation equipment and technologies

Priority Area 5: Promote the generation and utilization of irrigation research, innovations, technologies and technical support services

Policy Statement: Government will lay emphasis on research and innovations as well adoption of cutting edge technologies to support agricultural enterprises in ways that meet national, regional and international standards.

Strategic Interventions

The Government will implement the following strategic interventions under this priority area:

i. Support and strengthen research, technology development in relevant institutions and dissemination of irrigation knowledge among stakeholders at national, regional, district and local levels in order to attain high productivity and meet quality standards.

ii. Support technological innovations, identification, development, selection, and weather forecast information dissemination

iii. Strengthen information management capacities through improving the adequacy, reliability and accessibility of existing databases at national, regional, district and local levels to facilitate irrigation research and technology development.

iv. Equip the institutions involved in irrigation project implementation with the available modern technologies in the field of project study, designs, construction and operation and management of irrigation schemes.

Priority Area 6: Ensure reliable water for irrigation to optimize, intensify and diversify crop, livestock and fisheries production and productivity

Policy Statement: Government will embark on the construction of bulk water supply systems, construct new strategic reservoirs and dams; rehabilitation, remodelling and upgrading of water storage facilities; promote rain water harvesting, as well as water abstraction and efficient transmission in order to ensure efficiency in irrigation development.

Strategic Interventions

The Government will implement the following strategic interventions under this priority area:

i. Develop water abstraction, transmission and storage infrastructure to ensure consistent supply of water for irrigation and promote efficient water use to increase agricultural production and productivity.

ii. Construction of bulk water transfer supply systems for multi-purpose use

iii. Construction of new storage reservoirs and dams for multi-purpose use.

iv. Promote rainwater harvesting for irrigation development for agricultural production and productivity.

v. Support the rehabilitation, remodelling and upgrading of water storage facilities and irrigation schemes.

4. CROSS CUTTING ISSUES

Under this Policy, all implementing agencies will be supported to that following key cross cutting issues are mainstreamed in ways that ensure a progressive irrigation development:

i. Integrating national adaptation action plans for agriculture (NAP-Ag) into irrigation systems and ensure content for climate change adaptation and mitigation shall be emphasised at designing, planning and implementation of this policy. Promoting effective land utilization as well as sustainable and maintaining land holdings in viable sizes shall be critical in curtailing land fragmentation.

ii. Government shall mainstream and integrate aspects of social protection and ensure that pertinent needs of women, youth, persons with disabilities, and those living with HIV/AIDS are included in interventions for irrigation development.

iii. Targeting small holder farmers by transforming both their production and consumption patterns in ways that point them to production of food home consumption and a surplus for sale. Irrigation will contribute to better nutrition outcomes and household incomes.

iv. Conceited efforts will be channelled to address gender-related challenges in irrigated agriculture and seek to achieve equity and greater participation in irrigation planning, development and management. This will include focusing on activities that build capacity for engendered development across the agriculture value chains.

v. Government will deepen the use of ICTs in agriculture as a panacea of information sharing, reduction of communication costs and easing monitoring and evaluation as well as reporting mechanisms which is critical for lessons sharing and scaling up of innovations.

5. LINKAGES TO EXISTING LEGAL FRAMEWORKS

5.1 International, Continental and Regional Dispensations

Uganda is a signatory to the Sustainable Development Goals whose goals especially Goal 13 on taking action to combat climate change and its impacts as well as Goal 15 on combatting desertification and halt and revise land degradation and biodiversity loss among other goals. Uganda is a party to the Convention on Biological Diversity (CBD) of 1992; the Convention on wetlands signed in Ramsar, Iran in 1971 – which is an inter-governmental treaty which provides the framework for the national action and international co-operation for the conservation and wise use of wetlands and their resources.

This policy is aligned to international conventions to which Uganda is signatory including the Comprehensive Africa Agriculture Development Programme (CAADP) under the New Partnership for Africa's Development (NEPAD) protocol that calls for transformation of on-farm productivity including an emphasis on efficient irrigation. Also related to this is Uganda's commitment to African Union Policy Framework and Reform Strategy that among others calls on countries to ensure implementation of interventions for sustainable aquaculture.

Uganda is part of the Technical Corporation for the Promotion of the Development and Environmental Protection of the Nile Basin (TECCNILE) that was established by the Ministers of Water Affairs in the Nile basin. They represent ten countries, namely Burundi, Egypt, Ethiopia, Eritrea, Kenya, Rwanda, Sudan, Tanzania, Uganda and DRC. The purpose of the agreement is to provide for co-operation by the signatory countries for integrated and sustainable development in joint use of the Nile waters. This policy is in alignment to Uganda's commitments under the East African Community (EAC) Treaty requires Governments to invest in interventions that ensure sustainable production that enhance food security, increase incomes and contribute meaningfully to poverty reduction.

5.2 National Policies, Legislations and Regulatory Framework

This policy is part of broader efforts to fulfil national commitment to the realization of Uganda's Vision 2040, through six National Development Plans (NDPs), the second of which is under implementation. It is part of the implementation of the National Water Sector Strategy and Investment Plan (2010-2035), the Agricultural Sector Strategic Plan (ASSP) 2015/16-2019/20 and the National Agricultural Policy (2013). Other Legal and Policy documents for facilitating irrigation include:

i. The Constitution of the Republic of Uganda (1995, Revised);
ii. The Local Government Act, 2010- Cap-243;
iii. The National Water Act, 1999 – Cap 152,
iv. The Land Act, 1998;
v. National Environment Management Act, Cap 153,
vi. The National Water & Sewerage Corporation Act, 2000;
vii. Livestock Acts (1945; 1976; 2000; 2001);
viii. The National Agricultural Research Organization (NARO) Act, 2005:
ix. The National Agricultural Advisory Services (NAADS) Act, 2001;
x. National Water Policy (1999);
xi. National Environment Management Policy (1994);
xii. National Agricultural Extension Policy 2016;
xiii. National Wetlands Policy;
xiv. Land use Policy (2014),
xv. National Climate Change Policy (2015);
xvi. National Water Regulations (1998) and Waste water regulation,;
xvii. The Fish (Aquaculture) Rules, 2003;
xviii. The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000;
xix. The Environmental Impact Assessment Regulations, 1998;
xx. The Water Resources Regulations, 1998;
xxi. Waste Water Discharge Regulation, 1998;
xxii. The National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999; and the
xxiii. National Climate Change Policy implementation strategy (2015-2020);

The policy is in consonance with the aspirations of the National Water Policy (being revised) and is aimed to promote proper water resource assessment and planning for agricultural production. This policy calls for increasing the capacity of the farmers to access and use water for crops, fisheries and livestock production. It will support investments towards appropriate water-harvesting technologies for irrigation, aquaculture and livestock development and calls for an enabling the environment for farmers and the private sector to participate in the financing, planning, development and management of irrigation. It comes at a time when Uganda is implementing the National Climate Change Policy and the National Adaptation Plans to Climate Change in Agriculture (NAP-Ag). These supportive frameworks will provide useful synergies in ensuring that irrigation development is embedded in the overall agenda to transit Uganda towards a sustainable green economy as enshrined in the Uganda Green Growth Strategy.

6. IMPLEMENTATION FRAMEWORK AND STRATEGIC PARTNERSHIPS

The Ministry in charge of agriculture shall be responsible for on-farm which refers to development of hydraulic infrastructure, associated engineering works and irrigation accessories comprising of conveyance from farm gates to farmers' fields and water use management. The Ministry in charge of water shall be responsible for off-farm interventions which refers to development of hydraulic infrastructure and associated engineering works comprising of water abstraction and conveyance to farm gates.

Government will invest in large and medium irrigation schemes through public investments and public private partnerships while for micro irrigation schemes, Government will support progressive farmers and organized farmer groups through targeted subsidy. This will attract and stimulate private sector investment into irrigation. Both ministries in charge of agriculture and water shall produce guidelines to operationalize this implementation arrangement.

In line with Section 82 (3) of the Local Government Act Cap 243, Government will provide, in the Medium Term Expenditure Framework, provisions towards support of participating stakeholders in implementation of this policy. This consistent with the current practice that has been adopted for the current interventions.

6.1 Implementation Arrangements

The Policy will be implemented under a multi-sectoral, multi-dimensional approach with cohesive implementation arrangement of various stakeholders whose roles and responsibilities are elaborated in the table below.

Institution	Roles and Responsibilities
Office of the Prime Minister	i. Chair the Inter-Ministerial Technical Committee (IMTC) on Water for Production (WFP) to enhance synergies between implementing sectors (Water and Agriculture) in irrigation Sub sector
	ii. Supervise and monitor the implementation of the Irrigation Policy
	iii. Ensure that irrigation activities under special programs are in line with the National Irrigation Policy
	iv. Mobilize resources nationally and from development partners for Irrigation Planning, Development, Operation and Maintenance
	v. Contribute to policy formulation reviews, evaluation, research and training in irrigation development.

Institution	Roles and Responsibilities
	vi. Report to the Committee of Permanent Secretaries namely Implementation Coordination Steering Committee (ICSC) on any outstanding issues
Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and its Agencies	i. Formulate and review appropriate regulations, irrigation standards and implementing guidelines on agricultural water use and management;
	ii. Undertake the planning and development of micro and small scale irrigation systems
	iii. Undertake the planning and development of on-farm irrigation infrastructure and implementation of on-farm activities for medium and large scale schemes to ensure effective utilization of water for irrigation and best agronomic practices ;
	iv. Support the operation and maintenance of on-farm irrigation infrastructures;
	v. Provide agricultural technical guidance, education and training of extension workers, artisans, irrigation agronomists, irrigation engineers and farmers, backstopping to districts and other stakeholders;
	vi. Support the establishment and guide farmer groups and producer associations in value chains and agribusiness through PPPPs. MAAIF will also work with the Ministry of Trade, Industry and Cooperatives to support cooperative societies in the management of their resources especially in the disposal and acquisition of fixed assets.
	vii. Promote marketing, trade, value addition of products and cooperatives principles in irrigated agriculture;
	viii. Coordinate actors involved in agricultural production, agricultural water management, value chain and marketing;
	ix. Spearhead research and development (R&D) for irrigation systems;
	x. Demonstrate and promote irrigation technologies that are efficient, cost effective and affordable systems.
	xi. Build the capacity of stakeholders involved in irrigation project implementation in the field of project study, designs, construction and operation and management of irrigation systems.
	xii. Carry out Environmental Social Impact Assessment (ESIA) and Resettlement Action Planning (RAP) for all areas planned for irrigation development.

Institution	Roles and Responsibilities
	xiii. Oversee implementation of national irrigation policy including access to strategic inputs and demonstration materials, monitoring, evaluation and compliance to standards;
	xiv. Development of national guidelines for farmers and agricultural water users associations
	xv. In consultation with District Local governments, and MWE shall Institute performance and management contracts with the appropriate institutions / farmer organizations at local/scheme level for sustainable management of irrigation schemes.
The Ministry of Water and Environment (MWE) and its Agencies	i. Undertake National Water Resources Assessment, Water control, Water Resources Planning, Allocation and Regulation,
	ii. Carry out Environmental Social Impact Assessment (ESIA) and Resettlement Action Planning (RAP) for all areas planned for irrigation development
	iii. Undertake the development of off-farm irrigation infrastructure and bulk water transfers for medium and large scale irrigation schemes ;
	iv. Support the operation and maintenance of off-farm irrigation infrastructures;
	v. Oversee implementation of national irrigation policy including access to strategic inputs and demonstration materials, monitoring, evaluation and compliance to standards;
	vi. Demonstrate and promote irrigation technologies that are efficient, cost effective and affordable systems.
	vii. Build the capacity of stakeholders involved in irrigation project implementation in the field of project study, designs, construction and operation and management of irrigation schemes.
	viii. Carryout research and development (R&D) for irrigation systems;
	ix. Carryout monitoring, evaluation and compliance to standards
	x. In consultation with District Local governments, MAAIF shall Institute performance and management contracts with the appropriate institutions / farmer organizations at local/scheme level for sustainable management of irrigation schemes.
Ministry of Finance, Planning and Economic Development (MFPED)	i. Mobilise and allocate public financial resources for implementation of the irrigation schemes.

Institution	Roles and Responsibilities
	ii. Coordinate foreign direct investment including aid to irrigation subsector;
	iii. Create an enabling environment for Producer Public Private Partnerships in support of irrigation development.
Ministry of Local Government (MOLG)	i. Coordinate and support Local Governments to provide efficient and effective irrigation services;
	ii. Build capacity of Local Governments for planning, budgeting, implementation and monitoring of irrigation activities.
National Planning Authority (NPA)	i. Ensure irrigation issues are captured and integrated in the National Development Plans
	ii. Assess the effectiveness of implementation of the National Irrigation Policy.
Ministry of Gender Labour and Social Development (MGLSD)	i. Support community mobilization and empowerment;
	ii. Promote rights of vulnerable and marginalised groups;
	iii. Undertake adult education and labour relevant to irrigation activities.
Ministry of Trade Industry and Cooperatives (MTIC)	i. Support the establishment and guide cooperative societies in the management of their resources especially in the disposal and acquisition of fixed assets.
	ii. Promote marketing, trade, value addition of products and cooperatives principles in irrigated agriculture;
Ministry of Lands, Housing and Urban Development (MLHUD)	i. Deal with issues relating to land ownership and related property rights in irrigation schemes.
Ministries of Education and Sports, Science and Technology; Universities and colleges	i. Train extension workers, artisans, irrigation agronomists, engineers and farmers under various institutions
	ii. Develop relevant training curriculum at all levels of education to meet the irrigation demands.
	iii. Conduct irrigation related research
District Local Governments	i. Participate in planning and development of irrigation infrastructure
	ii. Provide auxiliary extension services, Technical Assistance to WUAs, Farmers and other stakeholders;
	iii. Support the acquisition of land for construction of communal irrigation facilities;
	iv. Provide backup support for operation and maintenance of established infrastructure and equipment for irrigation;

Institution	Roles and Responsibilities
	v. Support and monitor implementation of Irrigation Policy;
	vi. Participate in data collection, validation, storage and use of irrigation information for planning and management.
	vii. Mobilise and allocate resources for irrigation planning, development and, Operation and Management.
Development Partners	i. Share good practices and alternative approaches to irrigation development;
	ii. Provide financial and technical support for irrigation development
Private Sector Institutions	i. Contribute to policy formulation, reviews, research and training;
	ii. Co-finance activities or investments with government;
	iii. Supply of inputs and other private sector services along commodity value chains;
	iv. Perform self-regulation and control activities in irrigation related activities.
	v. Offer professional services in sustainable planning, design, construction supervision, management and operation and maintenance of irrigation schemes.
Non-Governmental Organisations(NGOs), Civil Society Organisations(CSOs) and Community based organizations	i. Participate in development of irrigation infrastructure and provision of irrigation facilities;
	ii. Participate in capacity building programs;
	iii. Participate in mobilization of resources for irrigation;
	iv. Undertake advocacy to promote irrigation;
	v. Link farmers to microfinance institutions and other services.
Farmers' Organizations which include community groups, associations and cooperatives among others	i. Operate and Maintain irrigation facilities sustainably;
	ii. Make and implement Bye-laws;
	iii. Participate in capacity building programs;
	iv. Participate in site identification for irrigation facilities;
	v. Participate in monitoring and evaluation;
	vi. Participate in sustainable natural resource management in irrigation development.
Households	i. Embrace and actively participate in all planned interventions ii. Ensure proper use and self-monitoring the proper use and maintenance of set up infrastructure stock within communities iii. Engage in gainful and progressive agriculture

6.2 Coordination Arrangements

At the national level, the Office of the Prime Minister (OPM) will chair an Inter-Ministerial Technical committee on water for production to enhance synergies between implementing sectors (water and Agriculture) in irrigation. There is already a coordination mechanism jointly spearheaded by both MAAIF and MWE to drive this process and both co-chair a water for production sub-sector working group in the Ministry of Water and Environment. Inter-Ministerial Technical Committee on Water for Production will enhance synergy and complementarity between the key actors/sectors (Public and Private Sector) in irrigation sub-sector.

At the Ministerial level, MAAIF and MWE shall jointly be responsible for planning, advising, supervising, and monitoring the management and use of irrigation schemes. They will provide the technical advice in planning, design, construction and maintenance and operation of the hydraulic works and overall direction on the access, use and protection of the resources. Both line Ministries will work with other stakeholders to ensure coordination of standards and guidelines for provision of these services shall be through the Water Policy Committee.

At district level, a district technical support committee which constitutes District engineer, water officer, forest officer, the heads of the production and marketing, the agriculture officer and community development officers (all together 12 persons). They shall undertake site meetings and as well as heads of water office will coordinate with their respective line ministries to support planning, implementation, monitoring and management of irrigation in their respective districts. MAAIF will work through the Directorate of Agriculture Extension Services and their posted staff at the sub-county to support farmer uptake of irrigation opportunities where appropriate.

6.3 Monitoring and Evaluation Framework

This policy implementation will be monitored by OPM, MAAIF, MWE, MoFPED, Local Governments and other stakeholders at appropriate levels as guided by the National Monitoring and Evaluation Policy. To facilitate this process, a monitoring and evaluation framework will be designed for this plan and operationalized to feed into both the Agriculture Water Management Information System (AWMIS) / M&E system at MAAIF and the Water MIS under MWE. District and Sub-country officials will work with extension workers and the District Planner to generate performance data at the sub-county levels which will be aggregated at the district level before submission to MAAIF and MWE and appropriately packaged to improve performance. The implementation framework for this policy has already identified key performance indicators (KPIs) that will be reported on as part of the Ministries' reporting under the Performance Based Budgeting Tool (PBBT) and the Government Annual Performance Report (GAPR).

7. INFORMATION, EDUCATION AND COMMUNICATION STRATEGIES

7.1 Information Dissemination and Awareness Creation

A popular version of this policy will be designed and translated in key local languages for dissemination across the country. Using already existing institutions at the national and district level, MAAIF and MWE will utilize the media to engage the public on aspects of implementation and clarify on the roles of all stakeholders in each respect. The purpose of government is to place farmers at the centre of the irrigation development and ensure that they are involved in all stages of the irrigation development process from needs identification through design, financing, implementation and management.

7.2 Communication and Feedback Mechanisms

MWE and MAAIF will develop a communication strategy that will enhance provision of information and knowledge, increase awareness, encourage action, build consensus, change behaviour and attitudes, promoting community participation and resolving related conflicts in irrigation sub-sector development and management. The framework will outline avenues for Government to receive feedback from all stakeholders at all levels and appropriate response made to increase clarity of Farmers shall be sensitized to create demand for irrigation and formation of cooperatives/farmer organisations to support production, marketing and overall management of irrigation schemes.

8. FINANCING ARRANGEMENTS

Overall, the implementation of this policy will be funded by Government of Uganda, with support from the Development Partners, Private sector, Civil Society Organisations among other sources. The policy implementation will be supported the financing arrangements:

i. On-budget financing which covers publically funded investments planned and prepared in advance under the government medium term expenditure framework (MTEF) and support progressive farmers and organized farmer groups through targeted subsidy. Guidelines will produced jointly between and MWE and MAAIF to elaborate on this process.

ii. Non-tax revenue from contributory mechanisms under public private partnerships (PPPs) where private entities and farmer producer organizations will contribute a fee towards micro-irrigation schemes and equipment. This revenue stream will allow government to fund further infrastructural investments considered necessary to encourage and facilitate private investment in irrigated agriculture on basis on expressed demand from the potential private investors; and

iii. Supporting farmers to access low interest loans and credit to invest in micro-irrigation schemes.