



FINAL REGULATORY IMPACT ANALYSIS (RIA) REPORT

THE IRRIGATION (GENERAL) REGULATIONS, 2021

FOR

MINISTRY OF WATER, SANITATION AND IRRIGATION

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Acronyms and Abbreviations

| | |
|--------|---|
| ALDEV | African Land Development Unit |
| ASAL | Arid and Semi-Arid Land |
| ASDS | Agriculture Sector Development Strategy |
| ASGTS | Agriculture Sector Growth and Transformation Strategy |
| CAP | Chapter |
| CBA | Cost-Benefit Analysis |
| CDA | Coast Development Authority |
| CECM | County Executive Committee Member |
| CIDPs | County Integrated Development Plans |
| CS | Cabinet Secretary |
| ENNDA | Ewaso Ngi'ro North River Basin Development Authority |
| ENSDA | Ewaso Ng'iro South Development Authority |
| EU | European Union |
| FAO | Food and Agriculture Organization |
| GDP | Gross Domestic Product |
| JASCOM | Joint Agriculture Sector Consultation and Cooperation Mechanism |
| KALRO | Kenya Agriculture and Livestock Research Organization |
| KEBS | Kenya Bureau of Standards |
| KSMS | Kenya School of Monetary Studies |
| KVDA | Kerio Valley Development Authority |
| LBDA | Lake Basin Development Authority |
| MoALF | Ministry of Agriculture, Livestock and Fisheries |

| | |
|-------|---|
| MWI | Ministry of Water and Irrigation |
| NEMA | National Environmental Management Authority |
| NGOs | Non- Governmental Organization |
| NIA | National Irrigation Authority |
| NIB | National Irrigation Board |
| NWMP | National Water Master Plan |
| RDAs | Regional Development Authorities |
| RIA | Regulatory Impact Assessments |
| RIS | Regulatory Impact Statement |
| SDI | State Department of Irrigation |
| TARDA | Tana and Athi River Development Authority |
| WHO | World Health Organization |
| WRA | Water Resource Authority |
| WRMA | Water Resources Management Authority |

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Executive summary

The Ministry of Water, Sanitation and Irrigation engaged George Kashindi (the Consultant) to undertake a Regulatory Impact Assessment (RIA) of the proposed Irrigation (General) Regulations, 2021 to determine if the gains to be obtained from the regulation, would outweigh the costs imposed to the industry by the regulation as provided by sections 6 and 7 of the Statutory Instruments Act, 2013. The RIA sought to evaluate the impact and effects of the proposed regulation both on the public and private sectors to inform the choice of the most appropriate way to achieve objectives of the proposed regulation by evaluating the major feasible alternatives of intended regulatory action and other practical non-regulatory options.

The approach to the assignment entailed detailed desk review and synthesis of the draft Irrigation (General) Regulations, 2021 against Irrigation Act, 2019 and other relevant laws. The consultant also reviewed relevant agriculture policies and strategies, Kenya Vision 2030, the Big 4 Agenda, and other key policy documents for qualitative analysis, quantitative analysis, comparative analysis, trend analysis of data from these documents, trend analysis of judicial decisions on regulatory impact assessment and public participation and key informant interviews and focused group discussions to validate secondary data obtained from the documents.

The review of proposed irrigation regulations found that the proposed Regulations shall have a positive impact on the public sector by enhancing coherence and streamlining the management and supportive strategies towards the improvement of the irrigation industry. It was also found that the proposed regulation shall lead to increased agricultural production and enhance public private partnerships in the sector.

The proposed Regulations shall have a positive impact on the society's fundamental rights and freedoms through promotion of the right to clean and healthy environment as envisaged under Article 42 of the Constitution 2010. As a result, it will lead to promotion of food production which will be geared towards satisfying the socio-economic rights of the citizenry as envisaged under Article 43 of the Constitution and further promoting the consumer rights as contemplated under Article 46 of the Constitution.

The analysis therefore recommends the passing and operationalization of the proposed regulations.

INTRODUCTION AND BACKGROUND

1.1 Introduction

Kenya has an area of approximately 582,646 square kilometres comprising 97.8 % land and 2.2% water surface. Out of this only 20% of the land falls within medium to high rainfall areas and the rest is arid or semi-arid characterized by water deficit for agricultural production. The high rainfall zones receive more than 1,000 mm per annum and occupy less than 20% of the productive agricultural land and carries approximately 50% of the country's population. Most of the food and cash crops as well as livestock products are produced in this zone under semi-intensive and intensive systems. The medium rainfall zone receives between 750-1000 mm of rainfall annually and occupies between 30% - 35% of the 20% of the productive agricultural land area. It is home to about 30% of the population. Farmers in this zone keep cattle and small stock, and grow drought-tolerant crops. The arid and semi-arid lands (ASALs), receives 200-750 mm of rainfall annually and occupy about 84% of the total land area. ASALs which are predominantly used as rangelands and game parks carry 80% of the country's livestock and 65% of the wildlife (MoWI, 2016).

Kenya's agricultural sector has been negatively affected as the cropping and livestock production systems follow the annual rainfall patterns which are highly variable and unreliable. Therefore, there is need for the country to shift focus from rain-fed to irrigated agriculture. Irrigation will enhance production of crop, livestock and fisheries which will in turn significantly contribute to meeting the demands of national food security as well as products for emerging export markets and agro- industries.

Irrigation in Kenya has a long history spanning more than 400 years. Records show that irrigation has been practised for many years along the lower River Tana and in Keiyo, Marakwet, West Pokot and Baringo regions where farmers adopted irrigated agriculture as a guard against uncertainties such as the amount and distribution of rain.

Rice irrigation activities along river valleys in Kipini, Malindi, Shimoni and Vanga, where slaves were used to constructing rice schemes in the early 19th century, are also well-known.

Formal irrigation started between 1901 and 1905 during the construction of the Kenya-Uganda railway around Kibwezi and Makindu. Large-scale irrigation commenced in 1950s after the African Land Development Unit (ALDEV) in 1946 identified irrigation as part of a broad agricultural rehabilitation programme. It initiated a number of irrigation schemes – Mwea, Hola, Perkerra, Ishihara and Yatta using cheap labour from Mau Mau detainees. Many of the detainees were eventually settled in these schemes (MoWI, 2016).

1.2 Background

The agricultural sector in 2018 contributed 34.5% of the Kenya's Gross Domestic Product (GDP) through mainly growing of crops (27.8%); animal production (4.1%); support activities to agriculture (0.5%); fishing and aquaculture (0.5%) and manufacturing of food, beverages and tobacco (3.2%); and accounts for 65% of the total export earnings. The sector employs over 80% of Kenya's rural work force and provides more than 18% of formal employment. The Kenya Vision 2030 and the Government's Big 4 agenda recognizes the significance of agriculture towards its goals that aim at achieving an average gross domestic product (GDP) growth rate of 10% per annum up to the year 2030, realizing food and nutrition security and employment creation through agro-processing.

In spite of the critical role of the agricultural sector in the economy of the country, it still faces many challenges. Key among these challenges include highly erratic and unpredictable rainfall in the arid and semi-arid lands (ASALs) counties which make up 84% of the country, a steady reduction of agricultural land especially in high potential areas and low or declining agricultural production and productivity.

To attain increased and sustained agricultural production, the country will need to reduce reliance on rain-fed agriculture and increase irrigation-based systems that allow production throughout the year and thus better responding to market demand fluctuations, ensure reliable and adequate production of agro-industry raw materials and to realise the objective of ensuring food and nutrition security. Due to Kenya's growing population, higher water efficiency will be crucial to increase total food production with limited water resources. Drip irrigation can increase yields of the top 5 crops by 1-7 times compared to Kenya's predominantly rain fed yields today. While investment in irrigation technology amortises faster for cash or high value

crops, there is a business case for all Kenya's top 5 water intensive crops which are maize with a 340% increase in cash flow (value creation), pulse 90%, fruits 50%, tea 100%, and roots and tubers 85% (Water Resource Group, 2016).

The Constitution of Kenya 2010 provides for the management and control of the natural resource base including water used for irrigation. Chapter Five of the Constitution on Land and Environment covers issues of land use and water resources. The Fourth Schedule, Part 1 Clause 2 on the management of international waters and water resources is key to the development of irrigation and other water uses. Clause 22 of the Fourth Schedule deals with the protection of the environment and natural resources necessary for establishment of durable and sustainable development. Subsection (c) thereof defines the national Government role as '*water protection, securing sufficient residual water, hydraulic engineering and safety of dams*' (MWI, 2016).

The opportunities for economic growth through irrigation are immense in Kenya. Basing its findings on land suitability classification, the National Water Master Plan of 1992 (JICA, 1992) estimated that 11,341,900 hectares could be irrigated. This potential excludes the additional capacity for irrigation based on the vast underground aquifer recently discovered in the northern Kenya (MoWI, 2016). By 2015, only estimated at 180,503 hectares of irrigation land had been developed which equivalent to 13.5% of the total potential (MoWI, 2016).

Responsibilities for the irrigation sector in Kenya are shared among (i) MoALFC, responsible for production activities under irrigation, (ii) the Ministry of Water, Sanitation and Irrigation (MoWSI) in charge of managing the irrigation schemes and of water delivering services, and (iii) Regional Development Authorities (RDAs) under the State Department for Regional Development and which have been responsible for construction and management for the majority of dams in the country. This configuration has been in place since 2005 following reforms in the Water Act (2002) (MWI, 2016).

In August 2019, vide Executive Order No. 6 of 2019, the irrigation docket was transferred from the Ministry of Agriculture, Livestock and Fisheries to the expanded Ministry of Water and renamed as the Ministry of Water, Sanitation and Irrigation. According to the Executive order, the objective of this change was "To enhance synergy within the water sector, which is a key enabler for the implementation of the "Big Four". The State Department for Irrigation was

merged with the State Department for Water & Sanitation to establish the Ministry of Water, Sanitation and Irrigation" (Executive Office of the President State House–Registry, 2019).

1.3 Rationale/Justification for an RIA

Regulatory Impact Assessment (RIA) is a systemic approach to critically assess the positive and negative effects of proposed or existing regulatory and non-regulatory alternatives. It is an evidence-based approach to policy making. RIA requirements apply to proposals for new and amending regulations and to policy proposals that may result in new or amending regulations (regulatory proposals). It is an instrument that authorizes the determination and consequences of introducing a new regulatory regime. The systematic use of RIA has been recognized as a key means to improve the efficiency, transparency and accountability of decision making.

The irrigation sector has faced many challenges including operating without an established and specific irrigation policy now which has recently been developed, low rate of irrigation infrastructure development, inadequate funding for development and investment by public and private sector, poorly developed marketing channels and lack of diversification of irrigated commodity value chains. Further, the legal and regulatory frameworks have not been reviewed to reflect the emerging operational and socio-economic realities.

A well organized, coordinated and regulated irrigation sector in the country will facilitate accelerated development. This will enable and encourage accelerated irrigation infrastructural development, increased productivity per unit volume of water, increased water harvesting and storage, improved scheme management, enhanced stakeholder participation and improved business opportunities in the sector.

In order to attain the envisaged economic growth and sustained food production, the country needs to reduce reliance on rain-fed agriculture and increase irrigation-based systems that allow production throughout the year and increased agricultural productivity.

Irrigation accounts for 1.7 percent of total land area under agriculture, contributes 3% to the GDP and provides 18% of the value of all agricultural produce, demonstrating the potential of irrigation in increasing agricultural production and productivity. With irrigation, agricultural production can be increased by up to 400%, and jobs created at the rate of up to 15 persons per

hectare directly and indirectly. A robust irrigation sector will guarantee raw materials for agro-industries, create employment opportunities especially for youth and women, improve security and stem the tide of rural urban migration in search of employment opportunities (MoWI, 2017).

Kenya has not fully developed her irrigation potential estimated at 1.342 million hectares. The irrigation potential is based on surface and underground water including water harvesting and storage. By the end of 2015, approximately 180,503 ha of irrigation had been developed. This is about 13.5% of the potential leaving more than 80% of Kenya's irrigation potential untapped.

The irrigation development plan in the National Water Master Plan 2030 (NWMP 2030) was formulated assuming that water saving irrigation is introduced to maximize the new irrigation development area. If the water saving irrigation is not introduced, the possible new irrigation development area in 2030 will decrease from 623,700 ha to 530,800 hectares (decrease of about 15%) because the overall irrigation efficiency is lowered. The irrigation development plan is expected to actively introduce the water saving irrigation to be close to the target of the Kenya Vision 2030 to the maximum (MENR, WRMA, 2013).

1.4 Objective of the Assignment

Section 34 of the Irrigation Act, 2019 empowers the Cabinet Secretary in consultation with the County Governments to make regulations for the better carrying into effect of the provisions of the Act. The Cabinet Secretary is required to publish the regulations in the Gazette within ninety days of the enactment of the Act. The Act further requires that any regulations for furtherance of its purpose shall be tabled and approved by both Houses of Parliament.

RIA seeks to evaluate the impact and effects of the proposed regulations both on the public and private sectors to inform the choice of the most appropriate way to achieve objectives of the proposed regulations by evaluating the major feasible alternatives of intended regulatory action and other practical non-regulatory options. The assignment examines the benefits to be obtained from proposed regulation as well as costs of imposing the proposed regulations to industry players.

The specific objectives of the assignment were to:

- i. Review laws that govern irrigation industry including but not limited to the Constitution 2010 and Irrigation Act, 2019.
- ii. Review the draft Irrigation (General) Regulations, 2021.
- iii. Review RIAs on the Irrigation industry globally to determine appropriate considerations to be made in the preparation of RIAs and document key lessons learned from the global review of RIAs.
- iv. Conduct a Regulatory Impact Assessments (RIA) on the draft Irrigation Regulations as per section 6 and 7 of the Statutory Instruments Act, 2013 with specific focus on
 - Cost Benefit Analysis of the proposed regulations with focus on economic, environmental and social impact on all stakeholders.
 - The costs of administration and compliance on all stakeholders.
- v. Prepare a Regulatory Impact Statement (RIS) for the proposed regulations as outlined in part 3 of the Statutory Instruments Act, 2013.
- vi. Prepare an Explanatory Memoranda for the proposed regulations.
- vii. Prepare notices on the Regulatory Impact Statements for publication in the Kenya Gazette and other 2 other daily newspapers of wide circulation.
- viii. Submit a draft report containing the findings of the review, the draft RIS and an Explanatory Memoranda for consideration and approval by the Ministry prior to subjecting the draft to a stakeholders' forum.
- ix. Conduct stakeholders' forums to collect comments from stakeholders on the draft report and incorporate useful comments, views and suggestions.
- x. Submit a final report after incorporating the views and suggestions of the stakeholders.

1.5 Project Deliverables

The assignment resulted into the following deliverables:

- i. Inception report;
- ii. Regulatory Impact Statements for the proposed Regulations that include but not limited to economic, social and environmental impacts as well as administrative and compliance costs;

- iii. Draft Regulatory Impact Assessment Report for the proposed Regulations;
- iv. Final regulatory impact assessment report for the proposed Regulations;
- v. Explanatory Memoranda for the proposed Regulations;
- vi. Notices on the Regulatory Impact Statements for publication;
- vii. Certificate of Compliance for the proposed Regulations; and
- viii. Conduct stakeholders workshops to collect comments and views.

1.6 Methodology and Approach

The approach to the assignment entailed detailed desk review and synthesis of the draft Irrigation (General) Regulations, 2021 (published in 2021) against the provisions of the Irrigation Act, 2019, the Constitution, 2010 and other relevant laws. The consultant also reviewed relevant irrigation, water and agriculture policies, strategies and publications, Kenya Vision 2030, the Big 4 Agenda, and other key policy documents for qualitative analysis, quantitative analysis, comparative analysis, trend analysis of data from these documents, trend analysis of judicial decisions on regulatory impact assessment and public participation and key informant interviews and focused group discussions to validate secondary data obtained from the documents. In addition, the consultant conducted stakeholders' workshops to collect views and comments on draft RIS from industry players for consideration.

1.7 Regulation Objectives

The primary objective of the regulations is to facilitate better carrying out of the purposes and provisions of the Irrigation Act, 2019, which commenced in August 2019. The main object of this Act of Parliament was to promote and regulate the development and management of irrigation in Kenya.

The purpose of the Regulations was to ensure: -

- i. Sustainable development, management, financing, provision of support services and effective regulation of the entire irrigation sector in Kenya; and
- ii. Compliance with the Constitution and laws of Kenya, international laws, treaties and agreements and other ratified instruments

ASSESSMENT OF THE NATURE AND EXTENT OF THE PROBLEM

1.8 The Nature of the Problem

Whereas the need for the country to reduce its dependence on rain-fed agricultural production is clear, the demand for water resource for economic use and especially in agriculture has been increasing while water resources have been declining. This has resulted in most of the irrigation schemes in the country experiencing water shortages during the drought thus leading to declining production and undermining further expansion especially in the ASALs.

The major constraints and challenges to accelerated irrigation and drainage development include:

- i. The potential of irrigation in ensuring increased and stable agricultural production has not been appreciated, resulting in low prioritization of the sector in the past.
- ii. Inadequacy of legal and institutional framework in the irrigation sector. The sector, till recently lacked a national policy to guide irrigation development and management and expansion of the existing national irrigation schemes.
- iii. Inadequate public and private sector investment in the sector.
- iv. Inadequate development of irrigation infrastructure and water storage facilities and despite the high demand by irrigation relative to other uses, construction of water storage facilities for the irrigation development has been negligible. Indeed, Kenya is classified among the poorest countries in terms of surface water storage.
- v. Weak Irrigation Water Users' Associations (IWUAs) for sustainable management of the irrigation schemes.
- vi. Inadequate support services such as irrigation extension and marketing for profitable and sustainable irrigation development.

There is need to develop sustainable strategies for agricultural water management systems, irrigation development and management.

1.9 The Extent of the Problem

Kenya's irrigation sector development has remained largely untapped despite immense potential due to the many constraints and challenges facing the sector. These include lack of facilitative specific policy and legal framework until the recent development of the National Irrigation

Policy in 2017 and the Irrigation Act, 2019 but which are yet to be fully implemented; under-exploited irrigation potential due to low levels of public participation and investments including inadequate budgetary allocation; inadequate private sector participation and investments; inadequate infrastructure development for irrigation, drainage and water storage; poor management and maintenance of installed irrigation infrastructure; poorly developed channels for participation by irrigation farmers and weak governance of water users'/farmer associations; inadequate and un-coordinated information sharing in irrigation research, science and technology; inadequate irrigation support services; high investment costs; insecure land tenure and unsustainable land use; poor and inappropriate utilization of waste water and storm water; inefficient use of water resources in existing schemes; inadequate access to credit and financial services; inadequate input supplies and output markets; limited incentives for investment in irrigation materials, technology, equipment and machinery; and emerging negative impacts of climate change (Mugera, 2015).

Water resources available for irrigation are limited especially in ASALs. According to the results of the water balance study, to maximize irrigation area considering the development target of the Kenya Vision 2030, the introduction and promotion of water-saving irrigation methods is indispensable. The overall concept for irrigation development planning in the NWMP 2030 was formulated on the principles that irrigation development should be undertaken to the maximum as long as water is available and water saving methods such as drip and sprinkler irrigation for upland crop cultivation and water saving paddy cultivation should be introduced for efficient water use as much as possible (MENR, WRMA, 2013).

The majority of the smallholder farms in Kenya rely on rain-fed cultivation; the utilization of irrigation systems is way below its potential, with less than 7% of the cropped land under irrigation. The recurrent cycles of droughts and floods of the past years have represented a significant threat to crop cultivation and livestock rearing and management; they have led directly to poor agricultural performance and to severe famines. The high reliance on rain-fed agriculture, vulnerable to weather variability, leads to fluctuations in production. These trends have negatively affected agricultural incomes and hence investments in rural areas and are seen as one of the major reasons for persistently high levels of food insecurity (Boulanger, *et al.*, 2018).

The main irrigated crops in the country are rice, maize, sugarcane, vegetables, bananas, citrus, coffee, tea, cotton and flowers. Some of these crops like maize, sugarcane, coffee, tea and cotton, technically, require large scales of operation for economic returns to be realized. The land mainly under private and community-based smallholder irrigation is devoted to production of flowers; and vegetables and fruits for export and the local market. These include Asian vegetables, tomatoes, spinach, kales, brinjals, melons, courgettes and chillies. Fruits include mangoes, paw paws, bananas, custard apple and citrus. The returns from the commodities are relatively high and productivity is satisfactory. They are clustered along and around water sources which may have been developed with support from either the government or NGOs. The land parcels are commonly individually owned or rented. The irrigation schemes that are government managed through the NIB work under a relatively closed management by the NIB and are traditional rice growers with little or no rotation. They however have a long history of management failures and a myriad of other problems that stem from the inability to self-governance (Karina and Mwaniki, 2011).

Kenya has limited natural endowment of renewable fresh water, estimated at 21 billion m³ out of which 10 billion m³ is shared in trans-boundary basins. The per capita annual fresh water availability is projected to fall to 235 m³ against the internationally accepted threshold of 1000 m³ by 2025 with human population increase. Water availability is mainly concentrated in the country's five water towers and Lake Victoria regions but deforestation of catchment areas, human settlements and recurrent droughts have adversely affected hydrological sustainability. There also exist disparities in water resources within different water basins with ASALs having the worst shortages (MWI, 2016).

The main sources of water for irrigation in Kenya include rivers, streams, lakes and ground water. Surface water sources account for 86% and groundwater 14%, however this latter figure is likely to rise as a result of the recently identified water aquifers in Northern Kenya especially Turkana county. The country has 26 medium to large dams and about 4,100 small dams and water pans with a total water storage capacity of 184 million m³, equivalent to 5.3 m³ per capita per year. This is among the lowest water storage rates in the world and is equivalent to only 3 months use. Thus, if the country does not receive rains for only three months, it experiences famine, lacks water for irrigation and faces power rationing and many of the current irrigation

schemes have been experiencing declining water availability as a result of climate change, erratic rains, destruction of water catchments areas, deforestation and inadequate water harvesting and storage. Of the available ground water resources in the country, the total safe abstraction rate is estimated to be about 193 million m³, out of which only about 1% of available total is used for irrigation, mostly by private firms. The ASALs which are in most need of irrigation are poorly served by streams, rivers and lakes. Rainwater harvesting which could be used for irrigation even in the driest parts of the country remains largely untapped. Therefore, the scarcity of irrigation water in Kenya has more to do with failure to develop and harness available resources than absolute lack of water (MoWI, 2016).

Irrigation is identified as a key factor in the intensification of production and the increase in productivity of land throughout the Country's main agriculture policy documents. The key objectives of all these policy documents including ASDS, ASGTS was to improve productivity through irrigation and emphasize the need for the expansion of land under irrigation, the importance of the public-private partnerships and the promotion of a multi-sectoral approach for enhanced innovations, research and technology adoption (Boulanger, *et al.*, 2018).

1.10 Regulatory Contextualization

1.10.1 Policy background

In the past, irrigation development strategies and approaches were articulated in a number of government policy papers including: the Sessional Paper No.4 of 1981 on National Food Policy; Sessional Paper No. 1 on Economic Management for Renewed Growth; Sessional Paper No.2 of 1994 on National Food Policy; the Economic Recovery Strategy (2003 - 2007); the Strategy for Revitalizing Agriculture (2004-2014); the Agriculture Sector Development Strategy (ASDS 2010-2020) and the Kenya Vision 2030 and more recently in the Agriculture Sector Growth and Transformation Strategy (2018-2029). All these policies and strategies have not comprehensively explored ways and means on how the irrigation potential could be better harnessed since they aimed at providing employment and settlement of the landless basically through development of national irrigation schemes, as well as broadly dealing with aspects of irrigation (MoWI, 2016).

The National Water Master Plan 2030 (NWMP 2030), Kenya's water resources development and management blue print provides estimates of the country's water resources and its planning for

the period 2010–2030. The NWMP 2030 was formulated based on NWP 1999 and Water Act 2002 and adopts the Dublin principles whose thrust is that water should be managed on a catchment basis and treated as an economic good in order to attain sustainability in water resources management and development (WRMA, 2013).

Reforms in the Water Act of 2002 (CAP 372), which was repealed by the Water Act of 2016, separated ‘water resources management and development’ from ‘water delivery services’ through the creation and institutionalization of parastatals. With the devolution initiated in 2013, provision of water services is a concurrent function of national and county governments. Water remains a national resource and the service delivery is now a county responsibility; whenever water crosses county boundaries, the national-level institutions are called upon to intervene to regulate water service provision (Boulanger, *et al.*, 2018).

The Constitution of Kenya, 2010 however does not directly or explicitly refer to irrigation as a devolved function. However, the irrigation function is residual in nature and its vesting at the national level under Article 186(3) of the Constitution. The Irrigation Act, 2019 comprehensively shares the functions of irrigation to both the national and county government.

The fourth schedule of the Constitution has assigned specified functions on agriculture to the national government and the county governments and it stipulates that the two levels of government shall conduct their mutual relations on the basis of consultation and cooperation (Article 6, Article 189 (1) (b) (c)). The provisions related to irrigation at the national government include: the use of international waters and water resources; national public works; protection of the environment and natural resources (water protection, securing sufficient residual water, hydraulic engineering and the safety of dams; and agricultural policy and capacity building and technical assistance to the counties and public investment). The Executive Order No 1/2016 of May 2016 established a new Ministry of Water and Irrigation (MWI), and a State Department of Irrigation (SDI) (National Irrigation policy, 2017).

The Kenya Vision 2030 envisaged in National Water Master Plan 2030 aims to present a framework for water resources development and management consistent with the country’s social and economic development activities. One of the objectives of the plan is to increase the

area under irrigation to 1.2 million hectares (from around 160,000 in 2013). The main purpose of Water Act, 2016 is to adapt national water management to the decentralized structure in place since the approval of the Constitution of Kenya 2010 (Boulanger, *et al* 2018).

The Irrigation Act, Cap 347 of 1966 Revised 2012 [1986] (now repealed) established the NIB with a mandate to identify, design, develop, administer and manage public irrigation schemes. The public schemes are Mwea, Hola, Perkerra, Bura, West Kano, Ahero and Bunyala, and more recently the Galana Kulalu irrigation scheme. Over time the NIB activities have expanded to include development of smallholder irrigation schemes.

This Act did not take into account community-based smallholder and private irrigation schemes. Moreover, there are other public irrigation schemes managed by Regional Development Authorities (RDAs) which are statutory Boards and parastatals. These include TARDA Act Cap 443, CDA Act Cap 449, ENNDA Act Cap 448, KVDA Act Cap 441, LBDA Act, and ENSDA Act etc. There are also other institutions and semi-autonomous agencies involved in irrigation development and management and other state agencies responsible for infrastructure development, environmental conservation and management, public health, research and training institutions including universities which are not covered under the Act.

The Irrigation Act, No. 14 of 2019 addresses gaps in the old law while cognizant of the new governance structure created by the Constitution and provides for the development, management and regulation of irrigation, to support sustainable food security and socioeconomic development in Kenya, and for connected purposes.

The institutions that regulate the irrigation sector include the Ministry of Water, Sanitation and Irrigation, Water Resources Authority (WRA) and the National Environmental Management Authority (NEMA) and other related institutions.

EFFECTS OF THE PROPOSED REGULATIONS

The purpose of the Irrigation Act, 2019 is to provide for the development, management and regulation of irrigation, to support sustainable food security and socio-economic development in Kenya, and for connected purposes. To facilitate the implementation of the Act, a set of regulations are proposed under section 34 with specific provisions that will contribute to the

effective implementation of the Act. The primary objectives of the different provisions of the regulations are discussed herein below:

1.11 Irrigation Development

The regulations provide principles, guidelines and standards for promoting irrigation development within the context of a national irrigation master plan, county irrigation master plan, investment plan and respective strategic plans to support sustainable food security and socio-economic development of the country. In accordance with the regulations, the following principles shall be adopted for the promotion of irrigation development: compliance with all relevant statutory requirements; availability and reliability of irrigation water; efficient utilization irrigation water; compliance to quality standards; participatory development; gender mainstreaming and social inclusion; economic, social and environmental sustainability; climate change resilience measures; and integration of ecosystem services.

The regulations require that all irrigation schemes in the country be supervised by the National Irrigation Authority (the Authority) or County Irrigation Development Unit for purposes of development and management, with small scale, county public and county initiated irrigation schemes supervised by the County Irrigation Development Unit and medium and large scale irrigation schemes including inter-county small scale schemes supervised by the Authority. In the event that the Authority is the implementing agency for an irrigation scheme, the Cabinet Secretary shall take up the supervisory roles and all the necessary approvals for the development and management of the scheme as envisaged in the regulations shall be sought from the Cabinet Secretary.

The regulations also propose that all areas deemed suitable for medium and large scale irrigation schemes may be designated and gazetted as irrigation areas. The regulations also outline the criteria to be considered in designating an irrigation area as: location and sustainability of the land, pre-feasibility assessment, the national government policy or strategic direction, impact of the development, number of people affected, environmental protection and conservation, and participatory process that is documented in case of communal land. The regulations also empower the Cabinet Secretary in a notice published in the gazette to establish a national scheme, public scheme or strategic scheme upon considering certain criteria. The regulations

also allow the Cabinet Secretary to impose such requirements on entities intending to carry out or are carrying out irrigation in an area as may be considered necessary for the protection of the irrigation area.

Where there is an intended establishment of a scheme related to a public or national irrigation scheme meant for settlement, the regulations provide that the beneficiaries shall be identified before establishment.

On water for use in irrigation, the regulations require any individual or entity intending to carry out irrigation where the availability and reliability of water resource is not guaranteed to implement water harvesting and storage measures capable of storing flood water sufficient to meet at least three months' water demand where practical. In addition, recycled water may be used for irrigation subject to meeting water quality standards as prescribed in Part A and B of the Second Schedule. The regulations seek to promote the adoption of water harvesting, storage and even waste water recycling technologies which will contribute to increasing available water for increased irrigation and/or effective irrigation water management.

Further, in accordance with the regulations, any individual, entity or agency developing bulk water storage structures for irrigation may provide water to irrigation farmers at a tariff approved by the Cabinet Secretary from time to time in consultation with the Water Resources Authority.

For water users, any individual or entity using water for irrigation is required to obtain water use rights and meet the attendant obligations in accordance with the Water Act, 2016. On the other hand, communities owning smallholder irrigation schemes or public irrigation schemes meant for settlement are required by the regulations to form Irrigation Water Users Associations for purposes of acquiring water use rights.

The regulations require that prior to constructing an irrigation scheme, the owner, developer or other person intending to construct the irrigation scheme shall submit to the Authority or County Irrigation Development Unit as applicable, the following:- a pre-feasibility study report or initial project identification concept note showing the scheme's viability; minutes of resolutions of stakeholders' meetings endorsing or requesting for development of the irrigation scheme where applicable; the scheme's feasibility study report; irrigation project design report; an authorization for construction from the Water Resources Authority; land use authorization from the county or

national ministry responsible for land and physical planning; an environmental impact assessment license from National Environmental Management Authority; evidence of relevant easements from relevant agencies and entities; in respect to irrigation within private and community-based smallholder schemes, provide proof of land ownership which may consist of, but not limited to a certified copy of title deed, lease agreement or allotment letter; and for community-based smallholder irrigation schemes, evidence of existence of an irrigation water users' association.

In accordance with the regulations, the said feasibility study shall be undertaken prior to commencing the construction of the irrigation scheme and shall be planned and supervised by a qualified irrigation firm or registered professionals falling into the appropriate category of the irrigation scheme as defined in the Act. The study shall contain the following components:- hydrological and hydro-geological survey report; topographical survey report of appropriate scale; soil survey report; agricultural development and marketing plan; irrigation development plan; economic and financial analysis report; environmental and social impact assessment report; organization, management and institutional details; preliminary irrigation and related infrastructure design and cost estimates; and community participation plan where applicable.

The feasibility study report shall be prepared in the format outlined in Part B of the First Schedule and submitted to the Authority or County Irrigation Development Unit for review, and if found to be satisfactory, a "no objection" for the proposal to proceed to full design will be issued within thirty days.

The regulations further require that an irrigation scheme shall be designed and construction be supervised by a qualified and experienced irrigation firm or professional from an appropriate category set out in Part A of the Third Schedule of the regulations. An irrigation scheme shall be constructed by a contractor from the appropriate category of contractors as set out in Part B of the Third Schedule of the regulations duly registered in accordance with the Section 15 of the National Construction Authority Act (No. 41 of 2011).

In accordance with the regulations, an approval for construction of the proposed irrigation scheme will be issued by the supervising entity upon meeting the specified technical requirements and an authorization certificate for construction shall be issued for commencement

of construction of the irrigation infrastructure. On completion of construction, the applicant shall submit to the Authority or County Irrigation Development Unit the irrigation scheme completion report and an operation and maintenance manual in format prescribed in the regulations.

These provisions of the regulations will ensure that all critical roles and functions in irrigation development in the country including feasibility studies, irrigation schemes design, construction, supervision and monitoring are undertaken by qualified, experienced and registered Irrigation firms or Professionals and thereafter Irrigation Schemes Completion Reports and an Irrigation Schemes Operation Report submitted upon completion of schemes construction to the National irrigation Authority, County Irrigation Development Unit or other authorized supervising agency to allow effective monitoring and evaluation of such schemes, thereby ensuring compliance to set works, maintenance and operation standards.

The introduction and requirement for mandatory approvals, authorizations and feasibility studies and the requirement to use registered qualified and experienced Irrigation firms or Professionals certified by the relevant bodies and for the design, development, construction, monitoring, reporting and operation of irrigation schemes will ensure that irrigation developments will be regulated and required standards will be applied through all these processes making irrigation developments efficient, safe and effective and thus beneficial to all. The regulations will also while promoting smallholder irrigation development by communities through irrigation water users associations, allow the control and regulation in the development of such community and private schemes. This control and regulation of both the public and private schemes will ensure that all irrigation developments are aligned to and contribute to the realization of the national irrigation policy, national water management plan, the Kenya Vision 2030 and all other relevant sector specific policies and strategies.

The regulations also require that all irrigation service providers shall be certified by the relevant regulatory bodies and be registered with the Cabinet Secretary who shall maintain an inventory of irrigation service providers.

The regulations, in addition to providing for irrigation development services, also define service provision models and appropriate contractual arrangements for the development of national, public or strategic schemes by private entities and provide for the establishment of County

Irrigation Development Units to carry out irrigation development functions in the Counties; and guidelines for the development of smallholder irrigation schemes owned by communities through irrigation water users associations. The regulations also provide for alternative models for the development of national/public or strategic schemes by private entities, opening the door for public-private partnerships in irrigation development. This will allow the private sector to mobilize resources for irrigation infrastructure development to compliment Government resources which many times are constrained and inadequate for planned investments.

These provisions will significantly serve to transform irrigation development in the Country by promoting inclusive and participatory development of irrigation schemes, giving the farmers, stakeholders including the County governments and local communities an opportunity to participate in the planning, development and operation of the schemes, thus ensure strong buy-in, ownership and support right from the schemes' inception.

However, despite these clear benefits, implementation of some of these provisions of the regulations may result to increased costs in irrigation development, management and time delays of planned irrigation projects. The requirements of mandatory approvals, authorizations and feasibility studies will result to additional costs through fees/levies for the permits and authorizations and costs to commission such feasibility studies and may also result to time delays from official bureaucracy or time required in conducting the studies. The use of qualified and registered irrigation firms and professionals will also translate to additional costs in the designing, construction and management of irrigation schemes and time delays where such firms and professionals are not readily available. Effective public and stakeholders' participation in irrigation development processes will also involve major logistics and will also have high costs implications. The irrigation water users associations envisaged to drive the communities' owned smallholder irrigation schemes development will require much support to overcome the general challenges associated with farmer organizations for such schemes to be successful including trainings, organizational development and technical support which will require vast resources given that they are likely to be many and spread out across the country. In addition, the regulation promotes the community-based smallholder irrigation development to be only through these associations.

irrigation users will also require proper trainings on water harvesting and storage measures and use of recycled wastewater technologies. Such trainings and introduction or promotion of such technologies would also require substantial financial and technical resources.

On county irrigation development services, the regulations stipulate that these services shall be provided by County Governments through County Irrigation Development Units. The regulations require that the County Governments take into account the expertise and/or profession of engineers and technicians from the fields of irrigation, agriculture, civil, survey and mapping (or cartography), or their equivalent in related fields and in the establishment of the County Irrigation Development Units. This will allow county governments to take responsibility on irrigation development in the counties. The regulations recognize the critical role of county governments in agricultural and irrigation. The County Irrigation Development Units will allow each individual county to prioritize its own irrigation activities and investments and provide necessary support for irrigation development and management at the local or county level while providing a strong link between the two levels of governments on irrigation matters.

The proposed County Irrigation Development Units will however require much support from the Ministry and other national government agencies to develop appropriate structures to effectively play their role and support irrigation development and management in the County. In addition, though the regulations spell out distinct roles for governments and government agencies at both the national and county levels, conflicts between these two levels may still result due to poor coordination and management of inter-governmental relations and this may negatively impact on proposed developments and management of irrigation schemes.

1.12 Irrigation Schemes Licensing

The regulations provide an elaborate licensing process. They provide that no person or entity shall operate an irrigation scheme without obtaining an irrigation licence except where irrigation is undertaken at household level for subsistence.

The key provisions on irrigation licensing require that medium and large scale irrigation schemes must first be designated as such before an irrigation licence is issued. An application for a licence will be made to the Cabinet Secretary or such other authorized person and applicants will

be required to pay the fees prescribed accompanied by mandatory documents and reports identified in the regulations. The application can be made by an individual or legally incorporated body, a public officer on behalf of a public entity or the authorized officials of an association if such association possesses the requisite land rights. The Cabinet Secretary then reviews the application and either approves it and issues a licence or rejects it, giving reasons for the same. The Cabinet Secretary and other authorized persons shall take administrative measures to establish and maintain a licensing unit to receive and determine applications for irrigation licence; monitor and verify compliance to the licence conditions and enforce conditions attached to the licence for all irrigation schemes. They will also take administrative action to appoint and necessary officers for the execution of these functions.

An irrigation licence issued under this regulation will be subject to the terms and conditions under which the licence was issued and shall be renewable after a period of three years upon re-application. The regulation also provides conditions for revocation of irrigation licences.

These provisions will enable registration and coordination of all irrigation developments in the country and provide real time data on irrigation development, acreage and production, water requirements, actors etc. to inform subsequent and evidenced based planning in this sector. The issuance of renewable licences and provision for revocation of irrigation licences will enhance a higher degree of responsibility and accountability by individuals or entities carrying out irrigation by ensuring prudent use of natural resources in irrigation development and management.

The regulations recognize the critical role of the, supervising entities, licensing units and government agencies in the development, operation, management and monitoring of the performance of irrigation schemes by allowing close supervision of all these processes. The licensing processes and conditions will however result in increased costs of doing business in this sector due to the large number of documentation and studies needed for licensing and may also result to time delays for projects approval and implementation due to official bureaucracy. The regulations do not provide for any significant household irrigation and only allows for irrigation for subsistence and use manual water abstraction and application only.

1.13 Irrigation Schemes Management

The regulations require irrigation schemes to be managed in accordance with the principles set out in the Irrigation Act as well as the regulations which include compliance with set rules; ensuring transparency, accountability, sustainability and efficiency; ensuring implementation of water saving practices throughout the irrigation process; optimal utilization of resources and assets for enhanced productivity; service orientation; and resilience and business continuity initiatives.

The regulations also require irrigation management to continuously adopt and apply best practices in sector planning, coordination and financing. In addition, the regulations also require the management of strategic, public or national irrigation schemes to be through a framework defined at the time of establishment while management of public or national irrigation schemes meant for settlement shall be through scheme management committees, dispute resolution committees and irrigation water users' associations.

Scheme management committees shall be established by the Authority in accordance with the Act. However, the Cabinet Secretary through the Authority shall establish and gazette a scheme management committee for each national or public scheme in accordance with Section 19(1) of the Act. On the other hand, County Governors shall appoint a scheme management committee for their respective county public scheme, to facilitate access rights to land for all irrigation farmers on county public schemes, scheme administration and management. The functions of the various scheme management committees are also outlined.

The regulations provide for the formation of joint scheme management committees where schemes straddle two or more counties consisting of the County Commissioners of the respective Counties as co-chairs, a representative of the Authority and four representatives from each individual county committees and which must include one farmer representative.

The regulations define the composition of national or public irrigation scheme management committees; formation and composition of county public irrigation scheme management Committees and describe the roles of national and county public irrigation scheme management committees; The regulations provide for land user permits to be issued by the Authority or County Irrigation Development Units and the conditions for granting such permit are outlined.

The regulations require the Authority or the County Irrigation Development Unit to maintain a register which shall include the particulars of every permit holder, the number of his holding and the names of authorized dependents, allowing the development of an accurate register of irrigation schemes tenants for future evidence-based irrigation development planning and provides for succession of holdings ensuring social protection for permit holders families. The regulations also have provisions and mechanisms for revocation, any compensations and re-issue of such permits allowing for smooth transitions of permits for continued optimal land use in all irrigation schemes.

The regulations however do not allow a permit holder in a public or national irrigation schemes meant for settlement without written permission of the Authority to allow any other person to occupy his holding or to cultivate it on his behalf and only allows land use in accordance with the cropping programme laid down by the Authority in consultation with the irrigation water users association. In addition, the regulation allows the Authority in consultation with the scheme management committee to order the destruction of any crops planted in contravention of the cropping programme or to directly treat any crops or stocks in the scheme in any way to protect them against diseases, pests, or damage of any kind. Such provisions that can be easily invoked and misused to the detriment of permit holders and may be viewed as contrary to the basic principles of private business and infringing on individual rights.

The regulation also requires a permit holder to uphold good agricultural practices on his holding. This would require vast financial and human resources to train permit holders on good agricultural practices, monitor compliance and enforce use of good agricultural practices across all schemes. The regulation empowers the Authority to terminate permits if the holder is sentenced to imprisonment for a term of six months or more and transfer to a nominated successor of the previous permit holder. This would ensure such affected families sustain their livelihoods with minimal interference.

The regulations empower the Authority to make provision for the cultivation of a vacated holding in the irrigations schemes, thus allowing all land within irrigation schemes to be in productive use at all times. It also empowers the Authority to determine the irrigation service fee

in respect of irrigation services payable by permit holders calculated in accordance with rates prescribed by the Cabinet Secretary.

The regulations prescribe land development and use guidelines that will ensure that land in irrigation schemes will be optimally and efficiently utilized and only for the intended purposes thus contributing to the national irrigation, food and agro-processing goals.

Despite the provisions entrenching stakeholders' involvement in irrigation development and management, the regulations leave the role of determining irrigation service rates to the Authority or County Irrigation Development Unit and approved by the Cabinet Secretary or County Executive Committee Member responsible for irrigation as the case may be; with apparently no clear role for the stakeholders. This may result into the rates being viewed as high and increasing the cost of irrigation or not being acceptable to the permit holders due to lack of clear consultations.

The regulations allow residents of a catchment area who are crop farmers, livestock producers, fish pond users, small industry entrepreneurs or use water for irrigation serviced by a public or community-based smallholder irrigation scheme in an irrigation service area to form and register an association of irrigation water users to manage community-based smallholder schemes and public schemes meant of settlement except where such schemes are owned by individual farmers. The functions of the associations are identified as to manage an irrigation scheme wholly or partly in its service area and provide irrigation services equitably and timely to members of the association; to maintain, renovate and improve the irrigation scheme within its service area and to undertake construction and reconstruction works, but this may be delegated to the association by the Authority or county government in the case of national, public and strategic irrigation schemes; to take appropriate measures to combat erosion, salinity, siltation, pollution encroachment; to make internal rules for the use of irrigation water and collect fees from its members for the services provided; to procure, maintain and operate irrigation equipment; and to develop an irrigation schedule informed by agricultural enterprise plan within a defined service area. This provision allows water users to be responsible for the management of their own affairs motivating them to invest both more time and resources in the management of

the scheme ensure high governance standards in the associations as each association is expected to establish codes of conduct for its officials and members as prescribed in the regulation.

The Cabinet Secretary will establish and maintain an annual master register of all irrigation water users' associations updated annually which will provide important data and information to inform irrigation planning and management. The County Executive Committee Member in the counties responsible for irrigation are also required by the regulations to maintain a register of all associations within their respective counties.

The Authority and County Irrigation Development Units shall constitute the supervising entity or authorities for associations to provide training and create awareness on the establishment and operation of associations; provide technical assistance and support or assist in the formation of new associations; establish and maintain the Register of Irrigation Water Users' Associations; and conduct legal and financial supervision.

The establishment of user associations across all irrigation schemes in the country will require substantial financial and human resources to sensitize, mobilize, train and organize water users and establish these associations.

The regulations entrench the independence of the irrigation water users' associations and though supportive of strong relationships and collaboration between the associations with the National Government Ministry or Agencies based at regional, county or other administrative level and county government, the regulations protect the associations from interference in their formation and any obstruction in the performance of their functions. This will allow the associations to carry out their functions independently and in the best way possible in the interest of their members devoid of directions or interferences from any of these or other external parties. In case of a large scale irrigation scheme where an association has inadequate capacity to manage the major works of the irrigation infrastructure, such services may be provided by the Authority or County Irrigation Development Unit or other entity under agency contract as an irrigation water service provider under third party beneficiary, express best effort contract terms. The regulations also require each association to maintain a capital replacement fund for purposes of emergency repairs, improvement or renovation of the irrigation and drainage system of the service area and

replacing machinery and equipment to avert stalling of schemes due to breakdowns thus ensuring that water supply for users is not interrupted resulting to losses.

Whereas the regulations provide that subject to the prevailing statutory obligations of an association, a National Government Ministry or agency and County Government will not interfere with the formation or performance of an association, the regulations also provide that the management committee of an association may, in writing, request for support from a National Government Ministry or other authorized Agency and County Government for the operation of the association. This will allow such an association to get lacking expertise or technical support to facilitate the associations' effective performance.

The regulation also empowers the Authority or County Irrigation Development Unit or other authorized entity to inspect the records of an association on invitation by the association members or when there is prima facie evidence of financial malpractice. Where the supervising entity finds evidence of financial malpractice or non-compliance with the provisions of the regulations or the by-laws of an association, it shall then either require the association's management committee to call an extraordinary meeting of the General Assembly in thirty days; present the findings to the members of the association during the meeting and guide the general assembly to take necessary corrective measures.

In addition, each association is required to maintain records of the association and at the end of each financial year submit an annual report to the Authority or County Irrigation Development Unit or other authorized entity, in the approved format and to seek the written concurrence of the Authority or County Irrigation Development Unit in the association's key activities. The regulations also provide guidelines under which the General Assembly of an association may, by two thirds majority vote and on approval of the Authority or County Irrigation Development Unit or other authorized entity dissolve the association; and the subsequent liquidation and de-registration of such an association.

Whereas this will promote transparency and governance in the associations and thus further enhance efficiency in service delivery as well as protect the interest of water users, it may also translate to interference in the governance and leadership functions in the associations.

Where several individual irrigation water users associations are served by or share common major irrigation infrastructure then an umbrella irrigation water users association may be formed by the decision of the Authority or County Irrigation Development Unit or other authorized entity or a majority of members of the associations to take care of their common interests by administering the whole or part of the major irrigation infrastructure and supplying irrigation water to user associations. Further, the regulations also provide for the formation of an association of irrigation farmers formed at the county or national level whose members shall either be the associations or umbrella association for associations at county level; or the respective county for associations at the national level. An association of irrigation farmers' activities may include but are not limited to promotion of good governance and management of irrigation schemes, capacity building of the respective irrigation water users associations; research, innovation and technology development; dissemination of irrigation research information; participating in the formulation of irrigation standards. The development of these structures will improve the organization, regulation; control and coordination of the irrigation sector for the benefit all sector actors. All these structures will facilitate organization and coordination of irrigation development and management in the country.

In addition, the regulations require irrigation water users association established in accordance with the regulations to consult with the Authority or County Irrigation Development Unit or other authorized supervising entity before joining the association of irrigation farmers, which denies the members their right to membership and affiliations of their choice.

The regulations also provide guidelines and procedures for the Authority, County Irrigation Development Unit or other authorized entity, in agreement with an association to transfer the management and water use rights of the entire or part of the irrigation system in a national, public or strategic irrigation scheme to the association. This will promote public private partnership in irrigation development in the country.

The regulations however also provide for the Authority or County Irrigation Development Unit to terminate the transfer agreement and cause the withdrawal of user rights where an association fails to successfully carry out the management of the transferred responsibilities as anticipated in the agreement, allowing the Authority or County Irrigation Development Unit to assume the

management responsibilities in the interim, and thereafter take necessary steps for remedial action within a period not exceeding six months. This will allow for corrective action where an association is unable to effectively play the anticipated functions in water users' interests.

The regulations provide for Dispute Resolution Committees in each association to hear and determine disputes relating to water use and distribution of water between members of the association, allowing for local solutions for irrigation related problems thereby reducing time and cost for solving such problems.

1.14 Irrigation Standards and Quality Control

The irrigation water quality standards applicable in these regulations are set out in Part A and B of the Second Schedule. The regulations further define specific water quality standards for different use areas in irrigation. This will guarantee the better safety of food produced under irrigations, better health for workers in the sector and preservation of the environment.

The regulations require any person or entity using water for irrigation to carry out water testing in accredited laboratories upon direction by a supervising entity or other agency to verify compliance to the required quality standards. This will enable continuous monitoring to ensure that water used for irrigation meets the set standards or to allow for corrective measures. However, this is a cost that has to be borne by the water users and may be substantial since laboratories with the capacity to conduct such tests in the country are few and far apart, most of them found only in major urban centers.

The regulations also define the quality standards for discharge of water from irrigation schemes set by the relevant agencies to ensure that ground and surface water are not polluted for adequacy protection of aquatic life and other ecosystem services and shall meet the quality standards as set out in Part A of the Second Schedule. Such discharge of water may however require pre-treatment before discharge which is an expensive process for the users but necessary to ensure that the environment and the country's biodiversity are preserved.

The irrigation infrastructure standards in the regulations are based on the Practice Manual for Small Dams, Pans and Other Water Conservation Structures in Kenya, 2015, and other applicable laws and several other relevant agencies regulations and best practices recommended

by these agencies which include Kenya Bureau of Standards, National Construction Authority, National Environmental Management Authority, National Water Harvesting and Storage Authority; Occupational Safety and Health Act, and other applicable laws. The design criteria shall observe the guidelines as provided in Section 5-27-5-40 of the National Construction Authority Facilities Design Guide of 2016 on irrigation development. Compliance with these standards will ensure high quality irrigation infrastructure that will guarantee users and public, livestock, wildlife and the environment safety, efficient to operate and with low maintenance costs.

Further, in order to enhance safety, the regulations require that every irrigation farmer reports to the Irrigation Water Users Association management committee or the Authority or County Irrigation Development Unit or other agency any situation which he has reasonable grounds to believe presents an imminent or serious danger to the safety or health of that farmer or of other farmers in the same scheme. This will allow for timely interventions to avert loss of lives and property damage from failed irrigation infrastructure.

As regards water harvesting and storage for irrigation, the regulations require a person who constructs a water harvesting and storage structure for irrigation to adhere to the standards as recommended by the Water Harvesting and Storage Authority. This will optimize water harvesting and storage, thus increase water access for irrigation.

These safety standards are also required to be incorporated in the design, manufacture, importation or supplies of any articles for use in an irrigation scheme and suppliers of such articles are required to carry out, or arrange for the carrying out of such testing and examination as may be necessary to ensure that such articles are safe and without risk to health when properly used. The erection and construction of irrigation infrastructure should also comply with the approved list of standards set out by the Kenya Bureau of Standards of 5th April, 2018. This will however increase the cost of such articles, making them more expensive to the users or even make them out of their reach which may force them to seek cheaper alternatives or to use local innovations that will defeat the objectives of this provision of the regulations.

The regulations define qualifications, standards for irrigation firms and professionals, local or foreign, for purposes of undertaking irrigation development and require them to be licensed by

the relevant professional bodies and enlisted by the Ministry responsible for Irrigation. This will help weed out unqualified practitioners in the irrigation sector and therefore also eradicate shoddy works which often lead to many repeat works, repairs and even total failure of projects, and thus loss of finances and in some cases loss of lives and destruction of properties. This may however bring in a new challenge that of delays in implementation of projects and/or provision of specific support services to the users where the qualified firms and professionals are not readily available and increase the cost of accessing irrigation services.

The regulations also provide for the Cabinet Secretary responsible for irrigation to establish and maintain a Technical Advisory Committee at all times for the purpose of enlisting and determination of all matters regarding the quality of works or services carried out by the qualified professionals, firms and contractors under the regulations. The decisions on the applications for enlisting of local and foreign qualified professionals, firms and contractors under the regulations will be based on the recommendation of the Technical Advisory Committee in compliance with the prevailing government policies and guidelines and communicated to the concerned party within fourteen days.

This provision will ensure professionalism in the provision of all irrigation services in the country.

The regulations also set standards for on-farm water management and require an individual or entity undertaking irrigation to practice good on-farm water management under sustainable economic and environmentally sound conditions. The regulations outline the factors to be considered in planning and managing farm activities including: availability and quality of water resources, crop and soil type; potential pollutants; soil moisture conserving technologies; reduction of soil erosion; use of best available technologies that optimize water use; conflicting water use demands; assessing the impact of the water use by local communities; protection of water quality; and adoption of salinity management guidelines. This will ensure quality and safety of produce from the farms, human and environment health. There however will be a need for training of water users on these good on-farm water management standards including pesticides or other agro and non-agrochemicals use which will require significant human and

financial resources. The regulations impose this obligation for capacity building on persons or entities managing irrigation schemes.

1.15 Irrigation Research, Innovation and Training

The regulations provide principles and guidelines of promoting irrigation research, innovation and training including ensuring efficiency and sustainability of the irrigation sector; environmental safety; addressing felt needs in the irrigation sector; cost effectiveness and ensuring returns on investment; and imparting appropriate irrigation skills, knowledge and attitude to ensure use of efficient technologies and compliance to quality standards and practices.

The regulations provide that the Cabinet Secretary shall maintain a register of all irrigation technologies and innovations allowed to be used in the country for greater good of the country. This will ensure that irrigation research will be need driven to address identified challenges in the irrigation sector and reduce academic research and waste of public resources to generate findings that may never be used.

The regulations also require that irrigation research, innovation and training be through continuous adoption and application of best practices and the Cabinet Secretary to establish facilities, project and programme on irrigation research, innovation and training; in collaboration with relevant stakeholders to establish irrigation research centres to act as avenues for dissemination of research findings in irrigation and demonstrate best practises in irrigation; ensure collaboration in curriculum development for irrigation and drainage capacity building; promote information sharing with stakeholders; and develop a catalogue of new technologies within the irrigation sector for information purposes.

1.16 Financing Irrigation Development

The regulations provide that any individual, entity or agency undertaking or intending to undertake development of an irrigation scheme may source funds through appropriate modalities including private investments; financial institutions; loans and grants from government and development partners; public-private partnerships; cost sharing; and cost recovery. This provision will open an avenue for alternative financing options for irrigation investments allowing for tapping into the large available financial resources from the private investors to

compliment public investment in irrigation allowing for increased investment for irrigation development.

The regulations also require that all agreements for financing irrigation development using public funds shall be approved by the Cabinet Secretary or the Governor with concurrence of the National Treasury. The Authority, county governments or other authorised agency shall ensure return on investment as envisioned in the Act during the initial appraisal of the scheme. This will ensure prudent deployment of public resources for irrigation investment.

The regulations also provide for cost-sharing in irrigation scheme development by which the Cabinet Secretary with the concurrence of the National Treasury may enter into financing agreements to support development of smallholder irrigation schemes through relevant stakeholders. The minimum contribution by the beneficiary is set at 5%. However this may be waived by the Cabinet Secretary for schemes developed on social equity basis for resource poor communities.

The regulations further provide that in financing phased irrigation scheme development, due consideration shall be made to ensure that the first phase covers abstraction and conveyance for the entire system and in-field system of at least one irrigation unit is completed and functional. This will ensure irrigation schemes are designed and constructed in a phased approach to allow early operationalization of irrigation schemes, allowing for completion as the scheme is already operational and to avoid incomplete and/or abandoned and thus non-operational irrigation schemes.

1.17 Monitoring, Reporting and Performance Audit

The regulations require the Cabinet Secretary to develop and maintain an irrigation and drainage management information system to perform the functions of monitoring and reporting. In accordance with the regulations, the Cabinet Secretary and county governments shall be responsible for data input into the system but may delegate input functions to the Authority or other agencies.

The irrigation and drainage management information system will serve in the establishment of data and information needs for irrigation sector; establishment of formats and protocols for geo-

referenced data capture, processing and sharing disaggregated data to the county government level; capture of accurate, reliable, timely and verifiable data and information for the subsector; capture of data on inputs, immediate outcomes and impacts in irrigation development activities; organize the irrigation and drainage data and information in a structured manner to facilitate accessibility and sharing amongst stakeholders for effective and efficient planning, coordination, monitoring and evaluation of the subsector; and establishment of a decision support platform for policy, management and investment decisions. This data and information will be important in informing future irrigation investment planning, irrigation schemes monitoring and performance evaluation for corrective actions as well as flagging out opportunities in the irrigation field.

The regulations propose that the irrigation and drainage management information system to be established and maintained be web-based. This will be an irrigation data repository that will provide real time data and information on irrigation, the actors and status to inform future policy development and planning; and investors planning. This will need high investment in terms of hardware, surveys, human and financial resources.

The regulations prescribe periodic monitoring, evaluation and performance audits by the Cabinet Secretary or a County Government for all individuals or entities carrying out irrigation or providing irrigation services to ensure compliance with the regulations and other relevant laws; issuing registration certificates and other relevant certifications; ensuring efficient irrigation schemes and good on-farm water management; and encouraging sustained economic productivity through promotion of marketing. This monitoring will continuously evaluate compliance of all the provisions of the regulations for any necessary corrective interventions and enforcement review and thus create an enabling environment for irrigation development while enhancing efficiency in irrigation schemes operation and management in the country. However, effective monitoring and evaluation of all irrigation schemes in the country will also require substantial resources, both financial and human, at both levels of Governments.

1.18 Offences and Penalties

The regulations identify prohibited activities and practices that constitute an offence under the regulations. These include wilful or animal damage of irrigation infrastructure, destructive activities in the schemes, causing fire or refusing to extinguish fires, applying prohibited

chemicals, abstracting water without authorization, operating an irrigation scheme without an irrigation license, residing in, carrying on business in, or occupying any part of a national, public or strategic irrigation scheme without a valid permit, or erecting a structure or building without consent of the Authority or County Irrigation Development Unit. These will serve as a guide to all the actors' conduct on what is allowable or not allowable in the irrigation schemes and in the irrigation sector in general and thus important for enforcement and compliance. The regulations provide that if not specified in the regulations, the penalty for any of the offences shall be in accordance with section 34(3) of the Irrigation Act.

1.19 Affected Groups

The regulations will affect all actors within the irrigation sector. These include:

- i. National Government & its Agencies
- ii. County Governments
- iii. Small-scale farmers
- iv. Large scale farmers
- v. Private companies
- vi. Irrigation Water users Associations/Umbrellas Irrigation Water users Associations
- vii. Producers' associations/Organizations
- viii. Farm inputs and Equipment suppliers
- ix. Irrigation equipment and machinery suppliers
- x. Irrigation articles manufacturers
- xi. Irrigation Firms
- xii. Irrigation professionals
- xiii. Irrigation service providers
- xiv. Extension service providers
- xv. Commercial spray service providers

1.20 Effects on the Public Sector

The proposed regulations will affect the public sector in the following ways:

- i. The Government will establish a coherent and regulated environment for streamlined oversight and improved management and development of the irrigation sector.

- ii. County Governments will have a well-organized irrigation policy and supportive strategies implementation structure at the local level through the County Irrigation Development Units, for the regulation and better coordination of the irrigation sector and promoting irrigation developments in the counties and thus increase agricultural production and incomes for farmers.
- iii. Conservation and protection of all current and potential irrigation areas in the country for sustainable irrigation development and better control environmental hazards such as floods.
- iv. The National Irrigation Authority will have improved sector structures, systems and implementation framework for more effective irrigation sector regulation, planning and development.
- v. The broader agricultural sector and national economy will benefit from the increased volumes of production and exports from irrigation schemes and thus increased foreign exchange earnings.
- vi. The regulations will provide opportunities for public and private sector partnership for irrigation investments, building synergies in the development and management of the irrigation sector.
- vii. Increased cooperation and collaboration in irrigation research, science and technology, and information sharing with all stakeholders including regional and international partners.

3.11 Effects on the Private Sector

The proposed regulation will affect the private sector in the following ways:

- i. Irrigation sector players including private companies, irrigation water users associations and umbrella associations, producers' associations/organizations, farm inputs and equipment suppliers irrigation equipment and machinery suppliers, irrigation articles manufacturers/suppliers, Irrigation Firms, Irrigation professionals, Irrigation service providers will stand to benefit from a better regulated irrigation sector and conducive operating environment for their different businesses. They will

also be protected from often negative interferences from Governments and Government agencies; and other political interferences.

- ii. These private sector actors will also have an opportunity to partner with the Governments and government agencies for synergy in the development and management of the irrigation sector
- iii. Sustainable viable businesses will be established and can thrive in the irrigation sector. This may attract new local and foreign investors to invest in the sector in the country.
- iv. Irrigation users will access irrigation services only from qualified and registered professionals and firms which will ensure quality, effective and efficient services for the users.
- v. Quality and safety of produce from the farms, human and environmental health will be enhanced through good on farm water management and agricultural practices.
- vi. Irrigation users even those in irrigation water users associations will select their irrigation services providers based on quality, cost of services, efficiency and effectiveness. This will promote competition amongst the service providers for the benefit of the users e.g. resulting in better costing and services.
- vii. Irrigation developments will increase agricultural production, create employment and improving livelihoods of farmers and rural populations through increased earnings.
- viii. Production and supply consistence of raw materials for agro-processing will be improved.
- ix. Academia and research organizations will also be winners in this regard because the regulation create a demand for their services

3.12 Effects on Fundamental Rights and Freedoms

Article 43 of the Constitution provides for the economic and social rights. It affirms the rights of individuals and communities to an adequate standard of life including right to accessible and adequate housing, right to adequate food of acceptable quality and right to clean and safe water in adequate quantities. The State has an obligation to allocate and provide resources for the progressive realization of these rights.

Article 55 of the Constitution requires the State to take measures to ensure the youth can access employment and other opportunities for social and economic advancement. Thus the State has a constitutional obligation to promote investment, income and wealth creation in the agricultural sectors and other sectors of the economy. In addition, the government has an international obligation to promote the right to work in the country.

The proposed regulations shall have the following positive impacts on rights and freedoms of individuals: They will provide better returns on their produce and investment to existing and new irrigation farmers. The regulation will also create wealth and employment for more Kenyans in the rural areas while producing raw materials for agro-processing. This would contribute to improved household incomes and enhances capacities to afford an adequate standard of living envisaged in article 43 of the Constitution.

Further, the proposed regulations seek to advance the government policy of transforming Kenya's Agricultural sector aimed at achieving the national goals set out in the Kenya Vision 2030, the Government's Big 4 Agenda, the National Irrigation Policy, the National Agriculture Policy and the Agriculture Sector Growth and Transformation Strategy (ASGTS) and individual County Integrated Development Plans (CIDPs) whereby the agricultural sector shall be a key driver of economic growth and value addition. The regulations will not only enhance public participation of the players in the sector and enable public-private partnership in the development and management of irrigation in the country but also ensure consumers of irrigated products have quality and safe products to consume as required in article 46 of the Constitution as well as preserve the environment as required in article 42 of the Constitution on the right to a clean and healthy environment.

Regulations 76 and 112 of the proposed regulations shall enhance the right to access information to industry players as provided in article 35 of the Constitution. Regulation 76 provides for sharing of information relating to maintenance and condition of a transferred irrigation system while regulation 112 provides for the establishment and maintenance of an irrigation and drainage management information system.

Regulations 83 - 87 of the proposed regulations enhance the right to fair administrative action as provided in article 47 of the Constitution that requires administrative action to be expeditious, efficient, lawful, reasonable and procedurally fair. They establish a Dispute Resolution Committee to resolve disputes among members of associations. They also provide for the dispute resolution procedures and appeal process to enhance fairness in dispute resolution in the sector.

However, Regulation 49 of the proposed regulations may violate the provisions of article 36 of the constitution on freedom of association because it compels individuals to form irrigation water users association if they fail to do so within 12 months after coming into force of the proposed regulations. Article 36 allows individuals the freedom to form or join or participate in activities of an association. Article 36(2) of the Constitution disallows compelling and individual to join an association. The membership of these associations should be voluntary.

REGULATORY AND NON-REGULATORY OPTIONS

This chapter highlights other regulatory and non-regulatory options that could be adopted in regulating the irrigation sector in Kenya.

Alternatives to rule-based regulation are more flexible than a rule-based approach, since they do not require setting the rules out in legislation which then takes more time and effort to develop and change.

1.21 Option 1: Maintaining the Status Quo

Before considering new interventions, it is important to consider whether the problem could be resolved by making changes to practices within the existing regulatory framework, thus maintaining the status quo. Examples of this are:

- i. Making use of existing laws, regulation and/or guidelines;
- ii. Simplifying or clarifying existing regulation;
- iii. Improving enforcement of existing regulation; or
- iv. Making legal remedies more accessible or cheaper.

1.22 Option 2: Passing the Regulations

Government can achieve its policy objectives by using taxpayer's money or through a range of non-spending interventions, including regulations. The regulations aim to set rules to protect and benefit people, businesses and the environment, stabilizing markets and addressing market failures to support economic growth. Regulations can also create costs for businesses, and the public sectors. It can, if overused, poorly designed or implemented, stifle competitiveness and growth.

Adoption and operationalization of the proposed regulations will:

- i. Facilitate the implementation of the National Irrigation Policy, 2017 to address all aspects of the irrigation sector and to align it to the Constitution of Kenya, 2010 in

- order for the two levels of government to work together harmoniously for the full exploitation of the irrigation potential in the country;
- ii. Facilitate the implementation of the Irrigation Act, 2019 for the development, management, financing, provision of support services and regulation of the entire irrigation sector in Kenya;
 - iii. Support increased participation of the private sector and promote public-private partnerships in the irrigation sector thus allowing for an expanded and more efficient irrigation sector that will support the country's agricultural development agenda as envisaged in the Vision 2030, the Big 4 agenda, National irrigation policy, the national agriculture policy including the Agriculture Sector Growth and Transformation Strategy (ASGTS) and individual Counties Integrated Development Plans (CIDPs) to make the agricultural sector be a key driver of economic growth and value addition.
 - iv. Improve quality of irrigation services offered in the country by allowing only qualified and registered professionals and firms to provide such services which will ensure quality, effective and efficient services for the irrigation users.
 - v. Streamline and coordination of irrigation sector for a coherent, coordinated and regulated environment for oversight and improved management and development of the irrigation sector, and remove hurdles that have negatively impacted on the sector.
 - vi. Develop and maintain a realistic data base on the sector inclusive of registers of irrigation schemes, water users associations and umbrella associations, irrigation permits holders, land and water utilization, all sector players including private irrigation companies, producers' associations and organizations, farm inputs and equipment suppliers, irrigation equipment and machinery suppliers, irrigation articles manufacturers, Irrigation Firms, Irrigation professionals, Irrigation service providers in Kenya for better coordination, control and planning in the sector.
 - vii. Increase irrigation information access to users, especially smallholder farmers and prospective investors for informed on-farm and investment decisions.
 - viii. Enhance quality and safety of produce from the farms to better promote human and environmental health.
 - ix. Protect all current and potential irrigation areas in the country by designating and gazettelement as irrigation areas.

- x. Promote adoption of water harvesting; storage and waste water recycling technologies thus contribute to increasing available water for increased irrigation and effective irrigation water management.
- xi. Enhance safety standards in the irrigation infrastructure designing, construction and operations to avert human lives and property losses from irrigation structure failures.

The regulations are thus important for the development, streamlining and organizing of the irrigation sector.

1.23 Option 3: Other Practical Options

Alternatives to regulation include information and education, market-based structures, self-regulation and co-regulation. In addition, existing policies can be improved, without further regulation, using techniques such as behavioral insight or changing enforcement practices to improve compliance. Such approaches may be better or worse for business and the economy than an equivalent regulatory measure

1. Alternatives to regulation include:

- i. **No new intervention/do nothing;** - This may include making use of existing laws and regulations; simplifying or clarifying existing laws and regulations; improving enforcement of existing laws and regulations; or making legal remedies more accessible or cheaper and as discussed in the section above status quo in the sector is likely to remain.
- ii. **Information and education;** Information and education can be used to empower irrigation industry players to make their own decisions, improving choice for mutual benefit of all. There are potential risks associated with this. Information and education can take time to make an impact. Access to information and the ability to use it can vary within a community and so may not reach all equally. It may also not be straightforward to assess how people will react or change their behaviour in response to the information provided. It will also increase costs for government and businesses that will be providing the information and education required.

iii. **Incentive/market-based structures:** The government can use economic instruments, such as taxes, subsidies, quotas and permits, vouchers etc. as initiatives to realize the desired objectives. These initiatives however are only practically possible in well-developed and efficiently functioning sectors which have well defined structures unlike the irrigation sectors. Further, often these sorts of systems need their own regulation to establish the framework and may have additional costs to the government and are unlikely to be effective in the irrigation sector.

2. **Alternatives models of regulation:**

i. **Self-regulation;**

An industry or a profession can self-regulate, for example through the use of codes of conduct, customer charters, standards or accreditation. In many cases rules and codes of conduct will be formulated by the industry representatives or organizations under their own initiative.

ii. **Co-regulation.**

Co-regulation is an intermediate step between state-imposed and self-regulation that involves some degree of explicit government involvement where the industry may work with government to develop a code of practice whose enforcement would be by the industry or a professional organization and accredited by government.

COST-BENEFIT ANALYSIS (CBA)

This chapter provides an analysis of the potential costs and benefits of using the proposed regulations in regulating irrigation sector. It analyses the economic, environmental and social impacts as well as the administrative and compliance costs of adopting the proposed regulations. It also assesses and quantifies the return on investments of the proposed regulations; and how the impact of the proposed regulations is likely to be distributed between the public and private sectors.

1.24 Economic, Environmental and Social Impacts

1.24.1 Economic impacts of the proposed regulation

Economic impacts of proposed regulations are:-

- i. Increase the area under irrigation from the current approximate 180,503 hectares (Ha) to the country's potential of 1.342 million Ha by increasing the area under irrigation by 40,000 Ha per year in line with the National Irrigation Policy. Kenya Vision 2030 envisioned 404,800 Ha under irrigation especially in the Arid and semi-arid area by putting 30,000 hectares of land under irrigation each year. This plan will ensure Kenya hits the one million irrigation acre threshold (405,000 Ha) in 12.5 years.
- ii. Increase Irrigation contribution to country's GDP by 400% to the projected potential from the current estimated 3% contribution through increased agricultural production.
- iii. Increase irrigation contribution to the total value of all agricultural produce by 400% to the projected potential from the current estimated 18% contribution through increased agricultural production.
- iv. Create many jobs opportunities at the rate of up to 15 persons per hectare directly and indirectly.

Other economic benefits but which are difficult to quantify with the available data and information in this assignment are:

- i. Guarantee raw materials for agro-industries.

- ii. Increased agricultural production under irrigation.
- iii. Increased exports of products from irrigation schemes
- iv. Increased value addition and product diversification.
- v. Increased foreign exchange earnings from irrigation products exports.
- vi. Increased savings and investment by irrigation farm families.
- vii. Foreign direct investment through new investments in production, value addition and marketing in Kenya's irrigation sector.
- viii. Improved terms of trade - substitution of imported agricultural produce with locally produced produce.
- ix. Aquaculture can be introduced and incorporated in the irrigation schemes as a complimentary activity to diversify production and income streams for farmers.
- x. Increased cess and taxes from increased agricultural produce.

1.24.2 The economic costs of the proposed regulations

The economic costs of the proposed regulations are:

- i. The regulations require the users to acquire and renew the licence and permit at a fee.
- ii. The regulations require different types of studies and surveys including irrigation schemes feasibility studies, water quality analysis, hydrological surveys etc. and which are mandatory and will be a costly process for irrigators.
- iii. The regulations require that only qualified and registered professionals and firms will provide irrigation services in the country. These will be more expensive to engage (for good reason) and they may not be readily available in some parts of the country and may thus result to delays to planning, implementation, management or provision of services in the irrigation schemes.
- iv. Effective implementation of the regulations will require investment in capacity building of irrigation stakeholders on among others good on-farm water management and agricultural practices, development and maintenance of the sector register, schemes audits, monitoring and evaluation etc.
- v. The regulations may also introduce bureaucracy due to the many processes envisaged in the regulations resulting in time delays.

- vi. The regulations mandate the Authority to determine irrigation service rates in public schemes with apparently no clear role for the stakeholders. This may result to the rates being viewed as high and increasing the cost of irrigation by irrigation users

1.24.3 The social impacts of the proposed regulations

The social benefits of proposed regulations are:

- i. Decreased poverty levels among the farm families and the community in general.
- ii. Improved income distribution among the farm families and the community in general.
- iii. Improved access to water and sanitation among the farm families due to increased incomes.
- iv. Improved health status of the farm families and the community resulting to reduced child and maternal mortality and reduced disease incidences due to improved nutrition and improved food safety.
- v. Improved education levels and reduced illiteracy
- vi. Stem the tide of rural urban migration in search of employment opportunities
- vii. Improved security amongst rural populations in irrigation areas

1.24.4 The social costs of the proposed regulations

The social costs of the proposed regulations are:

- i. Some of the provisions of the regulations especially on tenure and obligations may be viewed as infringing on individuals rights especially in the public irrigation schemes and there may be difficulties in their acceptance as they may be seen as extending insecure land tenure system that has always characterized public irrigation schemes in Kenya.
- ii. Expansion of irrigation schemes may result to an increase in water borne diseases and insect pests breeding areas negatively affecting the health of the population and increased insects nuisance to the public.

1.24.5 The environmental impacts of the proposed regulations

The environmental impacts of proposed regulations are:

- i. Improved access to clean affordable water by the households.

- ii. Better control of environmental hazards like floods and reduced risks from irrigation infrastructure failures.
- iii. Reduced deforestation.
- iv. Reduced carbon emissions.
- v. Improved land conservation, utilization and management in all irrigation areas
- vi. Reduced soil degradation due to improved run-off water and irrigation scheme discharge management, improved plant cover and reduced soil operations.

The possible negative impacts of the regulations may include:

- i. Reduced rivers flow and disturbed aquatic ecosystems.
- ii. Increased groundwater recharge, waterlogging, soil salinity.
- iii. Reduced downstream river water quality.
- iv. Affect water access for downstream water users.
- v. Lost land use opportunities.
- vi. Groundwater mining with wells, land subsidence.

However, with good irrigation design, development and management, these negative environmental impacts can be significantly mitigated and impacts reduced.

1.25 Costs, Benefits Analysis Interpretation and Assumptions

From the above discussions, it is quite clear that the expected economic, social and environmental benefits from the implementation of the proposed regulations heavily outweigh the corresponding costs. The analysis of cost and benefits of implementation of the proposed regulations is however based on the following assumptions:

- i. Implementation of the regulations will be undertaken in a holistic manner where all provisions of the regulation will be implemented and not selectively or partially where some provisions are implemented or partially implemented.
- ii. The country's development strategies and policy environment including irrigation specific policies will continue to prioritize and support the development of irrigation and the agriculture sector.

- iii. The climatic conditions will remain favourable for agricultural production.
- iv. Kenya's agricultural produce will continue to access current and other alternative global markets.
- v. Irrigation sector actors including farmers will respond rationally to the implementation of the proposed regulations and voluntarily comply with the proposed regulations.
- vi. The additional resources and revenue generated from the various fees and levies will be used for the of the irrigation development.
- vii. Other complimenting Government departments and agencies will play their anticipated roles effectively for optimal leverage in irrigation development.

1.26 Administration and Compliance Cost

The RIA notes that resources would be required for operationalization of the regulations which will include human resource and operation costs for enforcement as well as for awareness creation of the regulations to the different stakeholders in the irrigation sector. More resources will go to the implementation of the wider national agriculture policy which supports extension services for strengthening knowledge transfer and technology distribution among the farmers and in the implementation of the National irrigation policy, Agriculture sector growth and transformation strategy and the Big 4 agenda.

The government will also incur costs in the identification, mapping, assessment, protection gazettement, status review, and monitoring of all and potential irrigation areas across the country as protected irrigation areas.

1.27 Assessment of Return on Investment (Benefit)

Passing and operationalization of the regulations will be critical in facilitating development of the irrigation sector. It will streamline Kenya's unstructured irrigation sector to allow coordinated control of the sector, create a level play field for all sector players and promote professionalism and fair trade practices to support Kenya's agricultural development and manufacturing pillars as envisioned in the Vision 2030, the Big 4 agenda, ASTGS and individual counties CIDPs. An effective, efficient and well developed irrigation sector will optimize land utilization in irrigations areas and support increased production and productivity of quality

agricultural products that meet international market standards, and ensure consistent provision of quality raw material for agro-industries to sustainably guarantee improved incomes for the farmer and thus improved livelihoods and social welfare for communities, while guaranteeing other businesses within the sector good returns and higher export earnings for the country.

In broad terms, the RIA notes that following broad benefits:

- i. The regulations will streamline the unstructured irrigation sector for better functioning while allowing for fair competition and this will result to enhanced efficiency and development of the industry.
- ii. Improved access to reliable irrigation information and irrigation services from the professional agents will support the farmers and firms to improve the productivity and quality of produce
- iii. Enabling policy operating environment will be attractive to new investors expanding irrigation in the country, thus contributing towards reaching the national target irrigation area.
- iv. A reliable comprehensive data base on the sector inclusive of a register of irrigation schemes, irrigation water users associations and umbrella associations, irrigation permits holders, land and water utilization, all sector players including private irrigation companies, producers' associations and organizations, farm inputs and equipment suppliers, irrigation equipment and machinery suppliers, irrigation articles manufacturers, Irrigation Firms, irrigation professionals, irrigation service providers in Kenya for better coordination, control and planning in the sector.
- v. More efficient and effective irrigation water use planning, management and utilization for sustainable water resources management and development.
- vi. Adoption of appropriate water harvesting, conservation, saving, utilization and wastewater recycling technologies.
- vii. Establish clear structured mechanisms for discharge of water from irrigation schemes, thus reduce environmental contamination.

- viii. Increased agricultural national production and value addition will translate into increased agricultural exports and thus increased foreign exchange earnings.
- ix. Increased agricultural production which translates to increased job creation through farm labour, agro- processing and products manufacturing, value addition, marketing and auxiliary services.
- x. Research in the irrigation sub- sector will be focused to address identified issues and support further development of all spheres of the sector.
- xi. Increased and effective public and stakeholders' participation in irrigation development processes including direct private sector and public-private partnerships
- xii. Adoption of good agricultural and on-farm water management practices.

1.28 Quantification of the Benefits

Growth in Agriculture Value Added at constant prices increased to 6.6 per cent in 2018 from 1.8 % recorded in 2017. Maize production increased by 26.0 % from 35.4 million bags in 2017 to 44.6 million bags in 2018. The production of tea, coffee and sugarcane increased by 12.1%, 7.0 % and 10.4% respectively in 2018. The quantity of horticulture produce exported which is more dependent on irrigation increased by 6.1 % to 322.6 thousand tonnes. The value of marketed agricultural production has been increasing over the last four years and increased further by 11.4 % to KSh 497.9 billion in 2018. The value of horticulture exports increased from by 33.3 % to KSh 153.7 billion in 2018 on account of higher production and improved international prices. The value of marketed livestock and livestock products increased by 8.3 % to KSh 146.8 billion in 2018 (Economic Survey, KNBS, 2019).

It is estimated that irrigation provides 18% of the value of all agricultural produce demonstrating the potential of irrigation in increasing agricultural production and productivity (MWI, 2016).

By 2015 only an estimated 180,503 Ha of irrigation land had been developed which is equivalent to 13.5% of the total estimated 11,341,900 hectares potential that could be irrigated and was contributing an estimated 3% to the GDP. This potential of excluding the additional capacity for irrigation based on the vast underground aquifer recently discovered in the northern Kenya.

According to the National irrigation policy, irrigation, agricultural production can be increased by up to 400 percent, and over 1 million jobs created at the rate of up to 15 persons per hectare directly and indirectly in the sector. This can be interpreted that the current contribution of irrigation to the national GDP, in Agriculture Value Added and value of marketed agricultural production can be increased by 400% with the right interventions in irrigation development and management whilst creating millions of jobs in the sector (MWI, 2016).

In addition to expanded irrigation schemes, irrigation sector contribution to the economy can further be increased by enhancing efficiency in existing schemes. Many of the current irrigation schemes in the country have a long history of management failures, inefficiencies and a myriad of other problems that stem from the inability to self-governance including those that are government managed through the NIB and have been operating well below their capacity. The Government managed schemes work under a relatively closed management by the NIB and traditionally grows rice with little or no rotation (Ngigi, S. 2002).

Studies have shown that irrigation can increase yields of the top Kenya's 5 crops of maize, pulses, fruits, tea and roots and tubers by 1-7 times compared Kenya's predominantly rain fed yields today. While investment in irrigation technology amortizes faster for cash or high value crops, there is a business case for all Kenya's important crops (Water Resource group, 2016).

REASONS WHY OTHER REGULATORY OPTIONS ARE NOT APPROPRIATE

1.29 Option 1: Maintaining the Status Quo

Maintaining the status-quo will only sustain the challenges in the irrigation sector, curtailing new developments in the sector and even allow further decline in this sector, including the following:

- i. The irrigation sector will continue to remain unstructured and not effectively regulated allowing continued operation of unqualified, unscrupulous, quick-for-profit players who do not necessarily comply with set irrigation standards resulting to the installation of unsafe irrigation and failed infra-structures which are harmful to lives, health and to the environment, inefficient and unsustainable exploitation of water resources, reduced agricultural productivity and production in the irrigation schemes, reduced produce quality and food safety and the sector will remain unattractive to new private sector investments.
- ii. Irrigation information and services will remain inaccessible by many users and potential investors to inform on-farm and investment decisions.
- iii. Quality of irrigation services offered in the country will continue to be low and expensive.
- iv. Exploitation of Kenya's irrigation potential of 1.342 million which is currently estimated at 13.5% Ha will remain low.
- v. Limited private sector participation in irrigation development, leaving the sector as a monopoly for less business efficient public agencies.
- vi. Underutilization of irrigation schemes by farmers in underperforming and/or collapsed schemes and especially by smallholders in public irrigation schemes who do not realize optimal benefits of irrigation.
- vii. Continued mismanagement of irrigation schemes and especially public schemes resulting to their under-performance or even total collapse and thus loss of public investments.
- viii. Agricultural productivity and quality of Kenya's agricultural products will decline further, reducing export volumes and acceptability in some markets, thus, reduced foreign exchange earnings.

- ix. Farmers' earnings will also reduce as a result of reduced productivity and product quality, thus impacting on the farms families' ability to access social services and amenities including housing, health, education etc.
- x. Reduced earnings for farmers will also translate to loss of employment opportunities in agricultural production in the rural areas, increasing the rate of unemployment in the country and insecurity.
- xi. The environmental hazards resulting from low adoption of good agricultural practices and poor on-farm water management practices continue destroying Kenya's environment and biodiversity which are important for sustainable agricultural and economic development.
- xii. Farmers' cost of production under irrigation will remain high due to uncompetitive irrigation services costs, low adoption of good agricultural practices, poor on-farm water management practices, and inefficiencies of the irrigation schemes.
- xiii. There will be no clear involvement of county governments in regulation of the irrigation sector thus contravening the provisions of fourth schedule of the constitution, and relevant provisions of County Governments Act.
- xiv. Destruction and poor utilization of all current and potential irrigation areas in the country will continue leading to their partial or total destruction.
- xv. Adoption of water harvesting, storage and wastewater recycling technologies thus contribute to increasing available water for increased irrigation and effective irrigation water management will remain low
- xvi. Incidences of human lives and property losses from irrigation structure failures due to non-compliance of standards in the irrigation infrastructure designing, construction and operations will continue
- xvii. Quality and safety standards of produce from the farms will continue to be low, negatively affecting human and environmental health.
- xviii. Regulation, coordination, control and planning in the subsector will continue to be ad hoc and not to be evidence based in absence of the proposed all-inclusive data base on the sector.

The situation is not sustainable, and the RIA recommends that the proposed regulations be put in place to promote the development of the irrigation sector to effectively contribute to the realization of the objectives of the Kenya Vision 2030, the National irrigation policy, The Agricultural sector growth and transformation strategy the National Agriculture Sector Development Strategy, the Government's Big 4 Agenda and the individual Counties CIDPs.

1.30 Option 2: Other Practical Options

Alternatives to regulation include:

i. No new intervention/do nothing

This may include making use of existing regulations; simplifying or clarifying existing regulations; improving enforcement of existing regulations; or making legal remedies more accessible or cheaper but with this approach, status quo in the irrigation sector is likely to remain to the detriment of all the sector stakeholders and the country.

ii. Information and education

Information and education can be used to empower stakeholders to make their own decisions, improving choice for mutual benefit of all. However, information and education can take time to make an impact and still may not be acceptable. This approach may increase costs for government and businesses that will be providing the information and education required. The desired objectives are unlikely to be realized within reasonable time for the common good of all.

iii. Incentive/market-based structures.

The government can use economic instruments, such as taxes, subsidies, initiatives to realize the desired objectives. These initiatives however are only practically possible in well-developed and efficiently functioning sectors which have well defined structures and often these sorts of systems need their own regulation to establish the framework and may have additional costs to the government and are unlikely to be effective in the irrigation sector.

1.31 Alternatives models of regulation include:

i. Self-regulation

The irrigation sector currently has no well-developed industry representative(s) to formulate and implement codes of conduct, customer charters, standards or accreditation system for self-regulation thus it is not possible in the sector.

ii. Co-regulation.

Co-regulation is an intermediate step between state-imposed and self-regulation that involves some degree of explicit government involvement where industry may work with government to develop a code of practice whose enforcement would be by the industry or a professional organization and accredited by government. The irrigation sector currently has no such organization(s) at the moment and thus co-regulation is practically not possible.

OUTCOME OF STAKEHOLDERS PARTICIPATION

This chapter examines the legal requirements for stakeholder engagement in the regulation making process. It also analyses the outcome of stakeholder engagements conducted in the coming up with the proposed regulations with an aim of assessing whether those engagements met the legal threshold set for stakeholder engagement in Kenya.

1.32 Legal basis for public participation

The principle of public participation is based on the belief that those who are affected by a decision have a right to be involved in the decision-making process. This principle upholds the sovereignty of the people by making them engaged and make views in the decision making process. Section 2 of the Statutory Instruments Act, 2013 defines public participation as the involvement by the regulation making Authority of persons or stakeholders that the statutory instrument may directly or indirectly apply to.

The Constitution of Kenya provides for national values and principles of good governance and participation of people of Kenya. Article 10 provides for the involvement of the people in enactment of any law. The national values and principles bind all state organs, state officers, public officers and all persons whenever they, *inter-alia*, apply the Constitution and enact any law.

The courts of law have in several instances provided for the modes of ensuring that public participation is effective and meaningful: For instance in, *Independent Electoral and Boundaries Commission (IEBC) v National Super Alliance (NASA) Kenya & 6 others [2017] eKLR* (para 164 – 5) the court of appeal stated;

“...The mode, degree, scope and extent of public participation is to be determined on a case by case basis.

What is critical is a reasonable notice and reasonable opportunity for public participation. In determining what reasonable notice is, a realistic time frame for public participation should be given. In addition, the purposes and level of public participation should be indicated. Reasonableness is also to be determined from the nature and importance of

legislation or decision to be made, and the intensity of the impact of the legislation or decision on the public. The length of consultation during public participation should be given and the issues for consultation. Mechanisms to enable the widest reach to members of public should be put in place; and if the matter is urgent the urgency should be explained...”

Further, in *Poverty Alleviation Network & Others v President of the Republic of South Africa & 19 others*, CCT 86/08 [2010] ZACC 5, public participation was emphasized in the following terms;

“...engagement with the public is essential. Public participation informs the public of what is to be expected. It allows for the community to express concerns, fears and even to make demands. In any democratic state, participation is integral to its legitimacy. When a decision is made without consulting the public the result can never be an informed decision...”

In totality of all those pronouncements, the following points are important in determining the effective threshold of public participation;

- i. Public participation was never intended to be superfluous or ornamental suggestion; rather, it should be implemented and enforced to have a practical substantive value.
- ii. Public participation must never be a mere cosmetic venture, formality and public relations relation exercise, rather it ought to be conducted in a manner that informs the public of what is at stake, how it will impact on the society and the end document should mirror and reflect the spirit of the public in concern.
- iii. Public participation should never be equated to mere consultations. The product of legislation ought to be a true reflection of the public participation so that the end product bears the seal of approval by the public.

1.33 Stakeholders Engagements

Section 5 of the Statutory Instruments Act, 2013 requires a regulation-making Authority to, before issuing a statutory instrument, make appropriate consultations with persons who are likely to be affected by the proposed instrument. Specifically, section 5(3) (a) of the Act requires a regulation making authority to notify, either directly or by advertisement, bodies that, or organizations representative of persons who, are likely to be affected by the proposed regulation.

Failure to conduct stakeholder engagement may risks the regulation being challenged in court and subsequently annulled. For example, in **Republic v Cabinet Secretary, Ministry of Agriculture, Livestock & Fisheries & 4 others Ex Parte Council of County Governors & another [2017] eKLR** the court declared the Coffee (General) Regulation, 2016 unlawful for failure to comply with the provisions of the Statutory Instruments Act.

In **Republic versus Ministry of Health & 3 others ex parte Kennedy Amdany Langat & 27 other (2018) eKLR** the court declared shisha ban vide Legal Notice No. 292 issued on 28th December, 2017 illegal due to lack of stakeholder engagement however due to the fact that it affected the greater public health, the Ministry of Health was granted 90 days to regularize the process in compliance with the Statutory Instruments Act.

Stakeholder engagement is a statutory requirement and a constitutional mandate that the Ministry must observe, even so, it bears a greater importance to the public as it enables people who are likely to be affected by the proposed regulations to make representation to the regulatory body, so that their concerns can be taken into account in deciding whether changes need to be made to the draft regulations. This process should not be considered as a formality. The views gathered during the process should also be given a serious consideration by the Ministry even though they are not binding. Failure to take into account the comments may have adverse consequences on the regulations including economical and cost implications.

The Ministry organized four Stakeholder Consultative Workshops to provide an opportunity for the public to participate in the process. The workshops were distributed throughout the country in which the Ministry chose a central region for the participants. The workshops took place in KALRO Dairy Research Institute, Naivasha for counties in Central and Rift Valley Regions, Tom Mboya Labour College in Kisumu for counties in Western, Nyanza and neighboring Rift

Valley Counties, Embu Agricultural Training College in Embu for counties in Eastern and North Eastern region and Bandari Maritime Academy in Mombasa for the counties in the Coastal Region and other neighboring regions.

The Workshops were attended by representatives from all the forty seven counties, two farmers from each county and two other farmers from each National Irrigation Scheme, representatives from the Council of Governors, representatives from educational institutions and representatives from Water Resource Authority among other professionals. The Ministry also made a presentation to the Joint Agricultural Sector Consultation and Cooperation Mechanism Working Group on Policies, Standards and Regulations and received useful comments on the draft regulations.

The National Validation Workshop held at the Kenya School of Monetary Studies (KSMS) in Nairobi on 23rd January, 2020 was attended by a large representation of the stakeholders likely to be affected by regulations, CECs from various counties who are likely to be affected by the regulations and most importantly farmers from different schemes across the country.

The Ministry presented the regulations to the attendants explaining each and every clause as well as engaging the attendants on their possible views and questions on the regulations. The Ministry explained the importance of the regulations in realigning the irrigation industry and reforming the agricultural sector.

The records from the public forums show extensive deliberations on a myriad of issues that arose from the proposed regulations. The stakeholders were further given opportunity to read and analyze to the regulations and share their written views via email to the Ministry. It was also apparent that the Ministry collated, reviewed and incorporated into the proposed regulations the issues raised and comments received from the workshops.

1.33.1 National Government/Level Consultations

On 5th December, 2019, the Ministry presented the regulations to the Joint Agriculture Sector Consultation and Cooperation Mechanism (JASCCOM) whose membership comprises of representatives from the national and county governments in the Agricultural sector. JASCCOM gave useful comments on the regulations which were taken into account by the Ministry. The Ministry from time to time consulted the Water Resources Authority (WRA) on issues dealing

with water resources and use which is a key component of the irrigation industry. WRA also attended the workshop held in Mombasa and were able to assist the participants during the review of the regulations.

The validation workshop held at KSMS brought together a number of government institutions such as a representative from the Council of Governors, National Irrigation Authority and other government officers. The workshop yielded positive comments for the improvement of the draft regulations.

1.33.2 County Governments/Level

Four workshops were held in Kisumu on 19th – 20th December, 2019, Embu on 16th- 17th December, 2019, Naivasha on 16th – 17th December, 2019 and Mombasa on 19th – 20th December, 2019. The workshops were attended by County Executive Committee Members in charge of irrigation, water and agriculture from all the forty seven counties. A representative from the Council of Governors was also present at the workshop held in Mombasa.

The workshop held at KSMS saw attendance of County representatives from Busia County, Siaya County, Narok County, Kwale County, Elgeyo Marakwet County, Garissa County, Kisumu County, Homa Bay County, Nairobi County, Meru County and Migori County among others.

1.33.3 Research and Academia

The Ministry involved various stakeholders from research institutions such as the Kenya Agriculture & Livestock Research Organization (KALRO) and academia during the workshops who aided the participants in the review of the regulations. The workshop held at KSMS was attended by various academic institutions including representatives from Kenyatta University and Jomo Kenyatta University of Agriculture and Technology.

1.33.4 Private sector

Farmers who are the key players in the irrigation sector from various counties attended the four workshops held in different regions. Also, the Managers from Bura and Tana/Hola irrigation scheme which are some of the National irrigation schemes were present at the workshop held in Mombasa.

A number of development partners including the Japan International Cooperation (JICA), African Development Bank (AfDB), Kenya Red Cross and Kenya Wildlife Services (KWS) attended the validation workshop held at KSMS on 21st January, 2020. The workshop was also attended by financial institutions such as Cooperative Bank and Equity Bank Limited.

1.34 Stakeholders views

The stakeholders raised the following issues;

- i. Definition of various terms under the regulations including; irrigation services, good agricultural practices, smallholder and small scale, federation, designated area and designated scheme, among others.
- ii. Delineation/minimum acreage/unit of the service area/irrigation areas.
- iii. Conflicting roles of the National Irrigation Authority, the National government and the County government on the already existing irrigation schemes.
- iv. Registration of professionals in the irrigation industry conflicting with the existing regimes in Kenya.
- v. Capacity building and awareness creation among farmers.
- vi. Emphasis on cost sharing modes and also the inclusion of public private partnership such as build operate terms model and protection of farmers from exploitation.
- vii. Lack of gender sensitivity in the regulations.
- viii. Sharing of role between the Cabinet Secretary, County Government and the National Irrigation Authority in regulation of the irrigation industry in Kenya.
- ix. The regulation lack provisions on climate change resilience, integration of ecosystem and economic sustainability.

1.35 Assessment of Adequacy

The Consultant attended the stakeholder engagement held in Mombasa. The quorum of the attendees was a well representation of the various stakeholders within the region. Having reviewed the records from the public forums organized by the Ministry, it is the opinion of the Consultant that the players in the irrigation industry in Kenya being the farmers from different irrigation schemes, County Government, the National Government, the Water Resources

Authority, the Agriculture and Food Authority, business community and academic experts were extensively consulted in the formulation of the regulations.

Further, the comments presented by JASCCOM on the draft regulations were taken into account in amending the provisions of the regulations. The Ministry has also held consultations with the office of the Attorney General on the compliance and soundness of the regulations.

Overall, the formulation of the draft regulations was fully compliant with the law relating to public participation and stakeholder engagement in Kenya.

ENFORCEMENT AND COMPLIANCE

The proposed regulations have established institutions at national and county government levels responsible for the enforcement of the proposed regulations to ensure compliance among industry players.

At the National level, the Ministry responsible for irrigation through its Cabinet Secretary and the National Irrigation Authority shall undertake regulating and coordinating activities in the sector. The Cabinet Secretary through the Authority shall establish Scheme Management Committees to coordinate activities of different national irrigation schemes.

At the county level, the respective Governors shall be responsible for establishing the Scheme Management Committees for county public irrigation schemes. The County Government shall also establish a County Irrigation Development Unit to facilitate and coordinate activities of different county irrigation schemes. Further, county governments are allowed to establish County Irrigation Development Unit to enhance irrigation development within the county.

The following regulatory tools have been proposed to aid in ensuring compliance with the regulations: issuance, cancellation, suspension and renewal of irrigation licenses and permits to occupy holding. Others regulatory tools include enlisting and issuance of service certificate to professional irrigation service providers and irrigation water users associations. The regulations propose use of criminal sanctions to ensure compliance.

The regulations also require players in the sector to prepare and submit annual reports in an approved format together with audited accounts. A feasibility study report is prepared and submitted by an individual or entity developing an irrigation scheme for commencement of its construction. Part IX of the proposed regulations; prescribe applicable punishment for offences under the Regulations. Penalties set out in the proposed regulations being the enabling legislation have to be in line with the penalties set out in section 34(3) of the Irrigation Act. Section 34(3)(c) of the Irrigation Act prescribes penalty not exceeding Kenya shillings fifty thousand or imprisonment of one year. This provision contradicts section 24(4) of the Statutory Instruments Act which provides for penalties not exceeding Kenya shillings twenty thousand shillings or imprisonment not exceeding six months.

REVIEW, MONITORING AND EVALUATION

This chapter provides for reviews and monitoring and evaluation techniques that could be adopted to ensure full implementation of the proposed regulations.

Part VIII of the draft regulations provides for monitoring, reporting and performance audit of the proposed regulations. Regulation 112 obligates the Cabinet Secretary to develop and maintain an irrigation and drainage management information system to perform the functions of monitoring and reporting. This may create an enabling environment for irrigation development while enhancing efficiency in irrigation schemes operation by having functionality for planning, monitoring, recording transactions, performance measurement and decision making. It further establishes and maintains integrated web-based irrigation and drainage management information system to assist in review, monitoring and evaluation by ensuring the data is safe and up to date. This will be an irrigation data repository that will provide real time data and information on irrigation, the actors and status to inform future policy development and planning; and investors planning.

Regulation 113 provides that any individual or entity carrying out irrigation or providing irrigation services shall be subject to monitoring, evaluation and performance audit which are carried out by the Cabinet Secretary or a County Government periodically on all irrigation schemes to ensure compliance with the laws and the regulations.

The Fifth Schedule of the proposed regulations provides the tools, procedure and standards to be used in carrying out monitoring, evaluation and performance audits and reporting for the same.

It was further noted that as part of the monitoring and evaluation framework, government technical departments and other complimenting regulatory agencies will be mandated to monitor specific issues within the counties and the sector, and maintain resultant data and information inform future regulation reviews.

CONCLUSION AND RECOMMENDATIONS

This chapter provides other laws and policies that could complement the proposed regulations. It also provides concluding observations regarding the proposed regulations and makes a specific recommendation on whether the proposed regulations should be adopted and implemented.

1.36 Conclusion

The proposed regulations, if effectively implemented, will provide a favorable environment to promote development of the irrigation sector and make it attractive to potential farmers, other irrigation sector players and to investors, thus providing the sector with an opportunity to realize its full potential and contribute fully to the national economy.

1.37 Recommendations

The RIA recommends the passing and operationalization of the proposed regulations.

1.38 Linking the Regulations to Other Regulations

The assessment by the RIA certifies that the Irrigation (General) Regulations will be complimented by other policies with overlapping objectives including:

- i. The Constitution of Kenya.
- ii. Agriculture Sector Development Strategy (ASDS, 2010-2020).
- iii. Agricultural sector growth and transformation strategy (ASGTS 2019-2029).
- iv. Kenya Vision 2030.
- v. Crops Act, 2013.
- vi. AFA Act, 2013.
- vii. Irrigation Act, 2019.
- viii. National Water Master Plan 2030 (NWMP 2030).
- ix. Water Act of 2016 (CAP 372).
- x. Executive Order No 1/2016 of May 2016.
- xi. National Irrigation policy, 2017.
- xii. Water Resources Management Authority (WRMA) Regulations.
- xiii. National Environmental Management Authority (NEMA) Act.

- xiv. TARDA Act Cap 443.
- xv. CDA Act Cap 449.
- xvi. Land Act, 2012.
- xvii. Land Registration Act, 2012.
- xviii. Law of Succession Act, Cap 160.
- xix. ENNDA Act Cap 448.
- xx. KVDA Act Cap 441.
- xxi. LBDA Act.
- xxii. ENSDA Act.
- xxiii. National trade policy.
- xxiv. National land policy.
- xxv. Seed and plant varieties Act (CAP 324, 2011).
- xxvi. Pest control products board Act (CAP 346, revised 2012).
- xxvii. National Agricultural Research Systems Policy.
- xxviii. National Agricultural Sector Extension Policy.
- xxix. Environment and Development Policy.
- xxx. National Social Protection Policy.
- xxxi. Biotechnology Policy.
- xxxii. Micro- and Small Enterprises Policy.
- xxxiii. Cooperatives Policy.
- xxxiv. National Productivity Policy.
- xxxv. Water Policy.
- xxxvi. National Food and Nutritional Security Policy.
- xxxvii. National Livestock Policy.
- xxxviii. Relevant County Policies and Legislation.

REFERENCES

1. Diogo Machado Mendes, Lisa Paglietti, 2015: Kenya Irrigation market brief.
2. Economic Survey 2019; Kenya National Bureau of Statistics, 2019.
3. Francis Z. Karina and Alex Wambua Mwaniki, 2011: Irrigation Agriculture in Kenya Impact of the Economic Stimulus Programme and Long-term Prospects for Food Security in an Era of Climate Change.
4. GoK (Government of the Republic of Kenya) 2010: Agriculture Sector Development Strategy.
5. GoK (Government of the Republic of Kenya) 2018: Agricultural sector growth and transformation strategy.
6. GoK (Government of the Republic of Kenya) 2019; Irrigation Act, 2019.
7. Ministry Of Environment, Water and Natural Resources Water Resources Management Authority, 2013: The Project on the Development of the National Water Master Plan 2030 Final Report.
8. Ministry of Water and Irrigation, 2017: National Irrigation Policy.
9. MoA (Ministry of Agriculture): National Rice Development Strategic Plan (2008–2018), Nairobi.
10. Ngigi, S. 2002: Review of Irrigation Development in Kenya.
11. P. Boulanger, H. Dudu, E. Ferrari, A.J. Mainar Causapé J. Balié, and L. Battaglia 2018: Policy options to support the Agriculture Sector Growth and Transformation Strategy in Kenya: A CGE analysis.
12. Water Resource group, 2016: Agricultural & Irrigation Opportunity in Kenya: 2030 WRG Roundtable #3 - Moving towards Solutions ppt 2030.
13. Winnie Mugeru, 2015; Factors Influencing Crop Production in Irrigation Schemes in the Arid and Semi-Arid Lands of Kenya: The Case of Hola Irrigation Scheme, Tana River County, Kenya.