National Irrigation Authority

NATIONAL IRRIGATION AUTHORITY

ISO 9001: 2015 CERTIFIED

STRATEGIC PLAN (2019-2023)

SEPTEMBER 2019

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STRATEGIC PLAN

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ACRONYMS AND ABBREVIATIONS

ABBREVIATION	DEFINITIONS
ACAL:	Alpex Consulting Africa Limited
ACA:	Athi Catchment Area
ADC:	Agricultural Development Corporations
AIRS:	Ahero Irrigation Research Station
ASAL:	Arid and Semi-Arid Lands
ASTGS:	The Agricultural Sector Transformation and Growth Strategy
CAADP:	Comprehensive African Agriculture Development Program
EMCA:	Environmental Management and Coordination Act
ENIP:	Expanded National Irrigation Programme
ENNCA:	Ewaso Ng'iro North Catchment Area
ESP:	Economic Stimulus Programme
FAO:	Food and Agriculture Organization
FNSP:	National Food and Nutrition Security Policy
GDP:	Gross Domestic Product
HDI:	Human Development Index
HR:	Human Resource
IFAD:	International Fund for Agricultural Development
IFPRI:	International Food and Policy Research Institute
IMT:	Irrigation Management Transfer
IWRM:	Integrated Water Resources Management
IWUA:	Irrigation Water User's Association
JICA:	Japan International Cooperation Agency
LVNCA:	Lake Victoria North Catchment Area
MIAD:	Mwea Irrigation Agricultural development Centre
M&E:	Monitoring and Evaluation
MTP:	Medium Term Plan
MRM:	Mwea Rice Mills)

ABBREVIATION	DEFINITIONS
NEMA:	National Environment Management Authority
NEPAD:	New Partnership for Africa's Development
NIB:	National Irrigation Board
NIA:	National Irrigation Authority
NIP:	National Investment Plans of African countries
NYS:	National Youth Service
O&M:	Operations and Management
PPP:	Public Private Partnership
RDAs:	Regional Development Authorities
RECs:	Regional Economic Communities
RVCA:	Rift Valley Catchment Area
SAPs:	Structural Adjustment Programmes
SDGs:	Sustainable Development Goals
SRC:	Salary and Remuneration Commission
SWOT:	Strengths, Weaknesses, Opportunities, and Threats
TFP:	Total Factor Productivity
UN:	United Nations
WHO:	World Health Organization
WKRM:	Western Kenya Rice Mills

DEFINITION OF TERMS

Agriculture –primary production of food and fibre at the farm level, including crops and/or livestock production, as well as apiculture, aquaculture, mushrooms and other non-plant and non-animal products, and intentionally planted (and managed) forests.

"Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life".

Irrigation refers to the artificial application of water to assist in the growing of crops, trees and pastures. This can be done by letting water flow over the land (surface irrigation), by spraying water under pressure over the land concerned (sprinkler irrigation), or by bringing it directly to the plant (localized irrigation).

Adaptation: Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Baseline information: Information usually consisting of facts and figures collected at the initial stages of a program or project and that provides a basis for measuring progress in achieving program or project outputs, outcomes and impacts.

Baseline survey: An analysis describing the situation in a program or project area. It includes data on individual stakeholders prior to a development intervention. Progress (results and accomplishments) can be assessed and comparisons made against the baseline survey. It also serves as an important reference for the completion evaluation.

Capacity: the ability of people, organisations and society as a whole to successfully manage their affairs, and 'capacity building' means a process whereby people organisations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time. Capacity building (development) implies that "people instead of plans or structures are drivers for change and performance". Capacity development is a long-term process that includes training, dialogue, networking and advisory services. It requires a flexible approach, adapted and customized to meet organisational and individual needs.

Climate variability: Variations in the mean state and other statistics (such as standard deviations, or statistics of extremes) of the climate on all temporal and spatial scales beyond that of individual weather events.

Climate change: A change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods.

Evaluation: Evaluation is an assessment of a planned, ongoing, or completed intervention to determine its relevance, efficiency, effectiveness, impact and sustainability.

Goal: The higher-order program or sector objective to which a development intervention, such as a project, is intended to contribute. Thus, it is a statement of intent.

Indicator: Quantitative or qualitative factor or variable that provides a simple and reliable basis for assessing achievement, change or performance. A unit of information measures over time that can help show changes in a specific condition. A given goal or objective can have multiple indicators.

Impact: To have a strong, negative and direct impact on a person or system.

Logical framework: An analytical, presentational and management tool that involves problem analysis, stakeholder analysis, developing a hierarchy of objectives and selecting a preferred implementation strategy.

Monitoring and evaluation (M&E): The combination of monitoring and evaluation which together provide the knowledge required for: a) effective project management and b) reporting and accountability responsibilities.

Monitoring: Monitoring is a continuous process of collecting and analyzing information to compare how well a project, or program or policy is being implemented against expected results.

Monitoring & evaluation system: An M&E system is a management information system (MIS)

that provides data to management regarding the operation and effects of the project.

Output: The amount of something produced or generated by a person, system or program in a given period of time.

Outcome: A final product or the desired end result arising from some action or intervention.

Qualitative: Something that is not summarized in numerical form, such as minutes from community meetings and general notes from observations. Qualitative data normally describe people's knowledge, attitudes or behaviors.

Quantitative: Something measured or measurable by, or concerned with, quantity and expressed in numbers or quantities.

Resilience: The capacity of a system to cope with change, and to withstand stresses and catastrophe.

Risk: The likelihood of an event occurring combined with the severity of expected impacts.

Stakeholders: An agency, organization, group or individual with a direct or indirect interest in the program, or who is affected positively or negatively by the implementation and outcome of the program.

Mainstreaming: The process of integrating climate risks and adaptation issues into traditional sectoral development and investment practices.

Vulnerability: The degree to which a system is susceptible to and unable to cope with the adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.

FOREWORD

Effective irrigation and drainage services are vital components of a vibrant Kenyan agriculture. The strategic importance of irrigation in this country cannot be over emphasized. In Kenya, arid and semi-arid areas (ASALs) cover 80-89% whilst main economic activity is agriculture which, contributes about 34% of the GDP and additional 27% through linkages to other sectors such as manufacturing, distribution and services. Therefore, to support the livelihood for millions of rural farmers and shield them from vagaries of weather, there is need to increase irrigation investments. However, irrigation sector performance in Kenya is experiencing a number of challenges, namely, erratic rainfall and recurrent droughts, leading to low agricultural sector performance; low resilience of rural people to climatic effects, irregular production and low productivity, low intensification and crop diversification, and weak value chain and market development. It is becoming increasingly clear that with increased population and pressure on arable land, the typical smallholder farmer under dryland conditions cannot even provide for his own family's subsistence. In order to address the challenges in agricultural production and productivity, the country requires a more focused and strategic approach to the sector.

The context of irrigation and drainage has many dimensions, including hydrologic, agricultural, financial, economic, policy, legal, organizational, and social ones. Important features of these dimensions are covered in this strategic plan to define the framework in which the strategic choices for National Irrigation Authority (NIA) are made. This strategic plan is therefore aimed at facilitating the provision of irrigation-related goods, works, and services so that Kenya can attain food security, nutrition and economic growth as inspired for in the Sustainable Development Goals (SDGs), Vision 2030, Medium Term Plan (2018-2022), Big Four Agenda (2018-2022), Agricultural Sector Transformation and Growth Strategy (2019-2029), Kenya National Food and Nutrition Security (2011), and Comprehensive African Agricultural Development Program (CAADP).

The main objective of the Strategic Plan (2019-2023) is to contribute to the improvement in food security through increased food production and productivity as well as stability in year-to-year production, on an economically, socially, and environmentally sustainable basis. The long-term outcomes are: Increased irrigated agriculture production and productivity for local and export use using irrigation technologies that take into account climate change; maximize national food self-reliance; improved national and household incomes, food and nutritional security; improved irrigation service delivery; community resilience for adverse weather conditions; increased employment and income creating opportunities; enhanced land and water productivity through sustainable land tenure arrangements, catchment management and water harvesting and; reduced risk of disruptive variations in food supply.

This strategic plan is intended to guide sustainable irrigation development and management in NIA for the next five years. The plan encompasses an overarching emphasis on the critical need to extend and improve the quality of irrigation and drainage services in the country, focusing on rehabilitation and modernization of existing schemes and development of new ones. It also bring out the importance of facilitating and promoting investments in modern irrigation technologies for higher value crops and higher output quality, the facilitation of environmentally and financially sustainable irrigated agricultural systems and services and importance of modernizing management systems. This will be supported by modern data collection for decision support in irrigation and drainage service delivery. To increase sustainability, the plan will also focus on capacity development of farmers and Irrigation Water Users Associations (IWUA) to promote sustainable irrigated agriculture in Kenya. Lastly, the plan recognizes the importance of enhancing collaboration and partnership amongst the irrigation stakeholders with a view of improving the production environment for higher-value crops and higher-value-added products. Through these collaborations, the Authority will work closely with the County governments to optimize irrigated agriculture production to maximize benefits to farmers.

As NIA we are open to foster collaborations for a greater future and it is our commitment as the Board of the Authority to facilitate the management of the organization to implement this plan. As we move forward, we commit to our vision of "water to every irrigable acre"

Hon. Eng. Joshua Toro

Chairman

National Irrigation Authority

ACKNOWLEDGEMENT

The development of NIA Strategic Plan (2019-2023) has taken into cognizance the need for a participatory process and involvement of key stakeholders, not only as a measure of good corporate governance in the development of a viable irrigation sector, but also as a measure of ensuring that NIA contributes significantly to the improvement in food security and achievement of national prosperity through irrigated agriculture.

The strategic planning process benefited from the support and participation from different and diverse range of stakeholders and expertise. First and foremost, I would like to thank the Board members of NIA for their invaluable insight, time, and guidance during the process of developing this Strategic Plan. Their role in making the necessary approvals and providing strategic corporate guidance was indeed a decision that shall ever remain an indelible mark in the future of NIA. Further, the Board not only played a role in undertaking the necessary approvals to facilitate the process, but also contributed immensely by granting interviews during the data collection process and participating in the strategic plan validation processes and approving the final strategic plan.

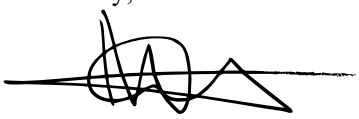
It also should be noted that in the course of developing this strategic plan, it demanded remarkable time, commitment, and resourcefulness of the NIA management team and other staff members. They contributed in a special way by providing their views and inputs on the strategic interventions required and the kind of National Irrigation Authority they would wish to see in the next five years and beyond. These perspectives, indeed, provided a platform for which the vision, mission, core values, strategic analyses, the strategic pillars and framework for the implementation of this strategic plan have been conceptualized, analyzed, synthesized and designed. Therefore, in a special way, I would like to express my sincere appreciation and gratitude to them.

The NIA's Strategic Plan (2019-2023) was also developed through the participation and involvement of various institutions in food security and nutrition work, including farmers, relevant national government departments, selected county governments, private companies, research institutes, international and local NGOs, donors and international organizations among others. I equally would like to extent my further gratitude to them for their professional insights and guidance towards this strategic plan document.

Lastly, but not least, I wish to thank most sincerely ACAL Consulting Ltd., without whose support this assignment would not have been such a success. Their professional guidance and technical advice have indeed provided the participants in the strategic planning process with new insights and approach on how NIA can be redesigned and strategically managed to deliver responsive and demand-driven quality irrigation-related good, works, and services to farmers and irrigation stakeholder at large. For that I say Thank You.

As a living document, this strategic plan is intended to be updated as needed in consultation with those parties over time. It is my humble request that, as we now start the journey of "Prospering through Irrigation", lets us remain focused and dedicated to the spirit and principles of good corporate governance and constitutionalism to bring meaningful transformation and prosperity to lives of Kenyans and eventually contribute to the poverty reduction and sustainable development of our society.

To all I say, THANK YOU and GOD BLESS YOU.



Gitonga Mugambi

CHIEF EXECUTIVE OFFICER

NATIONAL IRRIGATION AUTHORITY

National Irrigation Authority

NIA Corporate logo

Corporate colours

Brown

is our **land**, arable and arid. The **foundation** of our **agriculture** which the **Authority** purposes to **revolutionize** to **productive land** upon **nurturing** with water.

Aqua blue drop

is **water**; water for **agriculture**, water for **crops**, sourced from the **belly of the earth, oozing springs** to **rivers** and from **still lakes** and **reservoirs**; water for **life**; delivered to **crops** through **modern irrigation systems**, **sprinkler, drip; more crop per drop**, for **efficiency**, for **sustainability** and for **life.**

Green plant

is **well nurtured crops** nourished with water on our land; for food; for **agricultural raw materials** for industry, for **fodder,** for **wellbeing**, for **wealth** and **prosperity** of **our people**.

Rows, endless rows

represent **vast irrigated lands, plentiful production** for **food and nutritional security, socio-economic growth** and **well being.** The **colors of our national flag, our sovereignty, our strength, our aspirations, national coverage,** service to all citizens.

Green patch

is **nature, vivacity, and life;** color of **freshness** and **renewed energy,** color of the end goal, **wealth** and **prosperity** in a **sustainable environment** and **resilient communities.**

Black

in the name depicts the **Authority** over **irrigation development and management** to **transform and utilize** our land.

EXECUTIVE SUMMARY

Investment in irrigation is important for the production of food stuffs and renewable raw materials among other socio-economic and development needs of Kenya. However, the sustainability of irrigation farming in Kenya is seriously at stake due to a number of factors. Seasonal water scarcity in the county poses severe pressure for the national and county governments and the international community. The challenges of growing water scarcity are exacerbated by the increasing costs of new water, wasteful use of already developed water supplies, degradation of soils in irrigated areas, depletion of ground water, pollution of water and its impact on human health, and the distorted governance models which guide water allocation and use. Apart from these problems, it is clear that the rapid development in irrigated agriculture in Kenya during the past four decades has been achieved with remarkably little change in the legal and organizational frameworks, irrigation technologies, and institutional settings of irrigated agriculture.

Therefore, in order to achieve food security and the economic contribution of the agricultural sector in Kenya, adaptation of irrigated water management and associated infrastructure are necessary in Kenya, due to the rapidly changing natural, social, economic and political environment. In recent years it is widely accepted that water management for irrigated farming must be approached in a holistic way. Redirection of investments in irrigated agriculture is to take place to meet the national, regional, and international development goals and to face the challenge of population growth, malnutrition and poverty, increasing competition for land and water, and the requirement to protect the ecology.

Irrigation is important in Kenya to deal with the unpredictable rainfall patterns, especially in the context of climate change. Irrigation minimizes frequent food shortages that are attributable to dependence on rainfall, and increase yields. However, to do this effectively requires a range of infrastructure and management practices that will provide for a wide range of irrigated products and efficient water use. Recognizing this need, the government of Kenya has made ambitious commitments to expand the area irrigated, and set up the National Irrigation Authority (NIA) to deliver on this potential. Sustainable development and management of irrigation and drainage infrastructure in Kenya necessitates renewed strategic approach and guidance, both national and county government levels. Fundamentally, national and county strategic directions need to be harmonized with developments at global and regional levels.

In line with the foregoing, this strategic plan for NIA 2019-2023 provides a framework for facilitating and coordinating all stakeholders in Kenya, for the next five years, in the implementation and provision of irrigation-related goods, works and services. This is necessary in order to attain food security, nutrition and economic growth as aspired for in Vision 2030, Medium Term Plan 2018-2022, The Big Four Agenda, and irrigated agricultural sector growth and development goals.

Whilst recognizing the numerous challenges facing irrigation development in Kenya, NIA's approach to sustainable irrigation development shall be focused at shifting from old agriculture practices, considered as unsustainable to improved irrigation development methods, water efficiency, on-farm irrigation technologies, capacity building of stakeholder groups, especially farmers, in irrigation and among other related sustainable practices to promote sustainable development. Furthermore, increased attention will focus on the active participation of stakeholders, an institutional structure in association with physical, managerial, environmental, technical, financial and operational component to address sustainability in irrigated agriculture. To take full advantage of investments in irrigated agriculture, a major effort will be focused in modernizing irrigation and drainage systems and to further develop appropriate management strategies compatible with the financial and socio-economic trends, and the environment.

This strategic plan for NIA (2019-2023) is the fourth strategic plan since its inception in 1966 and it has been occasioned by the recognition and realization that the NIA needs to be more relevant, competitive, and sustainable in the provision of sustainable irrigation development and management so achieve its **Vision**: "Water to every irrigable acre". This shall be addressed through its **Mission:** "Provide and coordinate Sustainable Development and Management of irrigation services in Kenya".

This strategic plan is aimed at achieving the following strategic objectives

- Increase area under irrigation by 518,000 acres in the plan period
- Increase Irrigation water storage capacity by 400m3
- Achieve at least 200% utilization in each irrigation scheme.
- Form and strengthen at least one farmer organization in every NIA developed scheme to enter into agreements,
- Identify and implement irrigation development advancement technologies
- Develop and adopt sustainable irrigation management frameworks
- Develop and implement a transition plan to the irrigation act.
- Develop and implement management systems to improve efficiency

Figure 1 : Launch of Thiba Dam in Mwea by H.E President Uhuru Kenyatta

ORGANISATION OF THE REPORT

Part One presents the global, regional, and national context of sustainable irrigation development and management and brief historical profile of NIA, methodology of strategic plan development and the strategic framework covering vision, mission, core values and the general principles guiding the sustainable development and management of irrigation services at NIA.

Part Two addresses the situational analyses at global and regional levels, the general principles and lessons learnt in the development and management of successful irrigation projects. It also discusses the context and state of national agenda for irrigated agriculture and its potential for expansion and development in Kenya, including typologies, financing and resource mobilization, SWOT analysis, stakeholder analysis, and the summary of strategic issues.

Part Three of this strategic plan presents key strategic pillars and priority areas that are expected to guide efforts and resourcing in the next five years. In particular, the section identifies sustainable irrigation development, irrigation water harvesting and storage, sustainable irrigation management, irrigation-oriented research, and governance and capacity development as key focus areas for NIA. In each of the five thematic areas identified, key strategic issues, objective, actions, and output indicators are also presented.

Part Four provides for the implementation and coordination framework and the general guiding principles that would facilitate effective strategic plan execution. The section further presents the institutional framework and organization structure that would guide effective implementation, including detailed analysis on areas of partnership and collaboration with the various stakeholders in the irrigation sector in Kenya.

Part Five presents an overview of the theory of change in the context of irrigation development and management and its related monitoring and evaluation framework and reporting arrangements for the implementation of results orientation at NIA. The section further discusses the expected implementation challenges and assumptions and the ways by which NIA can address the challenges for efficient, effective and productive execution of this strategic plan.

PART 1

GENERAL CONTEXT OF IRRIGATED AGRICULTURE

1 PART ONE. GENERAL CONTEXT OF IRRIGATED AGRICULTURE

1.1 Background

The irrigation of arable land and pastures has been practiced around the world for thousands of years. With the aid of irrigation, it was and still is possible to grow crops with reliably high yields in all arid regions of the earth. At the same time, irrigation has guaranteed an adequate and continuous supply of food stuffs, without which it would not have been possible to attain sustainable food security in a country. It is estimated that by the year 1800 about 8 million hectares of land were irrigated around the world, but 100 years later this figure had increased to about 40 million hectares, partly as a result of modern sprinkler irrigation system that had become available to gardeners and farmers. By the year 1950, the irrigated area had risen still further to a total of about 94 million hectares on a world-wide basis. Irrigation farming continued to grow at a considerable rate in subsequent years, especially during the so called "Green Revolution". Nowadays, about 250 million hectares or 17 per cent of the world's agricultural area, are irrigated, producing about 36 per cent of the world's food supplies. In terms of such value, the contribution made by irrigated agriculture to the world's total agricultural output is estimated at just under 50 per cent, this is probably due to the fact that in many irrigated areas, farmers grow a greater proportion of crops with a high market value.

Agricultural production has increased slowly in Africa, and for number of reasons the irrigation sector has not yet played a major role to cover the imbalance between food demand and supply, to benefit farmers and generate jobs for the youth in particular. In general, Africa has significant land and water potential. Africa could irrigate 42.5 million hectares, based on available land and water resources and by far the greatest potential is found in Nigeria, which accounts for more than 2.5 million hectares. Countries such as Cameroon, Chad, Ethiopia, Mali, Niger, South Africa, Sudan, Tanzania, Togo, and Uganda each have at least 100,000 hectares of potential (FAO Aqua stat, 2005). It is also having an average of 0.27 ha of cultivated area per inhabitant in Africa (0.24 ha for average in the world) and 1.02 ha per economic active person engaged in agriculture (1.16 ha for the average in the world). In Africa, population growth is relatively high (2.2 percent per year) when the average in the world is only 1.2 percent per year. It means that the pressure on agriculture and irrigation sector is higher in Africa today and in the future, to ensure food security and nutrition to more people.

In the early 1960s, there were 7.4 million ha of irrigated area under cultivation in Africa (Future Agricultures; WP119, June 2015). Although this area has nearly doubled to 13.6 million ha after almost 50 years, in 2006 African countries irrigated just 5.4 percent of their cultivated land, compared with a global average of around 20 percent and almost 40 percent in Asia (FAO Aquastat 2010). Hence the irrigation sector's contribution to agricultural output is relatively small. Geographical coverage is also skewed since a large proportion of irrigated land is concentrated in five countries, namely South Africa, Egypt, Madagascar, Morocco and Sudan (FAO Aquastat 2005).

Therefore, the irrigated sector performance is an essential task in meeting the basic food needs of billions of people in the world, especially in Africa. It has provided more than half of the two most important basic staples and close to a third of all food crops. In the future, irrigation farming and gardening will have to provide an even larger proportion of total food supplies, especially in Africa.

1.2 Introduction of Irrigated Agriculture in Kenya

Continued concern over food security in Kenya and a persistent agricultural productivity lag behind other parts of the world have refocused attention on the importance of key investments in the Kenyan agricultural sector. Irrigation is an investment that has been promoted persistently by donors, research analysts, and scientists within the international agricultural development community to address that lag. At the same time, irrigation is only one of the productivity-improving capital investments and technological inputs that are deficient in Kenya. Others include fertilizer, advanced seed delivery systems, postharvest processing facilities, and access to markets. Irrigation stands out strongly among these, however, because of its role in stabilizing yields in the face of climatic variability, which has increased notably in recent times and is projected to increase further under almost all future climate change scenarios. In addition, much of Kenya is expected to experience reduced annual precipitation, which would, along with higher temperatures, enhance the potential productivity-enhancing effects of irrigation.

Kenya is basically a predominantly agricultural-based economy and agriculture is dependent almost entirely on subsistence rain-fed agriculture. The irrigation potential in the country remain, largely, unexploited. Out of the estimated potential of 539,000 ha (based on available surface water) and a drainage potential of 600,000 ha., only 105,000 ha has been developed for irrigation purposes representing 19 percent of the potential area. The limited area under irrigation results into low agricultural production and productivity, leading to food deficits during periods of

erratic rainfall patterns, dry spells, droughts and floods of which there has been increased frequency of occurrence due to climate change effects. The food deficits are made worse by population growth which is projected to reach 65 million by 2050.

It is for these reasons that globally, regionally, and nationally irrigation has been recognized as one of the priority areas for reducing poverty and accelerating economic growth. In Kenya, irrigation is well anchored in Vision 2030, Medium Term Plan (MTP III) 2018-2022, Big Four Agenda 2018-2022, Agricultural Sector Transformation and Growth Strategy (ASTGS) 2019-2029), Water Master Plan 2030, and Irrigation ACT 2019 among other agriculture and water based policies and planning frameworks. These planning documents recognize agriculture as the main driver of rapid and inclusive economic growth and development. These documents emphasize that irrigation development and management should serve human needs such as food, nutrition, and income. For instance, ASTGS addresses sustainable agricultural and irrigation transformation for the delivery of food and nutrition security in Kenya with the overall aim of making Kenya free from extreme poverty, hunger, and malnutrition.

The agriculture and water based planning and development frameworks are aimed at addressing critical issues affecting the irrigation sector that include spatial and temporal water shortages; customary land tenure disputes; poor operations and maintenance of infrastructure; weak structures for handling agricultural productivity and value addition; weak post-harvest handling and marketing systems; limited frameworks for stakeholder participation and coordination; limited farmer and Water Users' Associations (IWUA) capacity; and weak frameworks/guidelines in the application of Integrated Water Resource Management (IWRM) principles. These factors have collectively contributed to overall low performance of irrigation schemes and projects in Kenya.

NIA acknowledges several opportunities that exist for accelerated irrigation development in Kenya, namely; effects of climate change, public private partnerships, improved governance and management reforms in water and land management and, increasing interest by stakeholders-including development partners. Therefore, NIA shall attempt to provide solutions to irrigation challenges and opportunities by addressing key priority areas of Sustainable Irrigation Development (SID) Irrigation Water Harvesting and Storage, Sustainable Irrigation Management (SIM), Irrigation Oriented Research (IOR) and Institutional Capacity Development (ICD). It is expected that the revitalization of irrigated agriculture, increased investment in modernizing infrastructure and practices, along with better governance on existing irrigated lands, will be critical to success. Irrigation investment and expansion is seen as a significant leverage to food security, livelihoods, rural resilience and development, and agricultural and broader economic development in Kenya.

Figure 2: Beneficiary of household irrigation water storage program

1.3 Brief Profile of National Irrigation Authority

The National Irrigation Authority (NIA), formerly known as National Irrigation Board, was established and incorporated as a state corporation in 1966, vide Irrigation Act, Cap 347 of the Laws of Kenya. This Act was reviewed and replaced with Irrigation Act 2019 and became operational on 16th August, 2019. Functionally, the Irrigation Act of 1966 empowered the institution to be responsible for the following technical and administrative (management) aspects of sustainable and integrated irrigation and drainage services in the national (public) schemes in Kenya (Mwea, Hola, Bura, Ahero, West Kano, Bunyala, and Perkerra); the resettlement and compensation of farmers; development and management (operations and maintenance) of irrigation infrastructure; production of crops in the schemes; post-harvest handling; marketing; and control of land use and management.

NIA also conducted operational research and established demonstration farms in its research stations including Mwea Irrigation Agricultural Development Centre (MIAD), Ahero Irrigation Research Station (AIRS), Hola Irrigation Scheme (HIRS), and Bura Irrigation Scheme (BIRS). NIA also established Mwea Rice Mills (MRM) and Western Kenya Rice Mills (WKRM) as its subsidiary companies which serve as processing plants for milling and packaging rice bought from farmers in the respective schemes. Under the Expanded National Irrigation Programme (ENIP), through a Policy Cabinet Paper developed in 2003 to facilitate the implementation of Economic Stimulus Programme (ESP), NIA was authorized to undertake new development as well as rehabilitation of smallholder and household irrigation projects in Kenya.

Since its inception, NIA has undergone various chronological developments to attain the status of a parastatal under the management of a board of directors through a General Manager assisted by an audit and technical departments who run the day to day activities of the Authority. With the oil crisis situation in the early 1970s, the performance of the global economy experienced negative growth and this invariably affected government and the general public sector performance, including NIA. This led to the Structural Adjustment Programmes (SAPs) initiated in the early 1980s aimed restructuring the design and character of the macro economic outlook of economy, in terms of monetary and fiscal policies for Kenya. This culminated into liberalization and privatization of the economy where government and public sector role in the economy was fundamentally changed and more prominence was given to private sector participation through a Public Private Partnership (PPP) framework. All these laid the strategic foundation upon which NIA would be conceptualized, governed, structured, and managed, including embracing the PPP as a mechanism for attracting external funding for sustainable development and management.

During the early 1990s came with it the New Public Management (NPM) reform agenda targeting at governance and management systems of public sector institutions. The aim was to improve and restructure them to conform with principles of good corporate governance and service delivery. It was intended to make public sector institutions adopt and adapt the private sector management practices with a view of inculcating a culture of performance orientation, service delivery, customer orientation, and prudence resource management and stewardship.

The late 1990s witnessed uprisings and revolt among farmers and communities in the public irrigation schemes in Kenya challenging the powers and management approach of NIA and calling for a greater say and empowerment of farmers in the management and affairs of irrigation schemes in Kenya. This led to the integration of irrigation farmers in the management of irrigation schemes through Participatory Irrigation Management framework called Irrigation Water User's Association (IWUA). This situation redefined the roles of NIA and farmers (IWUAs), with the former assuming the role of undertaking care of the development of irrigation infrastructure and the latter taking responsibility of operations and maintenance and other activities of the irrigation services value chain. These arrangements are yet to be captured formally in a legislative and policy framework.

With the turn of the Millennium (2000) Kenya intensified its reform agenda and nearly all sectors of the economy, including water, irrigation, and food security sectors, experienced a number of legal, policy changes and strategic orientations in terms of reorganizations, redesigns (structure), and guiding principles. The promulgation of the New Constitution in 2010 further led to fundamental reorientation of the economy and institutions discharged with the mandate of delivering public goods and services. A number of water sector reforms led to the development of Water Act 2002 (now Water Act 2016), and Irrigation ACT 2019. The main theme of these reforms is to make the water sector conform to the principles of Integrated Water Resource Management and Constitution of Kenya 2010.

Policies on water and irrigation have been updated more recently. In between the two National Water Master Plans, the one of 1992 and its update of 2013, there also has been a National Water Resources Management Strategy 2006-2008. In addition, a 2015 Draft National Irrigation Policy is currently under preparation. It will adopt principles of Integrated Water Resources Management (IWRM), environment management plans and agricultural water management strategy, including rainwater harvesting.

1.4 Legal and Institutional Framework for Irrigation Sector

The development of irrigation services in Kenya is guided by the Irrigation Act No. 14 of 2019, which commenced its operations on 16th August, 2019. The objective of the Act is to provide for the development, management and regulation of irrigation, to support sustainable food security and socioeconomic development in Kenya, and for connected purposes. Part III, Section 7(1) of the Act establishes the National Irrigation Authority (NIA) whose functions are;

1. Develop and improve irrigation infrastructure for national or public schemes;
2. Provide irrigation support services to private medium and smallholder schemes, in consultation and cooperation with county governments and other stakeholders;
3. Provide technical advisory services to irrigation schemes in design, construction supervision, administration, operation and maintenance under appropriate modalities, including agency contracts, as may be elaborated in regulations to this act.
4. Undertake irrigation development, including infrastructure, in national or public and smallholder schemes, including schemes which traverse or straddle more than one county;
5. In consultation with county governments, facilitate formation and strengthening of irrigation water users' associations at scheme level for operation, maintenance and management;
6. In consultation with the county governments and other stakeholders facilitate formation and strengthening of scheme management committees at scheme level for management of the schemes;
7. In consultation with the county governments and other stakeholders facilitate formation and strengthening of dispute resolution committees at scheme level for the resolution of disputes relating to scheme management;
8. In consultation with the cabinet secretary, the cabinet secretary for the time being responsible for finance, and the county governments raise funds for the development of infrastructure in national, public and smallholder schemes under appropriate mechanisms, including under agency contracts;

9. In consultation with the cabinet secretary and county governments, co-ordinate and plan settlement on national or public irrigation schemes, as well as schemes which traverse or straddle more than one county and determine the number of settlers thereof;
10. Provide technical advisory services on a commercial basis, on irrigation water management, including water harvesting and storage, and waste water recycling for agricultural use to all schemes under appropriate modalities, including agency contracts;
11. in collaboration with county governments, the private sector, civil society organizations and other stakeholders, provide technical advisory services to community and smallholder irrigation schemes concerning design, construction supervision, administration and maintenance of irrigation infrastructure under appropriate modalities, including agency contracts;
12. Facilitate linkages between and among the national government and county governments, private sector, civil society organizations, communities and other stakeholders for the provision of support services to irrigation water user associations;
13. provide land in national irrigation schemes for public purposes;
14. in collaboration with county governments and other stakeholders, promote the marketing, safe storage and processing of crops, animal and fish products grown or produced on national and other irrigation schemes and to liaise in this regard with other responsible state agencies and organizations;
15. in collaboration with county government and other stakeholders and government agencies carry out periodic researches to determine and make recommendation on fair prices for crops, animals and fish products grown or produced on national and other irrigation schemes;
16. Prepare and submit to the cabinet secretary, through the principal secretary, annual and other periodic reports concerning the performance of its mandate and functions; and
17. Advise the cabinet secretary, through the principal secretary, on any matter in connection with the development, maintenance, expansion and availability of irrigation support services.

In addition, support the Cabinet Secretary in fulfilling the obligations assigned in the Irrigation ACT 2019 that include:

- establish, through a gazette notice, national, public or strategic schemes of any category as defined in this Act;
- promote the use of efficient irrigation systems across the country;
- gather information and maintain data bases on irrigation development and management including data on irrigation water supplies, demands, projects, irrigated areas, management performance, potential for expansion and human resources;
- conduct periodic technical and management audits of irrigation schemes
- infrastructure, governance, management and financing;
- develop and maintain storage investments for their proper use implementation;
- facilitate access rights to land for all irrigators on national irrigation schemes in order to provide livelihoods for poor and vulnerable persons and groups, and adequate security for investments in land improvement and the irrigation schemes
- design of national or public irrigation schemes and others, takes into account the needs of various irrigation water users, including livestock and fish producers and the impact the irrigation scheme is likely to have on the environment. ensure that irrigation developments are planned and implemented within the framework of Integrated Water Resources Management, and in accordance with agreements between irrigation and other stakeholders, in such a manner as to reduce water resource conflicts
- ensure that irrigation research, innovation and training functions are carried out and appropriately coordinated.
- oversee management of existing and new national or public schemes, except those under county governments, and particularly storage dams, intake, main and secondary systems as necessary.

- provide resources and direction for capacity building and technical services to irrigation water users associations, scheme management committees, dispute resolution committees and other farmer associations to enable them to progressively accept and assume full responsibility for management of national or public schemes under appropriate agency contracts with the National Government or county governments, as the case may be.

The image below summarises the transition of the legal framework:

Irrigation Act Cap 347	Irrigation Act, 2019
1. To design, construct, supervise and administer national irrigation schemes 2. In consultation with the Minister for the time being responsible for Finance, to raise funds for the development of national Irrigation Schemes 3. To promote the marketing of crops and produce grown crops on national irrigation schemes and to liaise with organizations responsible for the marketing of agricultural produce 4. To provide, either by itself or by agreement with other persons, for the processing of agricultural produce grown or produced on national irrigation schemes	1. Provides for sustainable irrigation project identification, design, finance and implementation for small, medium and large scale projects 2. Provides irrigation technical advisory services to all farmers 3. Increase reliability of irrigation water through water harvesting and storage 4. Recognizes farmers organizations mainly IWUAs, Scheme Management and dispute resolution committees 5. Provides a mechanism for effective coordination, linkage and collaboration and partnership for the promotion, development, with all stakeholders particularly county governments 6. Provides mechanism for Irrigation sector information management for effective decision making and coordination

1.5 Rationale of the Strategic Plan

The need for this Strategic Plan for National Irrigation Authority (NIA) arises out of the high priority the Government of Kenya has assigned to developing irrigation at an accelerated rate to increase agricultural productivity. In turn this priority is based on the urgency of addressing food and nutrition security and reducing poverty, which is more prevalent in rural areas than urban, and on the predominant role of agriculture in the economy, which means that rapid overall economic growth cannot be attained without transforming and making the irrigated agricultural productive and competitive. Food and nutrition security is also given prominence in the global and regional development agenda as contained in the Sustainable Development Goals (SDGs) to end poverty, protect the environment and ensure prosperity for all with sustainability. Two of the SDGs: Goal 2—End hunger, achieve food security and improved nutrition and promote sustainable agriculture; and Goal 6—Ensure availability and sustainable management of water and sanitation for all have direct implications of food security and sustainable management of water resources, including irrigation water.

Further, the Government has undertaken institutional reforms in the irrigation sector that has culminated in the Irrigation ACT 2019. This ACT repeals the Irrigation Act (Cap.347 of 1966), which established the NIB and creates a National Irrigation Authority (NIA) with the mandate of regulating, promoting the development, and effective management of irrigation services in Kenya. This strategic plan shall, therefore, prepare a firm foundation for NIA to shift to the new roles and responsibilities, as contemplated in the ACT. Figure 1 provides an integrated framework for addressing sustainable irrigation development and management and capacity development areas. The framework provides an understanding of the mandate and role of NIA in the sustainable development and management of irrigation sector in Kenya. These roles and responsibilities include ensuring sustainable irrigation development, irrigation water harvesting and storage, coordinating irrigation management, undertaking irrigation oriented research, conducting monitoring and evaluation. The capacity development responsibility of NIA include project development and management, governance, resource mobilization and financial management and guidelines, enhancing the human resource capacity and enhancing partnerships and collaborations in the provision of irrigation management services. Further, it shows the expected development impacts for food security and national prosperity.

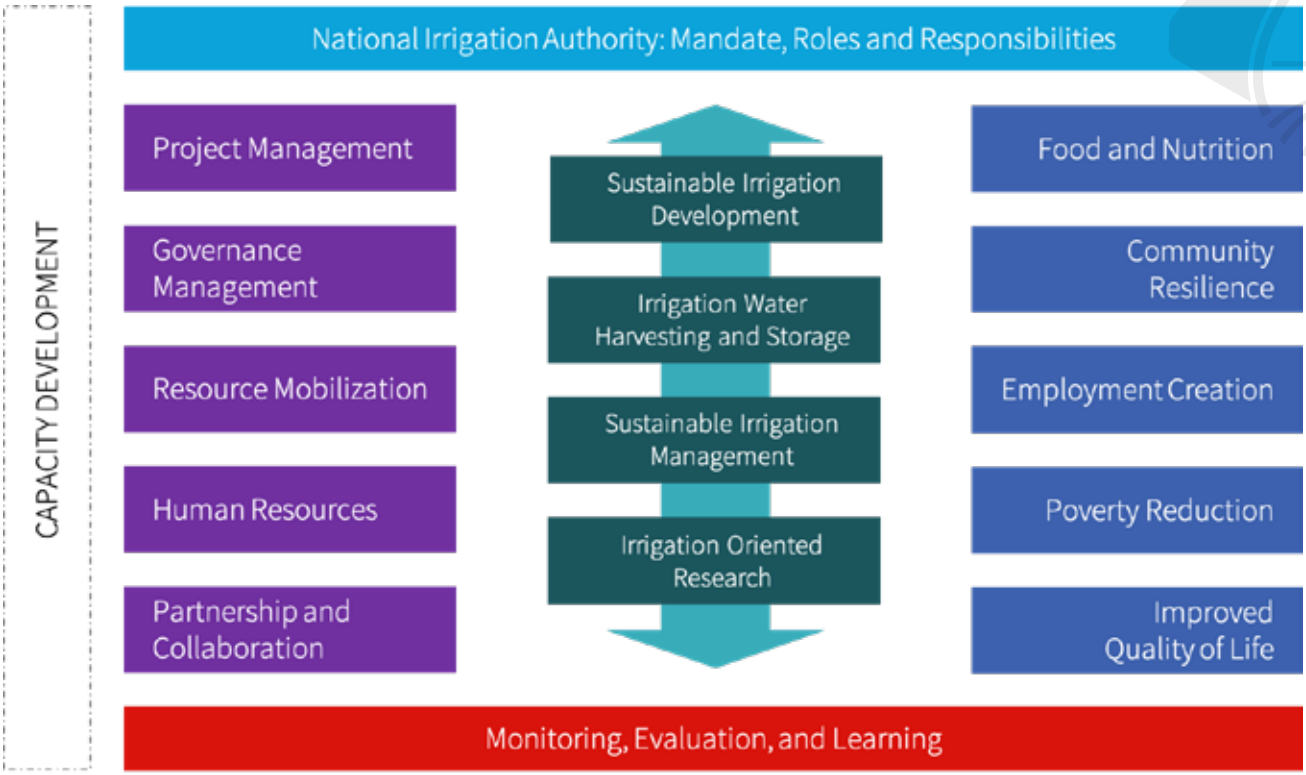


Figure 3: Sustainable Irrigation Development & Management

The specific role of the NIA strategic plan in the next five years (2019-2023) will facilitate the competitiveness of the sector in Kenya in the following areas:

a) Provide an effective framework for sustainable irrigation project design and implementation

b) Ensure optimal yet sustainable utilization of installed irrigation capacity

c) To provide a mechanism for strengthening (capacity building) and provision of irrigation development services of farmers and IWUAs and other players and;

d) Providing a model for resource mobilization and the financing of the irrigation services for NIA;

e) To provide a mechanism for enhancing effective coordination, linkage, collaboration and partnership for the promotion, development, and implementation of irrigation and drainage services;

f) Run research and innovation programme to increase effectiveness and efficiency of irrigation in response to emerging issues.

g) To strengthen the processes, human capital, governance and management systems of NIA

h) To provide a framework for undertaking effective monitoring and evaluation by NIA.

i) To improve the mechanism for irrigation sector information management for effective decision making and coordination;

1.6 Methodology of the Strategic Plan Development

In order to achieve the expectation of the strategic plan, the process involved undertaking detailed organizational and institutional capacity assessment aimed at developing a comprehensive understanding of the strategic issues affecting NIA and the irrigation sector, globally, regionally, and nationally. This involved analyzing both the internal and external operating environments to reveal the NIA's internal Strengths and Weaknesses and the irrigation sector's Opportunities and Threats (Challenges).

In order to inculcate good governance and corporate culture as well as conforming to the constitutional requirements for stakeholder participation and involvement, the process undertook a series of consultative meetings with key stakeholders of NIA and the irrigation sector involving a series of in-depth personal interviews and meetings, Focus Group Discussions, Key Informant Interviews, and workshop presentations. Some of the stakeholders consulted include Board members of NIA, Top Management team of NIA, staff members of NIA, NIA regional and scheme staff members, irrigation farmers (IWUA members) in selected irrigation schemes and projects. Also consulted are members of County Government of Baringo and Kirinyaga. The consultations further covered sampled NIA irrigation schemes and projects: Mwea, Bura, Muringa Banana, Perkerra, Katilu, Ahero, Nyangera, Lower Sio, Ndula Magogoni, Gachoka, and Machakos Green Houses.

Further, the exercise also involved undertaking the review and analysis of secondary data (documents review) that provided valuable perspectives on the best practices and benchmarks in the sustainable irrigation and drainage services management in Kenya, Africa, and globally. Some of the documents reviewed have provided insights in the following: strategic direction for irrigated agricultural sector development in Kenya and Africa, effective policy and regulatory framework guiding irrigation sector development, strategies for the modernization, intensification and development of sustainable irrigation production systems, support and capacity building for IWUAs, promotion of commodity chains and agribusiness development, and institutional development among others.

An internal assessment conducted was aimed at evaluating the adequacy, comprehensiveness, effectiveness of organisational structures, systems, organizational resources, and procedures; operational challenges facing NIA. Some of the areas covered by internal analysis include performance management, monitoring and evaluation, quality management, governance, organization culture and administration, human capital management, project design and management, procurement, irrigation support and development services, records management, administration, internal audit and risk management among others. The process culminated in the development of the Situational Analysis Report, which was validated by the NIA management team and culminated in the development of strategic issues and formulation of strategies.

1.7 Principles of Sustainable Irrigation Services

According to studies conducted by the Asian Development Bank (ADB) and the World Bank, successful irrigated projects commonly share the following features:

1. Improve agricultural productivity and performance: Good irrigation projects should aim at improving agricultural productivity and increase crop yields and cropping intensities.
2. Legal and Institutional Frameworks: Sustainable and competitive irrigation sector requires an enabling environment that allow farmers to supply the demand for their produce. This include the following: (i) a policy and institutional framework that promotes sound integrated water resource management; (ii) a legal framework for water user associations that promotes cost recovery at least sufficient to finance sustainable O&M; (iii) rural infrastructure (e.g., roads that allow farmers to market their products, and farm inputs to be delivered when they are needed); (iv) efficient markets that are free of price distortions and barriers to competition for both farm products and agricultural inputs; and (v) access to information on demand, prices, and technology.
3. Partnership and Collaboration: Long-term involvement by Implementing/Executing Agency in irrigation sector and building up effective partnerships with farmers, communities and other stakeholders over time contributes to project success, policy reform, and the development of institutional capacity.
4. Building commitment and ownership: The strategies employed by the Executing Agency should lead to long term commitment and ownership. Some of the indicators indicating commitment and building support include (i) establishing site-based project offices; (ii) well-qualified staff; (iii) selecting Implementing Agency personnel involved in earlier projects; and (iv) financing a considerable share of project cost.
5. Project Design and Management: Good quality at entry reflected by the quality of the feasibility study and project design, incorporation of lessons from prior projects, and the level of stakeholder participation.

6. Stakeholder Involvement and participation: Direct stakeholders and beneficiaries involved in all project phases, particularly O&M. Participatory techniques used to develop a sound understanding of the roles and responsibilities of farmers and water user associations and to create a climate in which participants were willing to pay irrigation fees.
7. Equitable irrigation water supply within the catchment area: Adequate water supply reached tail-end users, which are usually small farmers.
8. Dynamism and Flexibility: Making judicious changes in project designs during implementation contribute to achieving good project outcomes.
9. Principles of Quality Management: Effective quality control systems for civil works and internal and external audit systems put in place, even in remote areas.
10. Institutional Capacity Development: During implementation, continuous attention paid to building the systems needed for effective Project Operations and Management and Monitoring and evaluation.

PART 2

SITUATIONAL ANALYSES

2 PART TWO: SITUATIONAL ANALYSES

2.1 Global and Regional Perspectives of Irrigation

Agriculture is one of the major social and economic sectors in Africa since farming accounts for two thirds of livelihoods and food for two thirds of poor people's household budget (Africa Progress report, 2015). The consequence is that improved people's wellbeing depends for a major part on the performance of the agricultural sector in Africa. Still today and despite rapid economic growth in Africa over the past years (more than 5 percent in many countries in Sub-Saharan), the performance of agricultural sector is low and hunger continues to be a risk, in particular in the Horn of Africa and Sahel region. Rural vulnerability, low resilience to climatic effects and poverty are still deep in rural areas and nutrition is poor. Agricultural transformation is needed in Africa to address these challenges and irrigation is one pillar to contribute to such transformation.

Generally, agriculture faces complex challenges in the near future between now and 2050 to satisfy an estimated world population of 9 billion. According to United Nations (UN) statistics, the world's population is growing by 80 million people a year and expected to reach 9 billion by 2050. Population growth, urbanization, industrialization and increases in production and consumption have all generated an ever-increasing need for fresh water. By 2030, the world is predicted to face a 40% global water deficit. Competing demand increases the risk of localized conflicts and will lead to increasingly difficult in access to water for sustainable irrigated agriculture development.

Expanded irrigation development and improved water management are keys to increasing production, under water scarcity conditions. In Africa, and specifically Kenya, water scarcity has three dimensions: scarcity of water quantity and quality, scarcity of water infrastructures and scarcity of services and capacities. The present situation shows that water withdrawal per capita is still low and water withdrawal for agriculture is also low. The potential of the total internal renewable freshwater resources in Sub-Saharan Africa in 2013 were estimated to 3,857 billion m3, and water withdrawals are only around 189 billion m3, which is 18 percent of internal resources.

Agricultural water use accounts for 31 percent of total water withdrawals and less than 2 percent of the potential resources. In East Asia where agriculture is developed, the potential is less than in Sub Saharan Africa (1,982 billion m3), water withdrawal is 51 percent, and agriculture is the largest user (91 percent of the water withdrawal). Similarly, in North Africa and South Africa as a result the food security status has stabilized over the years and farmers are generating wealthy.

2.2 Context and Status of Irrigation Development and Management in Kenya

Kenya has 582,000 km^2 of landmass out of which only 17% is of medium to high agricultural potential with rainfall higher than 700 mm per year and thus suitable for rain-fed agriculture. The remaining (83%) Arid and Semi-Arid Lands (ASAL) and typically characterized by low (100-1,200 mm per annum) and erratic rainfall, high evapotranspiration rates and generally fragile ecosystems and cannot reliably support agriculture. Moreover, rain-fed agricultural production system is subject to erratic rainfall and recurrent droughts, leading to low agricultural sector performance. This includes low resilience of rural people to climatic effects, irregular production and low productivity, low intensification and crop diversification, and weak value chain and market development. It is becoming increasingly clear that with increased population and pressure on arable land, the typical smallholder farmer under dryland conditions cannot even provide for his own family's subsistence.

Future growth and development of the agricultural sector will rely on developing the 83% land that is ASAL as well as intensifying production in the high potential/ arable/ highland areas through irrigation. Irrigation development is a viable option for increasing agricultural production and hence reducing prevalence of poverty through employment creation and improved food security. Kenya has an irrigation potential of 539,000 ha (based on available surface water) and a drainage potential of 600,000 ha. This potential can be increased substantially with enhanced surface water storage and exploitation of the ground water potential. Out of the total potential, only 105,000 ha (19%) has been developed for irrigation.

2.3 Irrigation Typologies in Kenya

Within the formal irrigation, there are four major types of irrigation schemes that are grouped according to their ownership (private or public):

Private irrigation schemes:

- Community-based: small and medium farmer-managed schemes belonging to groups of farmers sharing a common irrigation system operating as irrigation water users' associations (IWUAs), cooperatives or self-help groups. There are about 3 600 smallholder irrigation schemes covering around 43 percent of the total area under irrigation. They produce the bulk of horticultural produce consumed in Kenya, appreciable amounts of export crops, grain staples and tubers. Examples include South West Kano, Mitunguu, Lower Nzoia, Chala, Lower Kaya, Oluch Kimira among others. They often experience poor mobilization and participation. Under this cluster, there are numerous farmer-led irrigation systems where farmers decided on the source of water, method of abstraction, application method and crops to be grown. These are primarily dominated by use of portable pumps. Such irrigation is the result of the individual and collective efforts of farmers rather than a project of the state, development partners, or large-scale private investment. But these farmers and their innovation and expansion in irrigation practice are often 'invisible' or illegal in official policy spaces and legislation
- Commercial farms: can be individual or firm irrigation schemes: cover about 39 percent of area under irrigation. Most of them utilize modern irrigation technology and produce high-value crops for the local and export market, especially flowers and vegetables. Examples include Del Monte, Kakuzi, High grown and Equator Flowers.

Public owned irrigation schemes: covering the remaining 18 percent; they are large-scale ranging from 800 ha to 12 000 ha each:

- National schemes, such as Mwea, Ahero, Perkerra, West Kano, Tana, Bunyala and Hola, which are managed by the National Irrigation Authority (NIA). In some national schemes, the government manages the schemes jointly with farmers' organizations such as WUAs through irrigation management transfer programmes.
- Institutional schemes, such as the Galana Kulalu irrigation scheme, managed by Regional Development Authorities (RDAs), Agricultural Development Corporations (ADC), the National Youth Service (NYS), prisons, universities and colleges.

Notably, other than the institutional schemes, all the other irrigation interventions are managed singly by farmers or jointly by both NIA and farmers under the participatory irrigation management framework.

2.4 Irrigation and Drainage Potential in Kenya

Agriculture in Kenya is mainly rainfed. Irrigated agriculture accounts for only 2.4 percent of the cultivated area, but contributes 3 percent to the GDP and 18 percent the national agricultural production. It employs about 3 million people: 900 000 directly and indirectly in public schemes, over 2 million in community-based schemes and around 82 500 in commercial farms. In the past, irrigation development not only aimed to secure and stabilize the food supply in face of droughts and to provide employment, but also to provide settlement for the landless when (re)distributing the equipped land.

The irrigation potential of Kenya has been estimated between 353 060 ha and 1 341 900 ha depending on the sources (Table 1). The highest potential of 1 341 900 ha assumes additional storage and improvement in irrigation efficiency and includes between 250 000 ha and 600 000 ha of floodplains that could be irrigated if equipped. The medium potential of 539 500 ha, of which 75 percent is located in Tana and Lake Victoria Catchments does not always take soil suitability into consideration.

Water Basin Catchment Areas	Irrigation Potential HIGH (WRA) (ha)	Irrigation Potential MEDIUM (NEMA) (ha)	Irrigation Potential HIGH (MWD) (ha)
Lake Victoria	327,219	200,000	180,000
Rift Valley	84,200	64,000	52,500
Athi River	295,956	40,000	-
Tana River	566,995	205,500	111,100
Ewaso Ng'iro North	151,730	30,000	9,460
TOTAL	1,341,900	539,500	352,060

Table 1: Irrigation Potential Estimation

Sources: FAO AQUA STAT 2016

Compared to other countries, the rate of irrigation development in Kenya has been very low at about 0.5% p.a. Irrigation development for the years 1985, 1998 and 2005 was 52,000 ha, 87,350 ha and 105,800 ha respectively. Most of Kenya's water originates from its five "water towers": Mau Forest Complex, Aberdare range, Mount Kenya, Mount Elgon and the Cherengani Hills. They are the largest montane forests in the country and form the upper catchments of the main rivers in Kenya (except Tsavo river flowing down Mount Kilimanjaro). There are six main catchments in the country, used as unit for the water resources management by the Water Resources Authority (WRA):

- Lake Victoria North Catchment Area (LVNCA), covering 3.0 percent of the country
- Lake Victoria South Catchment Area (LVSCA), covering 5.0 percent of the country
- Rift Valley Catchment Area (RVCA) which includes the inland lakes, covering 22.5 percent of the country
- Athi Catchment Area (ACA) stretching up to the coast, covering 11.5 percent of the country
- Tana Catchment Area (TCA), covering 21.7 percent of the country
- Ewaso Ng'iro North Catchment Area (ENNCA), covering 36.3 percent of the country

The water distribution in the drainage basins is uneven with, for example, 282 600 m^3/ km^2 in Lake Victoria basin, or over 750 m^3/year per capita and 21 300 m^3/km^2 in the Athi Catchment, or 162 m^3/year per capita (WRA, 2011). Inland water bodies, mainly nine large lakes, cover 11 230 km^2. Most of them are saline, with the exception of the lakes Victoria, Naivasha and Baringo. The lakes Nakuru, Naivasha, Bogoria, Baringo and Elementaita, as well as Tana River Delta, have been declared Ramsar sites of international importance for the conservation of biodiversity, totaling over 265 000 ha.

Internal renewable surface water resources are estimated at 20 200 million m^3/year and renewable groundwater resources at around 3 500 million m^3/year, but 3 000 million m^3/year is considered to be overlap between surface water and groundwater, which gives a value of total internal renewable water resources (IRWR) of 20 700 million m^3/year (Table 3). Out of this resource, only 4.7 billion m^3 is used annually. The bulk of the unutilized water then flows into the ocean and other water bodies within the catchment area. This then indicates the need for construction of water storage reservoirs to increase access to water for agricultural production and other uses.

The country has large and medium dams (> 15 m) is about 24 800 million m^3, all for hydropower and urban water supplies (and do not include irrigation) and about 4,100 small dams and water pans giving a total water storage capacity of 184 million m^3 for all uses, equivalent to 5.3 m^3 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. Lastly, the ASALs which are in most need of irrigation is poorly served by streams, rivers and lakes. Further, the annual rainfall, even in the driest parts of the country remains an untapped water source which could be used for irrigation if it were harvested and stored. Therefore, the scarcity of irrigation water in Kenya has more to do with failure to develop available resources than absolute lack of water.

There are six hydro-geological formations, which influence the distribution and availability of the groundwater resources: The volcanic and quaternary geological formations are rich in groundwater. The country's safe yield of surface water has been assessed at 7 400 million m³ per year while that of groundwater is about 1 000 million m³ per year. However, this figure needs to be reviewed with the new aquifers identified in 2013 in Turkana country, and in particular with five deep high capacity groundwater reserves accounting for about 250 000 million m³. Among those, the Lotikipi aquifer, west of Lake Turkana, is estimated at over 200 000 million m³ of water and the small Lodwar basin aquifer that could serve as a strategic reserve for Lodwar, regional capital of Turkana county.

2.5 Expansion of irrigation and Infrastructure Development

Irrigation development includes physical expansion, rehabilitation, and improving the productivity of irrigated enterprises, diversification and value addition, all of which require some level of infrastructure development. At current investment rates, the country has been achieving a growth rate of less than 5%, equivalent to about 5,000 ha per year of additional irrigated area. This has mainly been due to the low financing levels towards the sector. This growth rate is very low compared to the target of an average of 40,000 ha per year, needed to meet the targets set in Vision 2030 and the development of at least 800 ha (2,000 acres) per constituency introduced in parliament and which the Ministry is expected to implement immediately. The development of irrigation requires hardware and software among other services including infrastructure development. Generally, infrastructure development is costly and has been the role of the Government especially for major engineering works. The private sector, including individual farmers and NGOs, has also facilitated infrastructure development, especially for farm-level equipment.

2.5.1 Operations and Maintenance

Operations, management and maintenance of irrigation is concerned with day-to-day activities as well as problem-solving issues affecting a part or the whole scheme/project. These services require expertise and finances to enable payment of water use fees, purchasing of spare parts, fuel and other fixtures as well as for hiring labour and experts for specialized activities. Previously, the Government employed many artisans and technicians, and provided spares on public schemes. However, since the late 1990s (after public reforms and restructuring), the Participatory Irrigation Management (PIM) has been effected in almost all national schemes to facilitate the gradual transfer of O&M responsibilities through their respective IWUAs while for smallholder schemes O&M has been the responsibility of the farmers through their respective IWUAs. This area has remained a strategic concern for the sustainable development of the irrigation sector in Kenya. As witnessed during the field visits, some schemes have fallen to a state of disrepair because of minimal of lack of operation and maintenance efforts. O&M is also closely linked to irrigation water management to meet crop water requirements of the enterprise under production. There needs to be suitable knowledge on the water requirements that should be met by the irrigation system installed.

2.5.2 Agricultural Enterprises in Irrigated Agriculture

The Agriculture Sector Transformation and Growth Strategy (ASTGS) envisions strategic agricultural development to be "innovative, commercially-oriented and modern agriculture sector". ASTGS has identified among others, the improvement of water management and irrigation development especially for development of Northern Kenya and ASALs.

Irrigated Crops account for only 1.7% of the total cultivated area, but accounts for 36% of the value of all agricultural produce. The proportion of crops produced under irrigation has increased steadily over the years, with horticultural produce now contributing 60% of the value of exported agricultural produce. However, Kenya's agriculture is dominated by small-scale farmers who account for 75% of the total agricultural output, 70% of marketed agricultural produce and 20% of exported produce. Thus, the greatest gains will be made by improving irrigation and water management in smallholder irrigated agriculture. The ASTGS has identified the 13 value chains to be to be prioritized against 100 value chains in Kenya. It also lays emphasis of formation of strong farmers' organizations that will facilitate a contract farming approach the may be escalated to include agro-processing initiatives. The strong farmers' organizations hold the key to optimal utilization of irrigation infrastructure and enhance earnings for farmers from irrigated farming.

Livestock plays an important economic and socio-cultural role among many Kenyan communities. Livestock sub-sector contributes 10-12% to the GDP and 40% to the agricultural GDP. Furthermore, it employs 50% of the agricultural labour force. The livestock industry is the largest user of land in the country, occupying up to 47% of the total agricultural land area. Cases of occasional conflicts between the pastoralists and the irrigation farmers especially in ASAL areas during the severe drought have occurred. The inclusion of livestock in integrated irrigation development will improve both quality of the animals and profitability of irrigation enterprise.

Fisheries are an important source of food, nutrition, employment and cash incomes. Fish production in Kenya comes from aquaculture and capture fisheries. However, only about 7% of the fish harvests in Kenya come from aquaculture. Combining irrigation with aquaculture has remained a largely untapped resource, which could support the fisheries industry and yield multiple benefits to farmers.

2.5.3 Value Addition, Marketing and Commercialization

Kenya is uniquely placed to take advantage of expanding the domestic, regional and international markets. Due to diverse agro ecological zones in the country, a wide range of temperate, tropical, and sub-tropical products can be produced. But 40% of agricultural production in Kenya is lost through poor post-harvest handling and storage. Value addition reduces these losses and has the potential of providing producers with income generating opportunities. Market liberalization has opened possibilities for farmers to engage in value addition and target niche markets. The irrigation sector operates in a changing environment in which the demands for the sector services and products change regularly with technology, tastes and globalization. Improved technologies will add competitiveness to means of production and improve productivity.

2.5.4 Environmental Issues

Irrigation development has environmental implications on the soil, flora, fauna and human ecosystems which can have long-term impacts, and therefore, safeguards must be instituted in new and existing schemes. The Environmental Management and Coordination Act (EMCA) of 1999, stipulates the regulations regarding environmental protection and has also outlined the applications of the 'Polluter-pays principle' and public health considerations.

A major challenge for Kenya is the continued dwindling of the forest cover which currently stands as 2% of total land. This has been due to unplanned excision of forest land for settlements and excessive harvesting of trees without replanting of forests. This has resulted in loss of catchment protection, increased soil erosion, flooding, and generally, hydrological imbalances. Whereas irrigation usually targets areas devoid of forest cover, the impact of the sector has been, and should be generally positive towards increasing agro - forestry and especially fruit trees. This is especially crucial for the sustainability of hydrological balance in water catchment areas, from which irrigation water is obtained.

2.6 Financial and Resource Mobilization

Irrigation development and management entails difference cost items. The irrigation development phase includes project identification, feasibility studies, detailed design and construction of irrigation infrastructure. The construction may be expansion, rehabilitation or construction of new infrastructure. The infrastructure spans from water storage facilities, abstraction points, water conveyance and distribution systems, water control systems, drainage systems, farm access roads and management facilities. Notably, these being engineering investments, the capital expenditure is high. It is estimated that the cost of developing one acre ranges from Kshs 200,000 to Kshs 450,000 depending on the irrigation system adopted. Currently NIA has been using government grants from either exchequer or development partners to invest in the irrigation infrastructure.

The other major cost item is operations and maintenance of the irrigation systems. This by design is supposed to be borne by the farmers under the participatory irrigation management framework. This is the case with the community managed irrigation schemes however due to low capacity, the operation and maintenance function in these schemes is limited resulting in a state of disrepair of the infrastructure necessitating the need to government intervention to rehabilitate the infrastructure. On the other hand, the farmers in public irrigation schemes pay operation and maintenance fees to NIA to operate and maintain the primary and part of the secondary irrigation infrastructure. The funds collected are utilized to fund civil works and meet the cost of water management personnel and allowances for farmer's leaders. The current rates charged were set in 2003 and have not been reviewed despite the enomous increase in the cost of providing the service marked by increase in fuel and labour charges among others. Thus, NIA has been subsidizing farmers in the provision of O&M services particularly the pump driven irrigation systems by meeting the cost of electricity and fuel. NIA has also been undertaking elaborate rehabilitation initiatives in the schemes to ensure that the infrastructure is in good condition.

NIA runs research programmes to plug the gaps identified during irrigation development and operations. The current research focuses on crop trials, irrigation regimes and trials of inputs and crop husbandry method. This is done majorly through collaborative efforts with other research agencies, product suppliers and universities. There has been limited research on engineering and operation aspects of irrigation systems. This will require proper funding to contribute towards advancing the irrigation technologies.

Lastly, to run execute these activities requires an elaborate and robust institutional system comprising of Authority expenses, human resource, equipment, offices, facilities, ICT systems, insurances, utilities licenses/permits/rents and fees. This is funded by the recurrent budget allocated as government grants by government. However, the recurrent budgetary allocation has perpetually not met the NIA requirements. Kenya government recognizes the key role played by agriculture and irrigation development in enhancing the gross domestic product and as such allocates considerable amount of money on fiscal year basis to NIA. The funds allocated are from exchequer or from development partners.

2.7 National Government Funding.

In the spirit to achieve big four agenda of enhanced food security and improved health care, the national government has continued to demonstrate the important contribution by irrigation sector through committing additional financial support for its expansion and development. For instance, in the 2017/18 financial year, KSh2.2 billion was allocated to Galana-Kulalu Irrigation Scheme alone. There was also an overall improvement on support for Irrigation Development from Kshs 245.0 Million in FY2016/17 to Kshs 480.0 Million in FY 2017/18. The National Irrigation Authority (formerly NIB) expenditure allocation was also increased from Kshs 5,860.0 Million in FY2016/17 to Kshs 5,893.3. Million in 2017/18.

Currently, NIA is mainly funded by the exchequer which entails development, presentation and negotiation of projects with national treasury for annual support. The amount of funding varies on annual basis and is influenced by various factors that include economic performance, priority weigh on irrigation and development, lobby processes among others.

2.8 2.6.2 Internal Revenue Generation.

NIA realizes some revenue from its operations through collection of O&M from farmers. However, the O&M recoveries vary from scheme to scheme. The internal revenue generation is not reliable source of funding and a lot needs to be improved to achieve higher targets. Collection of operations and management (O&M) fee from scheme owners is not well anchored on legal frameworks. New innovative measures shall be required to improve the performance of the O&M framework.

Further, rice millers Rice mill enterprises, for instance at Ahero) is not generating adequate income to support its operations and also to be able to compete in the rice sector. Some of the factors leading to uncompetitive nature of the rice milling business include:

- Rigidity in prices changes to suit market buying and selling prices and lengthy procurement procedures.
- Lack of day to day supervisor and sometimes loose business orientations employed
- Use of old and outdated rice mills hence leading to higher operating costs. The costs of repair is exorbitant and quite often the mills remain dormant for some days.

There is, thus, need for reassessing the management/business model in the operations of the Rice Mills at Mwea and Ahero irrigation schemes (i.e. Commercialization, privatization, etc.).

2.8.1 Support from Development Partners

In general, both multilateral and bilateral institutions provide support for irrigation in Kenya. This is especially the case with capacity building and technical assistance in the establishment and management of small and large irrigational systems. NIA implements donor funded projects and the NIA staffs have the technical capacity to undertake fundraising and with appropriate skills development this can improve the fund stream. The main donors for the NIA projects included; World Bank, Japan International Cooperation Agency (JICA), The Arab Bank for Economic Development in Africa (BADEA), (Organization of the Petroleum Exporting Countries (OPEC) and KFID, among others. Among bilateral institutions, JICA is involved in supporting irrigation systems, especially in the production of rice. Through these projects, JICA facilitates the upgrading and modernization of major irrigation systems, improvements in local canal systems in reducing waste through evaporation, establishments of water users' associations such as farmers (to enhance participatory decision making processes in the utilization of water resources) and training of irrigation players in the management of water resources. In this regard, JICA provides water resource- related experts as well as equipment (such as vehicles and computers) in order to achieve its objective of efficient and equitable utilization of water from rivers. JICA's projects are designed to enhance the resiliency of farm communities in times of draught through the use of irrigation. These are strategic partners that NIA can develop long term relationship and partnership for the development of irrigation sector in Kenya. There are many other development partners who have shown interest in financing irrigation development in their county papers such as

AfDB, USDA, Kuwait Fund, Green climate fund and many more. NIA however lacks a structured resource mobilization framework to bring depth in fundraising for projects.

NIA will continue to tap into these existing sources while strengthening linkages to tap into other potential funding partners and sources to meet the Strategic Plan needs in the period 2019-2023. However, there would be need for the establishment of a dedicated resource mobilization office to coordinate finance and linkages liaisons.

2.8.2 Public Private Partnerships

The heavy investment in irrigation requires involvement of potential stakeholders and partnerships with the private sector. Currently, the largest part of investment in large scale Irrigation systems comes from public sector. For small scale, it is essentially individual or community level financing with public subsidies for main infrastructures and heavy maintenance (water storage reservoirs, deep wells, main water supply scheme). The sustainability of current irrigation systems needs to be strengthened through strong Public, Private and Partnerships (**PPP**).

In Kenya, many irrigated areas are managed without effective and viable cost recovery mechanisms. In the context of water scarcity, water use competition and low water use efficiency, irrigation sector needs to realize better performance in terms of water management, water use efficiency and irrigation monitoring at on farm level. Kenya lacks national water pricing strategy in irrigated water, and NIA has recognized this gap and the need for water pricing, partially to recover costs as well to encourage to water savings and to environmental protection.

Some of the lesson learnt from water demand management experience shows that deep reforms on irrigation sector, having big impacts on transforming agricultural sector include: refinement of the policy by introduction of water saving strategy, volumetric water accounting, water pricing, water use associations, and an environmental component to monitor and control water resources quality, strengthening decentralization, institutional autonomy and the partnership with private sector. Currently, NIA has limited PPP models but is able to raise resources through by negotiating subsidized services and collective bargain returns in contractual arrangements for provision of farm inputs and land preparation services for its farmers.

2.9 Status of the Human Resource Function

NIA has a fully established and functional Human Resources division operating under the department of Corporate Services. The division is manned by five staff members (three females and two males) and headed by a qualified and competent member who has worked in the public service for over ten years. The main functions of the HR Department include:

a) Developing and implementing human resource and development strategies, policies, and procedures

b) Staff recruitment and placement

c) Developing and managing Staff Compensation and Rewards

d) Developing and managing career progression and succession plans

e) Undertaking Performance Management and Appraisals

f) Managing employee relations and staff welfare

g) Payroll administration and records management

NIA currently has a total of 321 staff (88 technical and 234 support staff) across the various offices and divisions. This presents a wealth of skill and experience in undertaking irrigation and development across the country. NIA further collaborates with County and Ministry of Agriculture technical staff in irrigation and development matters which further enhances its impacts on capacity building both nationally and in the regions. The NIA's human resource function is currently being guided by a comprehensive Human Resource Policies and Procedures Manual reviewed in June 2018. The review was necessitated by the changes in the Constitution of Kenya 2010, Labour Laws 2007, and Human Resource guidelines developed by the Public Service Commission and Salaries and Remuneration Commission (SRC), as well as incorporating aspects of international best practices in HR management and practice. However, the reviewed Human Resource Policies and Procedures Manual (2018) was conducted without the organization undertaking comprehensive Human Resource Audit for the HR department. Like any audit, the Human Resource Audit is a systematic formal process, which is designed to examine the strategies, policies, procedures, documentation, structure, systems and practices with respect to the organization's human resource management. It systematically and scientifically assesses the strengths, limitations, and developmental needs of the existing human resources from the larger point of view of enhancing organisational performance.

A periodic Human Resource audit can qualify its effectiveness within an organization. Human Resource audits may accomplish a variety of objectives, such as ensuring legal compliance; helping maintain or improve a competitive advantage; establishing efficient documentation and technology practices; and identifying strengths and weaknesses in training, communications and other employment practices. The human resource audit is based on the premise that human resource processes are dynamic and must continually be redirected and revitalized to remain responsive to the ever changing needs. The HR Audit would help NIA establish how well its HR function is complying with the requirements set by Kenyan laws regarding employee relations and identification of areas that need improvement. Further, the HR Audit of the department may also provide guidance in the review of HR policies and procedures and determine areas that require removal, updating, or further strengthening.

NIA conducted its job evaluation in December 2012 with an aim of facilitating the reorganization of NIA, analysing its staffing levels, job grading structure, salary structure, job descriptions and specifications, and skills inventory. A series of consultancy services have been engaged by NIA in order to acquire professional approach to reconstituting the organization. The results of the recommendation have further gone through a process of review and adaptation by the State Corporations Advisory Committee and SRC. However, it is not clear in the job evaluation report on the job (compensable) factors chosen and the design of the job rating manual used in scoring and guiding job classifications (grading). However, these changes were taking place when NIA was undergoing through a period of disruptions and internal realignments with the changes initiated by the Constitution 2010 and accompanying reforms in the general water and irrigation sectors. Apparently, the changes undertaken are yet to comprehensively address the HR challenges NIA is currently experiencing.

NIA has developed career guidelines (2018) with an aim of providing a well-defined career structure to attract, motivate and facilitate retention of suitably qualified and competent staff in the organization. The guidelines also provide the framework for promotion and advancement in the organization. However, this is yet to provide a positive outcome for NIA since most employees appear not happy with the rate at manner at which promotions are handled in the organization. But this situation may appear tricky for the HR since there is a pool of staff members who are qualified for promotions but the vacancies are quite limited. The situation has apparently led to some former staff members leaving out of the organization looking for opportunities with better terms and conditions of service elsewhere. However, for promotion to take place, there must exist a vacancy, and the vacancies are quite rare due to

limited opportunities for vertical movement. This would thus require for HR innovative approaches to address the motive for promotion. However, this can only work better in the context of an existing effective Human Resource Strategy, which is yet to be developed by NIA.

NIA is yet to conduct a comprehensive institutional capacity assessment and Human Resource Strategy, as recommended in the job evaluation report of 2012. The absence of such a report makes it challenging for NIA to know and harmonize its organizational design, both at the head office and at project levels, at human resource requirement – in terms of quantity and competencies. This has led to the current situation in which there are significant imbalances in terms of human capital and resource requirements at head office and at scheme and project levels. However, this situation can only be addressed once the Corporate Strategy and Strategic Business Unit (Scheme Based) Strategy is finalized and approved.

NIA has developed training policy as contained in the NIA Human Resource Policy and Procedure Manual. The policy contains the philosophy and objectives underpinning the training and development function at NIA. A training needs assessment was conducted in 2014, in which individual training needs were identified and reported. A number training areas comprising both technical and management knowledge areas were identified. Some of the key areas identified for training include performance management, team building, monitoring and evaluation, knowledge management, documentation, communications skills, and partnerships and networks. Other include design, construction, and maintenance irrigation, coaching and mentoring, and time management among others. However, the report does not contain the annual training plan. Further, the consultant is yet to get the training report detailing the short term and long term impact of the training for NIA. This impact assessment is very important as it would provide the evidence as to whether training is a cost or an investment to NIA.

One of the core roles and responsibilities of NIA is to conduct capacity building for IWUAsS. However, the training and capacity building framework for NIA has not covered the IWUAs at the scheme and project levels. This aspect needs to be addressed by NIA at policy, procedure and operational levels. NIA makes use of interns as a significant component in service delivery at the institution. However, Human Resource Policy has no provision or statement on the issues pertaining to interns engaged at NIA, both at head office and at the NIA schemes. In the absence of a clear policy on the clear roles and responsibilities, it is left to the discretion of respective managers or officers on how to assign jobs/duties to the NIA interns. Cases have been reported where some interns handle very sensitive issues, including financial matters and records.

The NIA Human Resource Policy has provisions on performance management at the institution. The Performance Management Policy indicates an intention to put in place a comprehensive Performance Management System with clear targets, assessment and evaluation frameworks. These would require an integration and linkage with the performance contracting and performance appraisal system. However, the policy has not provided any clear method in conducting the performance appraisal. One of the current commonly used performance appraisal method is 3600 since it offers an objective and integrated approach to appraising an employee. In the absence of a clearly stated performance appraisal method, this is left to the discretion of the appraiser and hence becomes subjective, if a traditional (wrong) method is used. Further, in the absence of a Performance Appraisal Manual, with clearly defined performance attributes and measurement scale, then subject assignment to these attributes may prevail. For instance, attributes such as leadership, teamwork, communication skills, and analytical skills among other needs to be clearly defined as a form of standard measure.

It is not clear how the performance contracting role has been assigned the department of Research, Strategy, and Planning. There is need for clarity and harmony on how NIA integrates the institutional based performance and those relating to individual (employee) performance). This can be addressed when the NIA organizational re-design is being conducted in the process of reorganization to balance workload, span of control and functional harmonization and titles. Among other reasons, NIA appears to lack the capacity to implement some aspects of the HR policy hence leading to low morale and demotivated staff. For instance, a number of staff members have not been promoted even if they are due for promotions, including renewal of contracts for those staff members whose contracts have since expired. And there appears to be internal communication challenges as well since proper communications on their future status has not been made. There are no attached HR officers in most of the NIA schemes. HR and administration functions are handled by the scheme manager.

2.10 Review of NIA Strategic Plan 2013-2017

2.10.1 Background to the NIB Strategic Plan 2013-2017

The 2013-2017 period was marked by a series of rapid changes in the external environment, including the promulgation of the new Constitution 2010 followed by a raft of strategic changes in the agricultural, irrigation, water, and the general public sector institutions. Politics also played a significant in defining and influencing the

legal, policy, and institutional reforms are to be undertaken and the approaches used to restructure and reform them. The period also experienced continued implementation of the Economic Stimulus Package (ESP) whose aim was to promote rural development, enhancing food security, mitigating the adverse effects of climate change on agriculture, and creating associated opportunities for employment.

The 2013-2017 strategic goals and objectives were realigned with the agriculture sector programmes captured in the MTPII (2013-2017) and they cover six thematic areas, namely: Irrigation expansion and development; Water harvesting, storage, and abstraction; Research and innovation; Irrigation enterprise development; Modernization, optimization, and maximization and; Legislative, institutional, and operational capacity.

2.10.2 Performance of the Strategic Plan 2013-2017

2.10.2.1 Irrigation Expansion and Development

Undertaken an accelerated irrigation development and expansion involves strategically identified studies as to the feasibility of otherwise of the venture(s) along with designs, development of infrastructure in the target area for new projects and undertaking rehabilitation of existing irrigation infrastructure. These developments are further categorized as large, medium, and small irrigation projects, depending on the area of land covered.

Undertake Feasibility Studies and Project Designs

- Feasibility studies and detailed project designs completed and construction of civil works initiated.
- Completion of four (4) feasibility studies of large basin based studies that include Greater Bura, Turkwel and Kerio, Upper Nzoia, Daua river, Nyambote, Madasa, Tharaka Nithi, Taita Taveta cluster
- Undertaken the Development of Irrigation Infrastructure
- Construction of seven (7) new irrigation large scale projects in Bondo, Lower Subukia, Daua River Basin Lower Kuja, Ahero, West Kano, and Rahole.
- Intitaition of new and completion of medium and small-scale construction of projects in Kamoskoi, Mburia, Marodo, and Mogoyeit
- Construction of Bura rehabilitation project

The figure below provides a summary of this performance:

Increase area under irrigation by 404,800 hectares over the plan period	
ACTIVITIES	**EXPECTED OUTPUTS/KPI**
Undertake feasibility studies to put 202,400ha under irrigation in Galana and Kulalu	One prefeasibility study completed – 100%
Undertake feasibility studies and detailed designs to put 202,400ha under irrigation in other parts of the country	38 studies carried out by consultants and 156 by NIB inhouse team for expanded irrigation projects covering 510,000 acres (204,000ha) – 100%
Prepare detailed designs on land feasible for irrigation	38 studies carried out by consultants and 156 by NIB inhouse team for expanded irrigation projects all included EIAs covering

Figure 2 : summary of past strategic plan performance – objective one

2.10.2.2 Water harvesting, storage, and abstraction

- Completion of detailed designs for development of water storage reservoirs and commencement of construction works at Nyatike for River Kuja.
- Initiated six (6) new water storage reservoirs to stabilize water in irrigation schemes at Chebuskech, Bisanadi for Rapsu, Songa Dam, Mitunguu Dam, Mihango Dam, and Samburu Dam.
- Construction of seven (7) water storage dams at Radaat dam, Kieni dam, Thiba for Mwea, Mara and Lowaat dams.
- Construction of water storage pans and related irrigation infrastructure (Green house and drip kits) in Wajir, Mandera at Buramaiyo, Takaba, Brikan, and Fincharo.

The tables below provides a summary of this performance:

Increase area under irrigation by 404,800 hectares over the plan period	
ACTIVITIES	**EXPECTED OUTPUTS/KPI**
Construct irrigation infrastructure for 202,400ha in Galana and Kulalu	5,100 acres (2,040 ha) was equipped with irrigation infrastructure – 1%
Construct and rehabilitate irrigation infrastructure for 202,400ha in other parts of the country	127,969 (51,187.6ha) acres have been developed in irrigation programmes under NIB – 25%
Conduct baseline studies on the rate of expansion and development of irrigation	Baseline index on the rate of expansion and development of irrigation carried out – 100%

Figure 3 : summary of past strategic plan performance – objective two

Increase irrigation water storage holding capacity to 487 million m3 by 2017,	
ACTIVITIES	**EXPECTED OUTPUTS/KPI**
Feasibility studies and Detailed design for dams	10 studies carried out on identified dam sites Thuchi, Radat, New Gogo, Lowaat, Rwabura, Thirirka, Maara, Kitheno, Kithakanaaro
Construct water storage dams	Construction of Thiba dam ongoing 58 water pans constructed for irrigation and watering livestock
Construction of multipurpose dams.	9 dams under procurement

Figure 3 : summary of past strategic plan performance – objective three

2.10.2.3 Research and Innovation

Improved water use efficiency in selected irrigation schemes and projects through innovations in water use and the irrigation system (water released from the reservoir or canal head/water reaching the field); the field irrigated (water delivered to the field/water consumed by the crop); crop productivity (crop production per unit of water delivered to the field or system, kg/m^3); or economic crop productivity (economic value of crop production per unit of water delivered to the field or system $\$/m^3$).

2.10.2.4 Irrigation Enterprise Development

- Production support and creation of revolving fund for new schemes in ASAL areas.
- Management support services, including capacity building of farmers, research, communication, refurbishment of buildings, human resource systems.
- Training and follow-up activities dealing with farm financial management and limiting market risk to provide farmers guidance in terms of crop selection, planning of production, inputs use.
- Involvement of the scheme stakeholders hence creating an environment of ownership and commitment

2.10.2.5 Modernization, Optimization, and Maximization

- Improvement of cropping techniques through training and establishment of demonstration sites hence contributing to increased irrigation productivity and farmer's capacity and competencies in agronomy.
- In some schemes where there had been no or weak IWUAs, formation and training of management committee have been conducted.
- Infrastructure improvements have been undertaken, resulting in more equitable distribution of water among other benefits. In Mwea scheme, for instance, farmers have enjoyed an increase of 750 Kg. ha-1 to 1,250 Kg. ha-1 due to proper use of fertilizer and other crop husbandry techniques, in field block W3 (nicknamed 'Vietnam' after the water conflicts in 2002) the increase is more than 100 per cent. Some farmers who harvested less than 25 bags of rice per ha reported yields of more than 62.5 bags per ha due to improved water supply brought about by their IWUA. Farmers now receive water in one to two weeks' rotation to avoid crop losses.

- Another improvement was growing of more than one crop per year, especially in Mwea scheme, where only one rice crop was traditionally grown and the land left fallow the rest of the year. Farmers are now able to grow other crops immediately after harvesting the rice crop. Crops being incorporated on trial basis as part of rice rotation include soy beans, green grams, short season maize, sunflower, French beans, passion fruits, among others. The same trend exists in Naromoru and Kibirigwi schemes where new crops were introduced in order to increase farm profitability through improved plot use.
- In South West Kano, the strategic plan initiative has led to revival of the scheme after five years of not being in operation. The project has contributed to reduced canal siltation and unauthorized water diversions through training farmers and extension staff on water management. The training included land levelling for basins to improve on plot water use efficiency.

2.10.2.6 Legislative, Institutional, and Operational Capacity

- Implementing Galana Kulalu Food Security Project
- Managing 7 national irrigation schemes
- Developed 129 smallholder irrigation projects total area of 115, 780 acres
- Installed 714 greenhouses across the country
- Carried out feasibility studies and detailed designs for 48 projects covering 430,000 acres
- Feasibility studies and detailed investigations and designs have been carried out for 10 water storage projects with a combined volume of 1.35 billion cubic meters
- Advocated for the enactment of relevant legislations to enhance the institutional capacity of NIA to deliver irrigation services for Kenya (e.g. the Irrigation Act 2019). This is expected to expand the mandate of NIA beyond the national irrigation schemes and also provide NIA with the overall powers of coordinating irrigation activities in Kenya.
- NIA has 321 competent staff complement consisting 88 technical and 233 support staff able to deliver irrigation services in an efficient, effective, and productive manner.
- NIA has overtime developed new and strengthened existing systems to support day to day operations of the organization. For instance, developed HR policy, Quality Management Systems, trained staff, and developed framework for Corporate Communications among others.

2.10.3 Lessons Learned and Implications for Future Management of Irrigation Services

Irrigation, which has been a relatively neglected sector in Kenya for many years, is now picking up, with farmers receptive to attention, particularly when their voices are heard. Publicly financed irrigation and drainage investment projects have too often performed poorly. Sometimes the reasons have been unforeseeable or unavoidable. But in some cases, shortcomings were because, as planners, we gave inadequate consideration to institutional constraints or to the practical problems of subsequent implementation, or because there was insufficient commitment by the relevant implementing agencies or users to the developments proposed. Delay, dilapidation, waste of scarce water and adverse social and environmental impacts have been among the familiar consequences. Lessons have been learned from these setbacks, however.

This strategic plan shall benefit from this and other participatory planning approaches which have evolved, and are still evolving, to avoid future difficulties. Some of major problems that constrain the performance of NIA financed investment projects in the public sector schemes are:

- Inadequate consideration of institutional constraints and poor planning for implementation;
- Lack of commitment to the success of the project irrigation planners and users through use of Participatory Irrigation Management (PIM) practices.
- Poor project management (including M&E), both at implementation and thereafter, and poor operation and maintenance resulting from inadequate budget allocations. These core problems usually give rise to, or are accompanied by, a host of other technical, social and economic problems, such as: implementation delays and cost overruns; premature degeneration of civil works and equipment; unreliable water supplies, or over-irrigation, waterlogging and salinity; social problems, including problems of organization, equity, land tenure and gender exclusion; lower than expected output values, due to poor technical performance or reflecting over-optimistic price projections.

- Weak mechanisms for conducting due diligence, supervising, quality control, and coordinating the work of contractors.
- Weak frameworks for O&M
- Application of IWRM in irrigation services management
- Modernization of irrigation infrastructure and services to reduce the cost of maintenance
- Strong capacity development of IWUAs
- Strong collaboration and linkage with beneficiaries and partners
- Building internal institutional capacity for coordination and team work in project management

Hence, future action by NIA shall put emphasis on sounder formulation of irrigation and drainage investment strategies, improved conceptualization of project options, and building stronger participation and commitment into the detailed planning process.

2.11 Summary of SWOT Analysis for NIA

SWOT analysis involved evaluating NIA internal strengths and weaknesses and its external opportunities and threats. The aim of SWOT framework is ensuring that the strategy is based on a good fit between NIA's internal capability and its external situation. The results of the SWOT analysis are shown in Table 2 below.

2.12 Table 2: SWOT Analysis

STRENGTHS	WEAKNESSES/CONSTRAINTS
1. The Irrigation ACT 2019 gives NIA articulate recognition and the institution mandate to undertake overall coordination of irrigation activities in Kenya. **2. NIA has wide coverage/ decentralized and devolved and well established infrastructure and offices with irrigation projects in Kenya (about 250) and this provides a strategic platform of making an impact and contribution to food and nutrition security in Kenya.** **3. The experience acquired after over 50 years in the irrigation and drainage sector has made NIA acquired adequate competences in designing and implementing effective irrigation projects** **4. NIA partners and stakeholder, like farmers and donors, share enough common objectives and motivations to make them want to work together for the sustainability of the irrigation sector and address food and nutrition security in Kenya** **5. Strong and positive commitment and willingness among all cadres of NIA staff members to the core values and norms of NIA in the course of addressing issues as contained in its mandate.** **6. NIA legal foundation, as contained in the Irrigation ACT 2019, is based on the principles of IWRM as supported by UN and the Global Water Partnership to address SDG 6 and 17 design and implementation. This provides a**	1. Limited information management systems 2. High reliance on exchequer for funding 3. Limited public communication framework leading to reactive approaches to addressing pertinent issues affecting the corporate image of NIA. 4. Limited framework for implementing the mainstreamed approaches in gender, ICT, public complaints handling mechanism, customer relationship orientation, work environment, good governance and anti-corruption measures, and drug and substance abuse. The baseline data collected is not translated to formal programmes/plans with an implementation framework and monitoring, evaluation and reporting guidelines. 5. Absence of institutional assessment reports, capacity enhancement procedures, and HR Strategy 6. Inadequate policy and guidelines in undertaking M&E in the organization. Lack of an objective project design approach (like Log Frame Approach) 7. Some use of traditional methods of canal lining and other irrigation practices 8. Lack of formal approaches to addressing knowledge management, documentation, and dissemination of best practices and success stories in irrigation activities in NIA schemes and projects.

positive image of NIA in the eyes of the international community and development partners and hence can provide a platform for long term collaboration and resource mobilization for NIA. **7. The positive impact NIA has created in the seven public schemes provide the ground for NIA to justify its relevance and goodwill within and outside Kenya.** **8. The existence of Board with a multi-sectoral approach and diverse range of public and private sector experience provide a framework good corporate governance and diversity management in the institution.** **9. NIA good and agreeable physical work environment, both the head office and most of its regional and scheme/project offices. This is good for improved morale and workforce productivity** **10. The existence of committed, approachable, and competent management team and support staff members with sound knowledge and technical expertise of the irrigation and water services sector and its competitive landscape for growth and development.** **11. Favourable organizational (corporate) culture that supports client/customer-orientation, excellence, integrity, change and innovations.** **12. Sound financial and procurement policies and systems for internal controls, good governance and risk management** • **NIA is ISO 9001:2015QMS and ISO14001: 2015EMS Certified** • **Existing cordial relations with key development partners such as JICA, World bank and other**	9. Limited corporate branding to create, manage, and sustain an identity for NIA within the irrigation sector and connect with the audience (farmers and communities). 10. Limited automation of processes
OPPORTUNITIES	THREATS
1. The existence of good water sector governance framework through IWRM which advocates to sustainable water resource management in a collaborative, integrated, and cooperative manner. This leads to good synergy development in the management of irrigation services. **2. The existence of the Constitution 2010 and County Government Act 2012, which have laid the frameworks for transformative governance principles of transparency, accountability, participation and collaboration, and coordination of public sector services.** **3. Support from national and county governmentsA well-developed information and**	1. Insufficient policy coordination frameworks in the water, agriculture, and irrigation sectors hence leading to complex and siloed/compartmentalization approaches in the management of the sectors.. 2. Political influence and pressure leading to supply-driven approach in the implementation of some irrigation projects since principles of effective project design, demand driven, and sustainability are not duly taken into account. 3. Limited public sector financing due to competition from other social sectors of the economy and the meagre national and county government budgetary provisions on the irrigation sector, for both developmental and recurrent expenditure. In other

communication technology network in the country and among the irrigation players, hence allowing NIA to leverage on IT to develop stakeholder network and information sharing framework. **4. The need and support of the irrigation services is very well pronounced in both national and global planning agenda. This provides an environment for NIA to leverage of strategic resource to grow the sector and achieve the expected role in the food and nutrition security sector. This evidenced by the various water and agriculture sector reforms and plans that have been undertaken by the Government of Kenya.** **5. Global (UN and SDG) and regional (CAADP) platforms in support of irrigation sector initiatives for the improved food, nutrition, water security, and poverty reduction** **6. Existence of smart technology for use in irrigation sector and in remote communities for sustainable irrigation development.** **7. Existence of varied categories of stakeholders in irrigation sector, covering public sector, private sector, civil society organizations, and international organizations (JICA, World Bank, IFAD, etc.) and this can be used to tap synergy in the sustainable development of irrigation services in Kenya.**	words, the water, agriculture, and irrigation sector plans and policies are not matched with budgetary provisions for implementation and coordination. 4. Frequent changes in the key personnel in the sector in irrigation and water sectors hence leading weak institutional memory and strategic focus. 5. Widespread catchment integrated development challenges leading to increased levels of water insecurity, food insecurity, and environmental degradation among others 6. Negative effects of climate change and its implications to drought and flood management situation in the country. 7. Slow approaches in development and enactment of relevant water and irrigation sector based policies and plans. 8. Negative effects of climate change 9. Insecurity in some areas of the country 10. Conflicts over limited natural resources 11. Inadequate coordination framework between the county and national government over management of natural resources

Table 2; SWOT analysis

2.13 Stakeholder analysis

NIA stakeholders include; public agencies, national and county governments, development partners, private sector players, farming communities, individuals, members of the public, NIA Board and employees, suppliers of goods and services, research institutions, development partners, private sector, media, professional bodies, and academic institutions. These stakeholders provide opportunities for the board to enhance its efficiency and effectiveness in implementation of the strategic plan. In the next strategic plan dispensation NIA will increase engagements with all stakeholders as well as initiate support of potential stakeholders in a bid to successfully deliver the mandate. Further the board will continuously carry out stakeholder analysis on a regular basis in order to track changes in needs and ensure timely cooperation and support. A stakeholder analysis was undertaken to identify their roles/functions and expectations from NIA, as presented in Table 3.

Stakeholder Institution	Role in irrigation development	Expectation of the stakeholder to NIA	Collaboration areas
National Government	- Delivery of the KV2030 aspirations - Effective implementation of the CoK2010 - Proper utilization and accounting of funds - Creation of appropriate policies that will assist	- Timely delivery of statutory obligations - Work within the stipulated mandate - Adhere to the State Corporation Act - Adhere to the Legal Notice No.93	- Policy formulation on water resources - Funding - Regulatory services

Stakeholder Institution	Role in irrigation development	Expectation of the stakeholder to NIA	Collaboration areas
	NIB work towards its mandate - An enabling environment and support - Regular and adequate funding.	- Regular reporting and dissemination of information	
Ministry of Water, Sanitation and irrigation	- Policy formulation on water resources management - Management and development of water resources, Irrigation, Drainage and Land Reclamation - National irrigation policy and management - Management of irrigation schemes - Mapping, designating and developing areas ideal for irrigation schemes - Water harvesting and storage for irrigation. - Land reclamation.	- Translate the ministry policies - Account on land put under irrigation - Manage gazetted schemes as per the Irrigation Act - Implementation of projects in line with the laid down policies - Payment of water permits through the accredited agencies - Registration of Irrigation Water Users.	- Budget Formulation - Coordinating with other agencies in line with irrigation - Resource mobilization - Policy formulation on water resources
Ministry of Agriculture, Livestock. Fisheries and Irrigation	- Identification and prioritization of agriculture value chains	- Increase area under irrigation for enhanced agricultural production	- Development of irrigated agriculture value chains
Parliament	- Discuss motions and pass legislation on matters irrigation	- Submission of status reports - Attend parliamentary committee meetings in addressing matters arising on irrigation	- Resource mobilization - Budget formulation and approvals - Implementation of projects in line with the irrigation act and irrigation policies laid out
Senate	- Water is a national resource, but water service delivery is a county responsibility; As a legislative arm, the Senate represents the counties, and serves to protect the interests of the	- Report matters arising on irrigation to the senate - Implement projects in counties in line with the policies in place	- Legislation on county related irrigation matters

Stakeholder Institution	Role in irrigation development	Expectation of the stakeholder to NIA	Collaboration areas
	counties and their governments.		
KEPHIS	- To provide a science based regulatory service by assuring plant health, quality of agricultural inputs and produce for food security	- Ensure provision of certified seed to points - Link other seed merchants with famers	-
County Government	- Water service delivery; county governments ensure the adequacy and quality of water for irrigation purposes throughout the respective counties	- Involvement of the county in full execution of projects	- Utilization of irrigation infrastructure in Projects and Schemes - Agriculture extension in irrigation schemes. - Ensure market for irrigated agriculture produce
Kenya Seed	- To produce and market top quality certified seeds with an overall objective of adding value to the farming business and contributing to food self-sufficiency in the country	- Link them to Farmers through e.g. contract farming	- Contract farming for our farmers
Agriculture input suppliers	- To guide plant-growers to apply modern scientific methods toward making the most of their land, water and financial resources to grow high-quality products in responsible and sustainable ways	- Advisory services to farmers on fertilizer application	- WUAs
Agriculture and Food Authority	- Sharing of information and experiences on the best industry practices - Innovation and adoption of modern/appropriate technologies for processing, - Production, marketing and distribution,	- Link them to farmers	- WUAs
Banks	- Advisory roles on co-operative and a legal framework that offer an enabling	- Link them with farmers	- Farmer's institutions e.g WUA

Stakeholder Institution	Role in irrigation development	Expectation of the stakeholder to NIA	Collaboration areas
	environment that is conducive for the development of irrigation sector. - Financial support to farmers practising irrigation.		
Pest control products board	- To facilitate the availability of new pesticides for use during irrigation with proven safety, economic value, quality and efficacy.	- Execution of agricultural products efficacy trials	- Accredited services
Regional Development Authorities	- Promote management and conservation of natural resources by fostering integrated socio-economic programs through optimum utilization of resources through appropriate technology and innovations for improved livelihoods of the communities.	- Technical assistance in irrigation development	- Development of irrigation projects
Development Partners	- Support irrigation services through financing for research, information dissemination and infrastructure	- Execution of their projects in line with the laid down specific objectives and international law - Adherence to designs and specifications - Align to partners requirement	- Resource mobilization - Project execution - Capacity building
KALRO	- To Promote, streamline, co-ordinate and regulate research in crops, livestock, genetic resources and biotechnology in the country. - Expedite equitable access to research information, resources and technology and promote the application of research findings and	- Ensure provision of certified seed to points -	- Farmers Institutions - Capacity building

Stakeholder Institution	Role in irrigation development	Expectation of the stakeholder to NIA	Collaboration areas
	technology in the field of agriculture		
Water resources Authority	- sustainably and equitably allocate water resources - control pollution and improves water quality in the country's water bodies. - To collect all information on water resources, analyse, store and disseminate it to the various stakeholders	- Payment of water permits	- Farmers Institutions
Irrigation Equipment Suppliers	- Supporting large and small scale agro-projects using state of the art technology powering modern irrigation systems.	- Link them to farmers	- Farmers Institutions
East African Grain Council	- To support structured grain trade with the Eastern and Southern Africa region	- Link them to farmers	- Farmers Institutions
AFC	- To provide credit for the sole purpose of developing agriculture	- Link them to farmers	- Farmers Institutions
KEBS	- provision of comprehensive Standards development, Metrology, Conformity Assessment, Training and Certification services within the agriculture and food sector	- Link them to farmers	- Farmers Institutions
SIMLAW seed	- producing, importing, marketing and distributing superior and reliable vegetable seeds for commercial and domestic use. - Engaging in relevant research, extension services and introduction of products into the market that are geared	- Link them to farmers	- Farmers Institutions

Stakeholder Institution	Role in irrigation development	Expectation of the stakeholder to NIA	Collaboration areas
	towards increasing food sufficiency		
Farmers	- Utilize irrigation water for food production.	- Provide Irrigation Infrastructure - Link them to Markets - Link them to credit providers - Development of cropping schedule - Water management - Capacity Building	- Scheme/Infrastructure management - Capacity building
KEPSA	- Coordinating the private sector in Kenya through various mechanisms and to engage in advocacy that promotes economic growth.	- Feedback mechanisms - Incubation of innovations and technologies	- Public, Private partnerships (PPP)
Academic and research institutions e.g. Universities	- Conduct irrigation practices for community outreach - conduct research into best agricultural and irrigation practices. - Sustainable partnership - Collaboration - Responsiveness to industry needs	- Training of students in line with research and irrigation - Research outputs and innovations - Joint research and development projects	- Agricultural research - Research and development
NEMA	- supervision and coordination over all matters relating to the environment	- Conduct environmental assessments for projects - Implement mitigation measures - Acquisition of necessary permits	- Project execution
Kenya Forest service	- Manage water catchment areas primarily for soil and water conservation, carbon sequestration and other environmental services	- Protect the flora and fauna while executing projects - Seeking for permits in cases of use of forest zones - Link to farmers who are depending	- Policy formulation in line with access to water resources within the gazetted forest areas. - Project execution

Stakeholder Institution	Role in irrigation development	Expectation of the stakeholder to NIA	Collaboration areas
		on irrigation facilities within the forest	
Consultants/Contractors	- Professionalism - Timely and quality work - Adherence to the contract - Management of information - Responsible conduct	- Equal opportunity - Timely payment of dues - Support and cooperation - Adherence to the contract - Communication	- Timely Execution of projects - Maintenance and operations - Technical advice
Media	- Fair Coverage - Communication - Information dissemination - Contact for clarification on issues intended for public consumption - Nationwide circulation	- Access to irrigation information - Participation - Invitation to occasions - Feedback on inquiries - Dissemination of information	- Promoting visibility and awareness creation - Information dissemination - Feedback platforms
Professional bodies	- Recognition and references - Technical support - Professional development programmes - Grants - Global networking	- Qualified and registered members - Active membership	- Standardization and regulation of technical services

Table 3 : Analysis of NIA stakeholders

2.14 Summary of Strategic Issues/Gaps

The internal and external analyses of the issues surrounding NIA and the irrigation sector have provided guidance on areas that NIA needs to focus on in achieving food security in Kenya. Some of the identified areas of concern include:

- The need for NIA to put structures and systems that would support and facilitate in effective implementation and coordination of the irrigation in light of the changes in the legal framework, as contained in the Irrigation ACT 2019.
- Integration of IWRM principles in sustainable irrigation development and management
- There is need/opportunity for National Irrigation Authority to have its presence in nearly all the 47 counties so as to live to its expectations of achieving a national outlook and designing and implementing national and smallholder irrigation projects to achieve sustainable food and nutritional security situation in Kenya. This would have implications for expansion in irrigation infrastructure construction, rehabilitation, and modernization.
- Efficient Utilization and Management of Irrigation Water: The expansion of areas under irrigation in Kenya would mean additional demand for irrigation water storage and supply (distribution) system. The idea is not only to design new water delivery systems, but also to ensure that the available water is utilized in an efficient and effective way to achieve value for money principle. The strategic plan would, therefore, need to propose/put in place measures for effective demand management

- Research, Monitoring, Evaluation, and Knowledge Management: Sustainable irrigation development and management requires a robust research, monitoring, evaluation, and knowledge management system. In order for NIA to provide a viable system for its own internal functions and external framework, as contemplated in the Irrigation ACT 2019, there would be need to establish and build the institutional capacity of research, monitoring, and evaluation, and knowledge management.
- Smallholder and Medium Scale Irrigation Projects: The sustainable development and management of large irrigation projects (schemes) have become a challenge in most parts of the world, including Africa region and Kenya. This is an experience that has also been shared by NIA due the huge amount of capital investments and management capacity required. This has thus necessitated a paradigm shift towards putting more focus of smallholder and medium irrigation projects. NIA will thus require to refocus the strategic orientation on its irrigation projects to have more farmer and community impact and sustainability.
- Institutional and Organizational Capacity Development: there would be need for relevant organization structures for improved service delivery, including human resources capacity, financing and investment mechanisms, and strengthening partnership and collaboration.

Figure 4 : NIA officials Inspect a Cotton farm

2.15 Strategic Framework

2.15.1 Vision

“Water to every irrigable acre”

2.15.2 Mission

Provide and coordinate Sustainable Development and Management of irrigation services in Kenya

2.15.3 Core Values

Professionalism: We exhibit professional conduct and sound judgment in standards and service; we uphold objectivity and are focused on issues

Teamwork: We believe that the journey to greatness is taken along with others with whom we must keep stepping, one step at a time. Everyone has something to bring to the table.

Equity: We uphold fairness in our operations for all irrespective of gender, disability, region and socio-cultural background**.**

Integrity: We demonstrate the highest ethical standards in all aspects of our work complete with transparency, deep commitment to our customers, every community we serve and each other. We thrive in disclosure while upholding clarity and simplicity in all our endeavors

Innovation: We think creatively and differently to make a difference and apply innovative thinking and creativity to everything we do. We remain open to new ideas; look for ways to improve processes and seek creative solutions for stakeholders and partners.

Quality: we value excellence in service provision, leadership, people development, managing long term relationship. Our strategies shall aim at continual improvements in our systems, products and services diversification, reliability, accessibility and affordability

Passion: We are passionate about what we do every day, who we do it for and enjoy doing it. It's much easier to focus our passion toward developing solutions to achieve NIA's mandate and develop a much cohesive team

The figure below summarises this strategic framework:

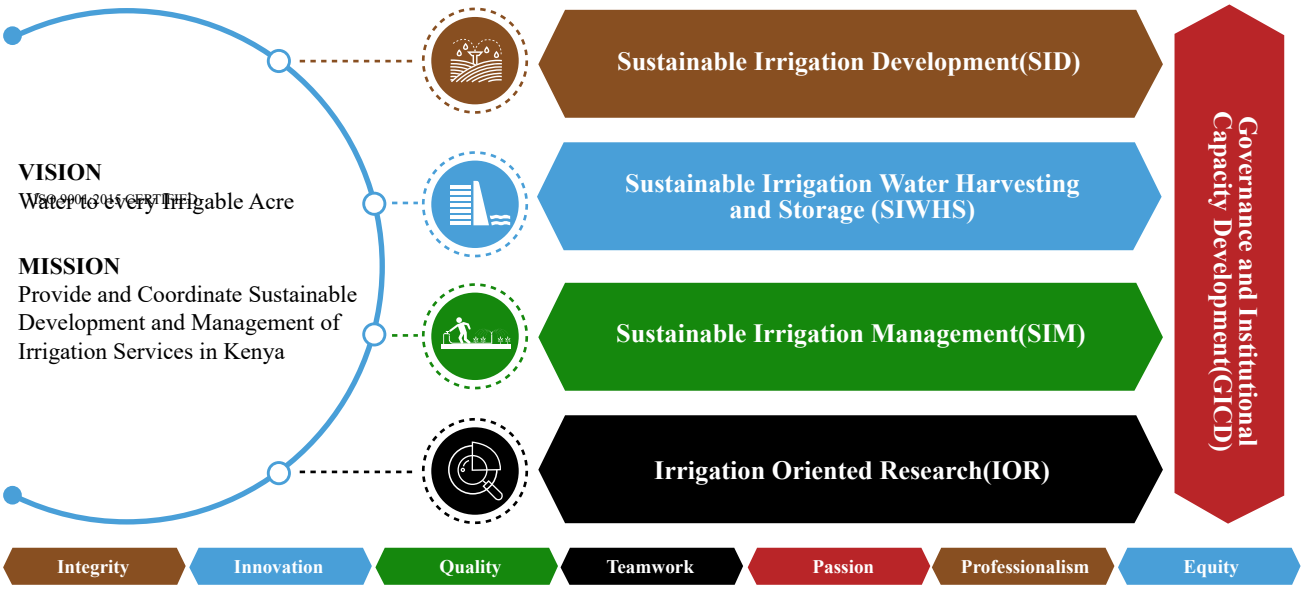


Figure 5: Strategic framework

PART 3

STRATEGIC PILLARS AND PRIORITY AREAS

3 PART THREE: STRATEGIC PILLARS AND PRIORITY AREAS

3.1 Irrigation Sector Development Agenda in Kenya in the medium-term plan.

Water and food top the list of development priorities in Kenya, and the two are intimately connected. The Vision 2030 accords special recognition to increasing production of higher-value crops and high value added irrigated agricultural products (livestock and fish), particularly for exports.

Subsequently in the Third MTP 2018-2022, on the food and nutrition security, the agriculture sector will focus on new and innovative initiatives that will drive food and nutrition security over the next five years by supporting enhanced large-scale production, small holder productivity and agro-processing and reduction in food prices. Key targets include increasing major food production by the year 2022. Specifically, annual production of maize will be increased from current average of 40 million (90kg bags) to 67.4 million (90 Kg bag); additional 70,000 MT of rice will be produced annually to reach an annual production of 406,486 MT; while annual production of Irish potato is targeted to increase to 2.52 million MT by 2022. In addition, agro-food Processing Programme under the manufacturing sector will involve value addition in agricultural, fisheries and livestock. Targeted products include: tea, coffee, nuts, legumes, cereals, fruits, vegetables, roots and tubers, animal feeds, dairy and meat. The programme will also entail training agro-processing entrepreneurs and expanding to seven (7) international markets. Notably, this will only make economic sense when volumes are in surplus to meet the demand of the obtaining industries. This surplus will be achieved through enhanced agricultural productivity that will only be realized through expansion of irrigated agriculture. Increased production will be achieved through among others expansion of production areas specifically through irrigation development.

It is in this regard that under the MTP III 2018-22 the irrigation subsector will increase land under irrigation by 518,000 acres (207,200 Ha) through the implementation of large scale, smallholder and ground water irrigation projects. Coupled with this, the subsector aims at increasing reliability of irrigation water to support full exploitation of irrigation potential for food security through construction of water harvesting and storage facilities. This will involve construction of large and medium-sized irrigation dams, household and community water pans, small dams and water harvesting structures in ASAL areas. To better use the irrigation water, the sub sector will promote use of drip irrigation and greenhouses to ensure efficient utilization of water as well as explore opportunities of adopting solar energy and wind power technologies to support new irrigation technologies.

Lastly, to ensure utilization of land under irrigation, the sub-sector will increase irrigation production and productivity efficiency from 60 per cent to over 150 per cent by 2022. This will involve the development and review of policies, legislations, regulations and guidelines; including research, capacity building and technical support to counties, irrigators and related stakeholders in order to promote sustainability of irrigation schemes through participatory irrigation management. In addition, an Irrigation and Drainage Information Management System (IDMIS) will be developed to facilitate mapping of irrigation schemes, water storage structures and general information management.

To transform Kenya's agricultural sector and make it a regional powerhouse, the Government has formulated the Agricultural Sector Transformation and Growth Strategy (ASTGS) 2019-2029. The strategy developed a criterion of identifying the transformation value chains out of the 100 value chains found in Kenya. A total of 13 value chains emerged with the highest potential for agricultural transformation, including: staples (maize, potatoes, rice, beans), horticulture (fruits, vegetables), livestock and fish (beef, poultry, sheep/goats, camels, fish, dairy), and others (imported wheat). However, we identified 25 similar value chains to these (e.g., other pulses for beans, other cereals such as millet and sorghum for maize, and cassava. Bt cotton is a type of GMO cotton that has been genetically modified by the insertion of one or more genes from a common soil bacterium, Bacillus thuringiensis (Bt). potatoes). Counties are strongly encouraged to select similar value chains that best suit their agro-ecology.

The strategy has identified Nine big ideas ("flagships") of focus to implement strategy: two flagships to increase small-scale farmer, pastoralist and fisher folk incomes; two flagships to increase agricultural

output and value-add; two flagships to boost household food resilience; and finally, three enablers that run across the transformation:

Figure 5 : Irrigated Land in Tana River County

Over a five-year period, MoALF&I will competitively procure ~50 new large-scale farm concessions, between them unlocking up to ~500,000 acres of new farm production, collectively delivering more than KES 100 billion of annual agricultural output and addressing up to 50% of Kenya's staple deficit.

In addition, MoALF&I will seek to sustainably unlock more than 150,000 acres of new irrigation through alternative water supply approaches, minimizing reliance on large dam construction programmes. While much of the land will be state-owned, the new farm enterprises will be predominantly private sector-funded, owned and operated. Undertaking smaller unit size of projects in multiple locations (around 50 locations with average size of 10,000 acres, but with a minimum size of 2,500 acres. Thus, the AGTS elaborates these objectives by acknowledging the role of sustainable irrigation development and management being vital for the diversification and intensification of irrigated agricultural production and productivity. The strategy prioritizes rehabilitation and modernization of current irrigation systems and construction of new irrigation infrastructure in the potential irrigation areas.

With the Big Four Agenda focusing on food security for the period 2019-2023, it's clear that the sustainable provisioning of these two elements to the 49 million-plus people of Kenya is a growing challenge—and one that is increasingly being addressed by a range of new approaches and technologies in the irrigation sector. Some of new and innovative initiatives that will drive 100% food and nutrition security over the next five years targeting 2.76 Million bags (52,000 Acres) include enhanced large-scale production, improved smallholder productivity, and reduced cost of food. The specific initiatives to be addressed through irrigation include additional 700,000 Acres through Public Private Partnership (PPP) (including idle arable land) under maize, potato, rice, cotton, aquaculture and feeds production. To increase productivity, the interventions target adoption of irrigation for agricultural production. In the ministerial BIG FOUR strategy, the targets to specific value chains include expand irrigated land under maize production covering 195,909 acres, expand irrigated land under rice production to cover 128,500 Acres, expand irrigated land under Irish potatoes production covering 54,582 acres, expand land under irrigated pasture covering 30,000 acres, expand irrigated land under cotton production covering 78,376 acres. Construct 125,000 household water pans (150 million cubic meters) to irrigate 125,000 acres in 27 counties and De-silt 1,000 colonial era dams to expand their capacity to harvest 130 million cubic meters to irrigate 130,000 acres in all counties.

It is therefore very clear that the government agenda has clearly put a strong case for irrigation development and advancement. The NIA should then ensure that the plans for the medium-term period are able to contribute to the achievement of the irrigation agenda. These targets will in a nut shell inform the specific sustainable irrigation development and management.

3.2 Strategic Issues and considerations

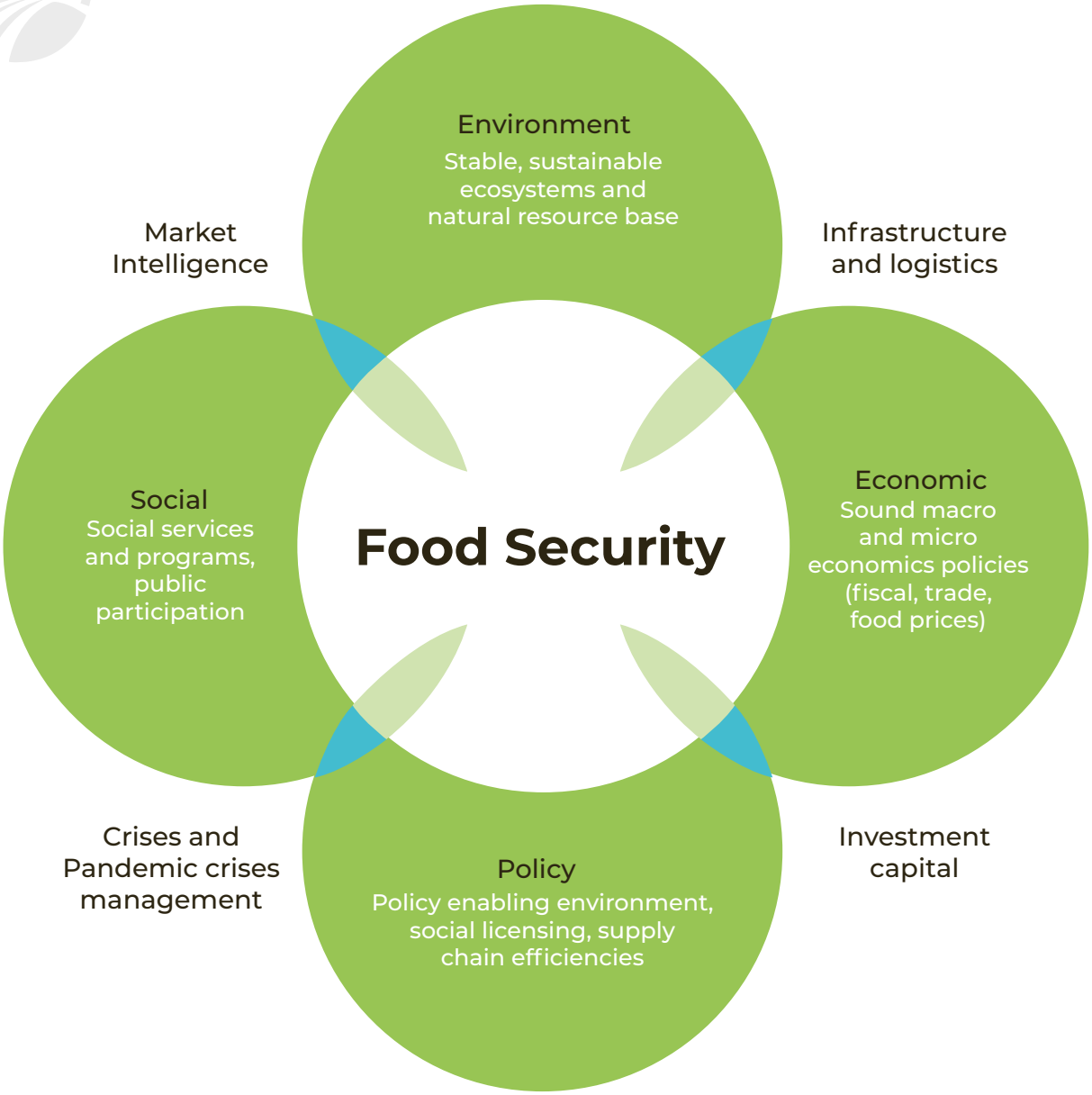
In order to sustain food security and the economic contribution of the agricultural sector in Kenya, adaptation of agricultural water management and associated infrastructure are necessary in Kenya, due to the rapidly changing natural, social, economic and political environment. In recent years it is widely accepted that water management for agriculture must be approached in a holistic way. Redirection of investments in irrigated agriculture is to take place to meet the national, regional, and international development goals and to face the challenge of population growth, malnutrition and poverty, increasing competition for land and water, and the requirement to protect the ecology. New challenges are appearing that make adaptation to climate change and increasing energy costs essential.

NIA's approach to sustainable irrigation development shall be focused at shifting from old agriculture practices, considered as unsustainable to improved irrigation methods, water efficiency, economic incentives, on-farm irrigation technologies, capacity building of stakeholder groups, especially farmers, in irrigation and among other related sustainable practices to promote sustainable development. Furthermore, Increased attention will focus on the active participation of stakeholders, an institutional structure in association with physical, managerial, environmental, technical, financial and operational component to address sustainability in irrigated agriculture.

The irrigation agenda laid by government in the planning documents, situation analysis for the irrigation sector and NIA in particular and the expanded mandate espoused in the Irrigation ACT 2019, foundational pillars alluded to by the Board of directors the following strategic issues have been deduced.

1. Accelerate development of land under irrigation
    a. Reliable irrigation water supply due to poor spatial and temporal distribution
2. Optimal utilization of installed irrigation infrastructure
    a. Inadequate operation and maintenance of existing irrigation infrastructure
    b. Weak farmers' institutions and organizations.
3. Production, marketing and value chains
    a. Collaboration and linkages
4. Resource mobilization towards irrigation development and management'
5. irrigation oriented research initiatives to drive the adoption of new technologies
6. institutional capacity building under the new legal framework

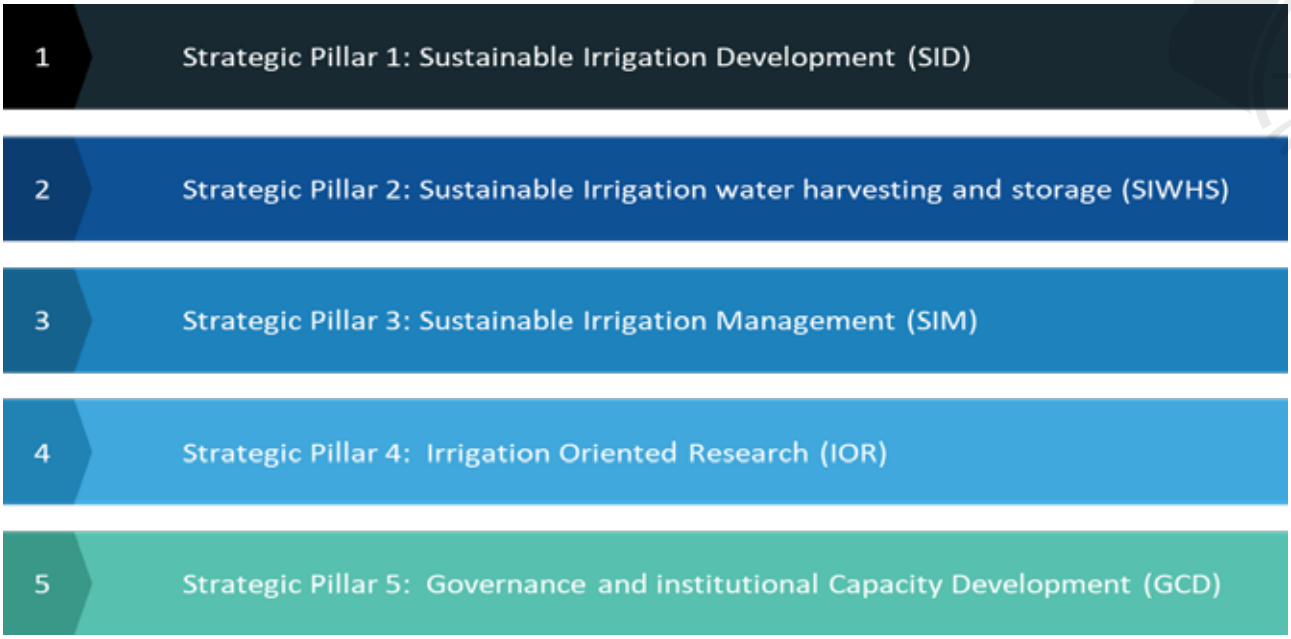
3.3 Strategic Goal and Outcomes



The overall goal of the strategy is to contribute food security and sustainable national economic growth and development through enhanced irrigated development and management service.

The long-term outcomes are:

1. Increased irrigated agriculture production and productivity for local and export use using irrigation technologies that take into account climate change.
2. Improved national and household incomes, food and nutritional security;
3. Improved irrigation service delivery;
4. Increased employment opportunities; and
5. Enhanced land and water productivity through sustainable land tenure arrangements, catchment management and water harvesting.



In order to achieve the strategic goals of enhancing food security and prosperous nation, the strategic plan will focus on five pillars namely, Sustainable Irrigation Development (SID), Sustainable Irrigation Management (SIM), Sustainable Irrigation water harvesting and storage (SIWHS), Irrigation Oriented Research (IOR) and Governance and Institutional Capacity Development (GCD).

A deep dive in the character and structure of the five pillars has been carried out to come up with strategic objectives for the institution, as presented in Table 3 below.

Strategic Pillar 1: Sustainable Irrigation Development (SID)		
Strategic Issues - **Lack of a comprehensive guidelines for mapping and establishing the irrigation project interventions areas** - **Limited/use of unsustainable approaches for mainstreaming participation and involvement of farmers and stakeholders in irrigation development and management** - **Limited application of IWRM principles in the design and implementation of irrigation projects** - **Limited harmonization/coordination of sustainable irrigation development initiatives with other authorities** - **Limited adoption of latest technologies to designs** - **Limited optimization of water availability management** - **Limited managed application of renewable energy alternatives for water abstraction** - **Inadequate financing for Development and management of Irrigation**		
Strategic objectives	Strategies	Activities
Increase area under irrigation by 518,000 acres in the plan period	1. - Map out strategic irrigation schemes of 10,000 acres and above per county 2. Design and Construct small scale and large-scale irrigation projects 3. -Exploit groundwater irrigation projects in all areas including arid and high potential areas. 4. -Adopt PPPs approach in implementation of National schemes	5. -Undertake Feasibility studies, detailed design of Smallholder and largescale irrigation projects 6. Develop Large Scale Irrigation projects 7. -Rehabilitate and expand existing irrigation projects 8. -Construct new smallholder irrigation projects 9. -Map Ground water irrigation projects 10. -Conduct hydrogeological studies for ground water potential. 11. -Drill and equip solar driven boreholes and installation of drip systems to exploit groundwater resources. 12. -Construct of ground water infrastructure for irrigation. 13. -Conduct feasibility studies for national schemes to PPP Projects

Strategic Pillar 2: Sustainable Irrigation water harvesting and storage (SIWHS)		
Strategic Issues - **Limited Irrigation Water harvesting and storage facilities resulting in unreliable irrigation water supply** - **Unfavorable land tenure resulting in high cost of land for development of water storage reservoirs** - **Limited application of IWRM principles in the design and implementation of water storage projects in Kenya** - **Inadequate financing**		
Strategic objectives	Strategies	Activities
Increase Irrigation water storage capacity by 400million m3 over the plan period	- Adoption of Water Storage at Household level - Increase capacity of existing community water pans and small dams - Development of large and medium dams for irrigation projects. - Exploiting water stored in existing dams for irrigation under IWRM principles	- Construction of household water storage pans - Rehabilitation and expansion of existing community water pans and small dams - Feasibility studies, detailed design and of large and medium scale dams. - Construction of Three medium/large scale dams for Irrigation Projects - Determine the potential of existing dams for use in irrigation

Strategic Pillar 3: Sustainable Irrigation Management (SIM)		
Strategic Issues - **Weak/inefficient approaches for irrigation water demand management for production** - **Inefficient irrigation water management techniques for production** - **Limited application of modern agronomic practices and technologies (smart agriculture) for improved productivity** - **Weak institutional and governance frameworks for integrated irrigation scheme/project performance and sustainability** - **Degradation of catchment areas hence affecting availability of water resources;** - **Beneficiary community unwillingness or capacity limitations to operate and maintain the systems; affecting water conveyancing and distribution.** - **Inadequate irrigation extension and advisory services which affects optimal productivity** - **Weak response mechanisms for market development, trade, finance and investment in an environmentally sustainable manner to serve national, regional, and global markets** - **Limited involvement and diversification in livestock and aquaculture in NIA projects areas** - **Limited investments in production and marketing infrastructure that are needed to scale up production and improve productivity.** - **Weak trade and regional value chain development and investments in agri-business and agro-industry for improved agricultural production and post-harvest initiatives** - **Weak entrepreneurial culture to manage agriculture production process as a business venture**		
Strategic objectives	Strategies	Activities

Achieve atleast 200% utilization (2 seasons) in each NIA developed irrigation scheme. **Form and strengthen at least one farmers' organization in every NIA developed scheme that can enter into contractual agreements**	- Increase utilization of irrigation infrastructure by 200% - Formation and strengthen farmers' organizations. - Improve the operation and maintenance service/function in irrigation schemes. - Collaborations on production and development of value chains. - Designate the public irrigation schemes as agricultural hubs and centers of excellence in agriculture	- Develop and implement scheme sustainability plans for public schemes. - Formulate water allocation and management plan within the scheme. - Determine operation and maintenance fees and water use charges per scheme - Partner with Water Service Providers to provide operation and maintenance services in the irrigation schemes and catchment - Formation and strengthening of IWUA as provided in the Irrigation Act. - Build capacity of farmers on operation and maintenance functions. - Mitigate against environmental degradation out of operation of irrigation schemes. - Provide technical advisory services on irrigation water management, operation and maintenance. - Operate and maintain primary irrigation infrastructure including the main water storage facilities. - Collaborate identification of value chains for irrigation schemes considering the agro-climatic zones, irrigation water requirements, irrigation systems and markets. - Develop typical cropping programmes for identified value chain - Develop a collaboration framework for farmers, aggregators, financing institutions and county governments - Lobby for designation of Mwea, Ahero, Perkerra, Katilu, Bura, Kuja as agro-processing centers as planned in the ASTGS.
Strategic Pillar 4: Irrigation Oriented Research (IOR)		
Strategic Issues - Limited service oriented approaches for irrigation water demand management for production - Limited application of modern agronomic practices and technologies (smart agriculture) for improved productivity - Limited application of integrated irrigation research recommendations to schemes/project performance and sustainability, - Loss of crop to Natural disasters - Limited prioritisation and adequate financing of Irrigation Research - Limited involvement and diversification in livestock and aquaculture in NIA projects areas - Limited research on Agro-ecological systems adaptation approaches to sustainable farming methods.		

- Low exploitation of alternative sources of irrigation water,
- Limited research on technologies to increase irrigation efficiency and productivity
- Limited knowledge on climate proofing irrigation infrastructure and adoption of climate smart irrigation farming.

Strategic objectives	Strategies	Activities
Identify irrigation development advancement technologies **Develop and adopt sustainable irrigation management frameworks**	- Develop a baseline on the irrigation investments in the country - Establish alternative water sources including mapping. - Adopt climate proofed irrigation infrastructure and climate smart irrigation farming to build resilience against climate change. - Collect, analyse and disseminated data on irrigation water use and contribution to food security. - Enhance irrigation development of technologies to increase irrigation efficiency. - Develop irrigation management to enhance water use efficiency and productivity. - Improve Irrigation Research Infrastructure and Capacity - -	- Conduct a comprehensive mapping of current NIA irrigation schemes/projects to determine their current status and viability - Pilot an insurance premium for irrigation farmers - Distill farmer-led irrigation concept - Explore opportunities of co-financing and cost recovery in irrigation projects and develop a framework for project implementation. - Pilot service-oriented irrigation management in irrigation schemes. - Investigate, develop and promote efficient irrigation water management technologies including lining. - Pilot volumetric allocation and pricing of water in irrigation in a scheme in eastern and western region. - Develop guidelines on climate mitigation and adaptation measures for climate proofed irrigation infrastructure - Domesticate guidelines on climate smart irrigation. - Seek collaboration of mapping of ground water resources - Explore alternative water sources including waste water, drainage water, ground. - Develop a framework for collecting data on production, collect, analyze and prepare annual report on contribution of irrigation to food security and economic prosperity. - Collect, analyse and disseminate data on water use.

Strategic Pillar 5: Governance and institutional Capacity Development (GCD)
Strategic Issues - Absence of human resource strategy and limited financial capacity in the implementation of human resource policies and guidelines - Reactive approaches/mechanisms in addressing corporate image and branding of NIA and stakeholder engagement

- Inadequate frameworks for the design and application of good corporate governance principles, including tools for Board evaluation and oversight management
- Inadequate structures for strategic plan implementation, review, and reporting
- Constant review of the organization structure hence lacking institutional stability in developing job descriptions and performance management frameworks
- Weak management and administrative systems and guidelines to coordinate integrated project management, including feasibility studies, research, and information management
- Lack of project guide policy on expansion, diversification, and sustainability of projects leading to an accumulation of uncompleted/stalled projects scattered around the country.
- Limited research activities confined to irrigation schemes
- Weak approaches to addressing competitiveness of the irrigation schemes/projects and enterprises, including integration of irritation development and management systems
- Weak systems and approaches to ensure effective implementation, monitoring and evaluation of the strategic plan.
- Lack of an effective mechanism for resource mobilization and coordination of partners and stakeholders
- Weak frameworks for the implementation of mainstreaming policies in the areas of gender, alcohol, drugs and substance abuse, ICT, ethical and anti-corruption practices among others.

Strategic objectives	Strategies	Activities
a) Develop and implement a transition plan to the irrigation act. **b) Develop and implement 7 operationalization frameworks to improve efficiency**	- Develop and implement a transition plan to the irrigation act. - Formulate and implement strategy operationalization frameworks - Maintain ISO certification including risk management. - Transition to the new legal framework espoused in the irrigation act 2019. - Endeavor to complete projects and projects as planned. - Widen and deepen the sources for funds for irrigation development - Maintain a good image of the institution - Resource and equip the human resource complement to deliver on the mandate of the institution. - Maintain ISO certification including risk management.	- Cascade the Strategic Plan/Develop Departmental Functional Plans - Develop a transition plan to the Irrigation act 2019 - Reorganizing functions in the structures of the organogram with respect to new act and strategic objectives. - Review and implement Board Charter for NIA with respect to new act. - Undertake institutional capacity assessment and develop Human Resource Framework - Develop and implement integrated Project Management framework and guidelines in irrigation development and management. - Establish and implement an overarching Monitoring, Evaluation and Learning framework - Develop a resource mobilization framework, establish and develop capacity of the Liaison and Resource Mobilization Unit - Develop and implement a customer service delivery framework translating to a customer service charter - Develop and implement a comprehensive communication framework.

		- Develop and implement data collection and knowledge management framework. - Seek ISMS certification as per ISO 27001

Table 4 : Strategic Pillars and Objectives

PART 4

IMPLEMENTATION FRAMEWORK OF STRATEGIC PLAN

4 PART FOUR: IMPLEMENTATION FRAMEWORK OF STRATEGIC PLAN

4.1 Implementation Framework

Despite the fact that most public sector organizations having developed strategic plans showing their vision, mission and objectives set to be achieved, there has been observed lack of mechanisms to cascade it to departmental, divisional, sectional and employee levels. Good corporate governance and strategic management principles strategic recommends the framework for cascading the corporate strategic plan to lower levels of governance and management structures that would facilitate effective results orientation mechanisms of the strategic plan.

Strategic plan execution/implementation is the process that turns strategies and plans into actions in order to accomplish strategic goals and objectives. Strategic plan execution is as important, or even more important, than the strategy itself. Critical actions move a strategic plan from a document that sits on the shelf to actions that drive organizational growth and development. However, lessons learnt shows, sadly, that majority of organizations who have strategic plans fail to implement them. According to Fortune Magazine, nine out of ten organizations fail to implement their strategic plan for many reasons:

- 60% of organizations don't link strategy to budgeting
- 75% of organizations don't link employee performance incentives to strategy
- 86% of top management spend less than one hour per month discussing strategy
- 95% of the typical workforce doesn't understand their organization's strategy.

This Strategic Plan is aimed at providing NIA with the roadmap it needs to pursue specific strategic direction and set of performance targets, deliver citizen/customer value, and be successful. However, this is just a plan; it doesn't guarantee that the desired performance is reached any more than having a roadmap guarantees the traveler arrives at the desired destination.

4.2 Avoiding the Strategy Execution Pitfalls

1. The success of this Strategic Plan shall be based on the need for NIA to heed the advice and stay away from the following common pitfalls of executing the strategic plan:
2. Lack of ownership: The most common reason a plan fails is lack of ownership. If employees don't have a stake and responsibility in the plan, it'll be business as usual for all but a frustrated few.
3. Lack of communication: The plan doesn't get communicated to employees and other primary stakeholders, and they don't understand how they contribute.
4. Getting mired in the day-to-day activities: The governance, and management team consumed by daily operating problems, lose sight of long-term goals.
5. Out of the ordinary: The plan is treated as something separate and removed from the management process.
6. An overwhelming plan: The goals and actions generated in the strategic planning session are too numerous because the team failed to make tough choices to eliminate non-critical actions. Employees don't know where to begin.
7. A meaningless plan: The vision, mission, and values are viewed as pointless and not supported by actions or don't have employee buy-in.
8. Annual strategy: Strategy is only discussed at yearly weekend retreats.
9. Not considering implementation: Implementation isn't discussed in the strategic planning process. The planning document is seen as an end in itself.
10. No progress report: There's no method to track progress, and the plan only measures what's easy, not what's important. No one feels any forward momentum.
11. No accountability: Accountability and high visibility help drive change. This means that each measure, objective, data source, and initiative must have an owner.

12. Lack of empowerment: Although accountability may provide strong motivation for improving performance, employees must also have the authority, responsibility, and tools necessary to impact relevant measures. Otherwise, they may resist involvement and ownership.

Arising from such lessons, the effective implementation of this Strategic Plan will be facilitated by the development and implementation of the following Operational Plans:

1. Development of Departmental, Divisional and Sectional Functional Plans
2. Annual Action Plan and Budget

4.3 Institutional Framework and Organization Structure of NIA

The governance and management organization structure of NIA consist of the Board and Management structure. The core responsibility of the Board is to do oversight and provide overall strategic direction of NIA. Additionally, the Board is to undertake corporate evaluation to ensure that the organization conforms to its statutory mandate and role in contributing towards food and nutrition security in Kenya. The roles and duties of the Board are captured in the Irrigation Act 2019 and in the Irrigation ACT Board Charter. The Board Charter further provides details on the various organs or Board committees, and how the Board conducts its business, including the framework of conducting Board evaluation. NIA has a total of ten (10) Board members, comprised of; a chairperson, the Principal Secretary responsible for Irrigation, the Principal Secretary responsible for finance, the principal secretary responsible for Agriculture, the Principal Secretary for the time being responsible for water, two persons nominated by the Council of County Governors, one person nominated by the registered association representing the largest number of entities in the private sector in Kenya and one person nominated by irrigation farmers associations. The Authority's Chief Executive Officer is an Ex-Officio member of the Board.

The Irrigation ACT 2019 which created a National Irrigation Authority (NIA) with the express mandate of regulating, promoting the development, and effective management of irrigation services in Kenya. In summary, the specific roles and responsibilities of the Authority, as contained in the Irrigation ACT 2019, include development of water-based irrigation infrastructure, agricultural production (agronomic) based services, marketing based irrigation infrastructure services, and overall coordination and facilitating sustainable irrigation and drainage services, covering large, medium, and small-scale irrigation projects in Kenya.

This expanded mandate of NIA as envisaged in the Irrigation ACT 2019 implies that NIA will have a new corporate identity since it shall have the responsibility of undertaking management as well as coordination role of all activities within the irrigation sector value chain as stated in its functions, powers, duties and responsibilities an expansion of the previous mandate of NIB. The new corporate identity will invariably require a relook and reorientation of the corporate strategic direction of the organization. The recent enactment of the Irrigation Act will require the Cabinet Secretary shall provide the effective and guidelines date for making it operational.

4.4 Stakeholders, Partnerships and Institutional Arrangements

Irrigation development shall be under the mandate of the NIA in Irrigation ACT 2019.Other major participants in the institutional arrangements for irrigation development and management will be relevant government, departments and agencies; research and training institutions; the private sector; irrigators; civil society organisations (CSOs), and development partners.

National Irrigation Authority

NIA shall be at the centre of irrigated agriculture development. As such, the Ministry shall be responsible for ensuring close co-ordination amongst various stakeholders in the irrigation sector. The main areas for facilitation and coordination by NIA will include:

- Promotion of irrigation development and management in potential areas; in line with the guidelines and standards developed and approved by State Department of Irrigation
- Initial identification of farmers' interest in irrigation and their needs and subsequent follow-up;
- Training of irrigation professionals;
- Irrigation research, extension, and advisory services
- Sensitization and beneficiary mobilization;
- Provision of advice on sectoral reform issues;
- Farmer/IWUA training and motivation;

- Particular programs concerning cost sharing methods;
- Irrigation water management practices.
- Monitoring, Evaluation, and Learning
- Information and Knowledge Management
- Coordinate the updating of existing database on irrigation development potential and ensure that it is easily accessed by all stakeholders.
- Ensure that land conservation issues are addressed in irrigation schemes and catchment areas;
- Facilitate the formulation of irrigation designs and specifications, which shall be a basis for monitoring and evaluation of irrigation works;
- Facilitate, coordinate, and manage water resources for irrigation purposes and monitor its sustainable;
- Facilitate the provision of hydrological data for the design of irrigation projects and facilitate the provision of water rights for irrigation development;
- Explore/coordinate alternatives to handling and marketing of farmers produce in order to realize maximum possible gross margins from irrigated agriculture;
- Play a catalytic role in influencing market intelligence among the farmer organizations and provide guidance through farmer training in effective negotiations on pricing of agricultural commodities;
- Facilitate/coordinate prevention and control of pests, diseases, and other irrigated agriculture related risks;
- Facilitate/coordinate the implementation of the National Irrigation Schemes focusing on large scale irrigation development
- Facilitate/coordinate provision of extension and research services;
- Monitor and evaluate the progress of irrigation development and management at the national level in compliance with irrigation standards and guidelines.
- Provide a forum for exchange of ideas in irrigation development and management in Kenya

National and County Departments Responsible for Irrigation, Finance, Economic Planning and Development

- Mobilize and disburse financial resources for the implementation of irrigation programmes;
- Promotion of irrigation investment and development
- Monitor utilization of disbursed funds;
- Explore aspects of tax incentives and preferential treatment for private estate, commercial farming and service providers.
- Ensure that development partner support is provided and coordinated in terms of overall national programming;
- Advise on PPPs arrangements and engagements in irrigation development and management
- Assess whether the irrigation programme or project complies with the relevant sector and national policies and strategies as well as standards and guidelines set out by responsible State Departments; and
- Assess whether the public sector expenditures comply with the Public Sector Investment Programme priorities and allocations.

National and County Departments Responsible for Lands

- Implement land reform and land tenure programmes for irrigation development, in close coordination with State Department of Irrigation;
- Maintain the land tenure database, and revise as necessary to assist the transfer of existing public lands to the beneficiaries and also in the identification of areas with potential for irrigation;
- Administer land rights and tenure; and
- Play a crucial role in preparing land use plans, registration and maintenance of Land Information Systems (LIS).

National and County Departments Responsible for Natural Resources, Energy and Environment and NEMA

- Consolidate the conservation of forest and catchment areas to conserve soil and water for irrigation purposes;
- Pursue the establishment of forest reserves to rehabilitate irrigation scheme catchment areas;
- Advise on sustainable sources of energy for irrigation development;
- Administer the National Environmental Policy and legislation and facilitate the process of Environmental Impact (EIA) for all new developments and where appropriate Environmental Audits for existing projects; and
- Ensure that irrigated agricultural development is promoted through environmentally sound irrigated crop production, consistent with the principles of sustainable development by including the relevant strategies and measures necessary for promoting conservation, management and sustainable utilization of the natural resources.

State Department Responsible for Parks and Wildlife

- Promote conservation of catchment areas in Game Reserves and parks to ensure acceptable water quality and adequate quantities that can be used for irrigation;
- Ensure that in any review of the status of protected areas, irrigated agriculture should be included as one of the options for future development and utilization of such land.
- Devise ways of preventing invasion of wildlife to irrigated lands.

National and County Departments Responsible for Industry and Trade

- Facilitate the formation and empowerment of farmer organisations for efficient marketing of irrigated produce; and
- Encourage investment in irrigation farming value chain.

County Governments

- Facilitate public awareness and mobilize communities for irrigation development;
- Plan and coordinate the implementation of irrigation development at the county levels; and
- Assist in the settlement of disputes in irrigated areas.

State Department Responsible for Education

- Include irrigation principles and practices in curricula for primary, secondary and tertiary education institutions; and
- Train future irrigation personnel.

National and County Departments Responsible for Health and Sanitation

- Provide appropriate interventions such as the promotion of hygiene and sanitation education to prevent water related diseases; and
- Mainstream HIV and AIDS in the irrigation sector.

National and County Departments Responsible for Gender Affairs

- Ensure that gender issues and involvement of vulnerable groups are mainstreamed in irrigation programmes.

Ministry Responsible for Nutrition, HIV and AIDS

- Ensure that Nutrition, HIV and AIDS issues are mainstreamed in irrigation programmes.

National and County Departments Responsible for Labour, Youth and Manpower Development

- Provide appropriate interventions such as the promotion of hygiene and sanitation education to prevent water related diseases; and
- Mainstream HIV and AIDS in the irrigation sector.

Office of the Public Procurement

- Advise on planning and coordination of large and international procurement;
- Advise on preparation of invitations to bid and bidding documents;
- Advise on publication and distribution of invitations to bid;
- Advise on the administering implementation of contracts

Office of the Auditor General

- Provide an independent assessment of irrigation programmes, policy, operation and results
- Undertake performance audit of the irrigation sector
- Advise on public resources management in order to achieve intended results in irrigation development.

Water Resources Authority (WRA)

The Water Act of 2016 provides for the establishment Water Resources Authority (WRA). The main objective of the WRA is to create an independent quasi-government organization which is a principal source of policy, control and protect (i.e. manage) the country's water resources. WRA shall be responsible for reviewing applications and issuing of water rights. It shall also monitor water abstractions and effluent discharges.

Training Institutions

- Training and development institutions will be encouraged to formulate programs that can build and maintain capacity in the irrigation sector at all levels;
- Develop/review and implement the curricula that meet the emerging demands in the irrigation sector;
- Supplement all formal courses in irrigation with on-the-job training

4.4.1 Private Sector

Consultants and Contractors

- The capacity in planning, designing and implementation of irrigation projects in the private sector shall be improved through contractual services;
- The private sector shall become more involved in irrigation activities that shall include carrying out studies, surveys, design and construction works;
- Consultants (both national and international) will be engaged with clear terms of reference (ToRs) and in compliance with the national guidelines for irrigation development and management

Equipment and Spare Parts Suppliers

The private sector and CSOs will be encouraged to increase stocks of new equipment and spare parts of acceptable standards and provide training to farmers and communities who purchase equipment; and

Pricing mechanism of equipment, spare parts and services will ensure affordability by the smallholder farmers.

Credit and Banking Institutions

Credit institutions will be encouraged to respond to the needs of small-scale irrigation beneficiaries, by providing affordable credit facilities for agricultural inputs acquisition through their legal community organizations (Cooperatives); and

Banking institutions will be encouraged to recognize the local community organizations for purposes of providing credit for capital development using terms that are affordable to the small-scale irrigation farmers.

Commercial Farming Sector

The commercial farming sector will be encouraged to share their experience in irrigated agriculture for the benefit of the smallholder farming communities;

Contract farming will be one of the alternatives to absorb the extra labour and also provide estates with alternative land management;

Estate owners will take on the added responsibility of acting as centers where the surrounding community can access farm inputs, provide storage and/or processing facilities of farm produce, and as marketing outlets of farm produce; and

Estates will be encouraged to invest more in irrigated agriculture.

Irrigators

Smallholder farmers will form organizations (IWUA), which shall facilitate liaison with technical officers in the planning and design of irrigation schemes, as well as participation in the implementation of irrigation development and management programmes;

The farmers will undertake to meet the financial costs of the operation and maintenance of their schemes and also to re-organize their operations to enable them to take over greater responsibilities;

Vulnerable groups (including the youth, elderly, women, disabled, HIV and AIDS affected) in irrigated agriculture will need special consideration in the acquisition of farm inputs;

Irrigated agriculture/NIA will cater for the interest of women farmers based on socio-cultural norms of the rural areas. Specifically, the irrigation sector shall cater for the following areas:

Design of irrigation systems in terms of water conveyance channels shall take cognizance of the ability of women to manage and work with such channels and also avoid the danger of children drowning in such systems; and

Local communities shall be assessed in their ability to encourage participation of vulnerable groups, such as female and child headed households in their local committees.

4.4.2 Civil Society Organizations

Efforts will be made to promote CSOs-development partner collaboration, and encourage the private sector and CSOs to provide services, equipment and materials for development of irrigated agriculture. Their involvement shall encompass community level support including;

- Group formation and capacity building;
- Demonstration of irrigated agriculture;
- Implementation of small-scale irrigation projects;
- Networking for the transfer of irrigation technology;
- Promotion and management of labour-saving technologies; and
- Assistance to farmers/IWUAs in the distribution of agricultural inputs.

A platform for dialogue with CSOs will be established and an enabling environment created for these to operate effectively through involvement in irrigated agriculture programmes. In addition, cooperation shall be established

with CSOs to avoid duplication of effort and to encourage them to participate in the implementation of the national and county programs for irrigation development; and Participate in the sector planning and review of the irrigation sub sector for effective information sharing.

4.4.3 Development Partners

- The support from development partners for development of irrigation will be key for the expansion, diversification, and intensification of the irrigation sector in Kenya.
- development partners have their own priority funding and areas of interest and this shall be harmonized with national and NIA preferred areas of support;
- Development partners will have to coordinate, among themselves, support rendered to the irrigation sector, and to this effect there shall be need to elect a coordinator (e.g. Donor Working Groups) for purposes of irrigation funding in Kenya.

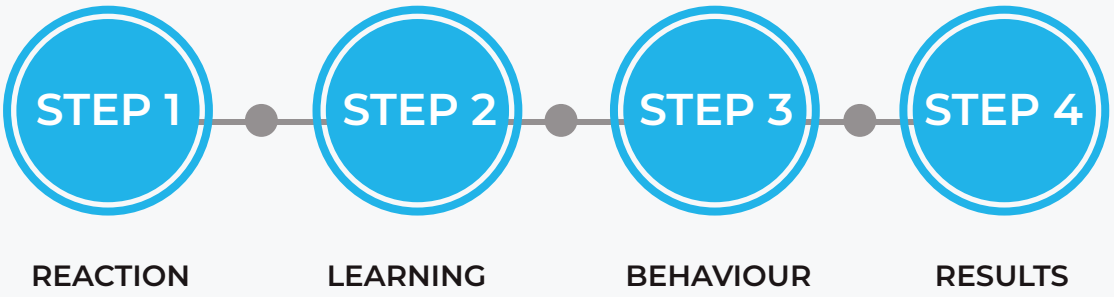
Annex 1 and 2 provide an outline of the key strategies for achieving objectives of the NIA priority areas in the irrigation strategy: sustainable irrigation development, sustainable irrigation management, and governance and capacity development. It also provides detailed matrix guiding the plan implementation and a framework for conducting monitoring and evaluation aimed at tracking progress towards achieving the stated objectives and actions in the strategic plan.

PART 5

MONITORING EVALUATION AND LEARNING

5 PART FIVE: MONITORING EVALUATION AND LEARNING

5.1 The Theory of Change, Monitoring, Evaluation and Learning



A theory of change explains how the activities undertaken by NIA interventions (such as a project, program or policy) contribute to a chain of results that lead to the intended or observed impacts. On other word, it provides the logic model in managing the irrigation projects. For this strategic plan, the theory of change was conceptualized and developed during the planning stage but has been found quite useful also for monitoring and evaluation phase of this strategic plan. The theory of change helps NIA in the following ways: develop better Key Evaluation Questions, identify key indicators for monitoring, identify gaps in available data, prioritize additional data collection, and provide a structure for data analysis and reporting.

The key strategic assumptions explained by the theory of change is that if the governance and institutional capacity of NIA is enhanced, including the research capacity, then sustainable irrigation development will lead to the availability of reliable and timely irrigation water to farmers (irrigable areas). When adequate supply of irrigation water is accessible to farmers, then sustainable irrigation management will address the production and productivity of irrigation enterprises in the irrigation schemes and projects. Then collaborative and partnership approaches will facilitate the provision of post-harvest handling practices and linking the farmers to the markets. The consumers are assumed to have the purchasing powers to acquire and utilize the food products. The consumption of quality irrigation food products will have adequate nutritional value to improve the health status and quality of life of the people of Kenya, which is the ultimate impact of the NIA interventions.

NIA will responsible for effective implementation of this strategic plan through facilitation and coordination of execution of the plan with relevant stakeholders having varying responsibilities in the implementation plan. Irrigation development and management will be promoted and facilitated to support smallholder and commercial farmers. Development of irrigation schemes and projects will ensure full participation of the farmer beneficiaries from identification to operation and maintenance to ensure sustainability.

The implementation of the strategic plan will be monitored through a monitoring and evaluation system with necessary feedback mechanism so as to effectively track sector performance indicators. Joint Sector Review meetings will be used for information sharing and effective engagement of stakeholders in irrigation development and management. The lessons learnt (Knowledge Management) in the projects will be incorporated in future project as part of evaluation. NIA will coordinate and lead the monitoring and evaluation process and ensure timely reporting and dissemination of results. An Irrigation Monitoring and Evaluation Systems Report will be prepared annually. The Monitoring and Evaluation Systems results will be used to inform all irrigation stakeholders to influence programme planning and design processes as well as resource management.

This Strategic Plan will be reviewed based an annual cycle as per the budget and financial year cycle in the public sector. However, this Strategic Plan or parts of it may be amended if there are significant changes in the operating environment in the course of its implementation.

Monitoring at NIA shall be involved in addressing inputs, activities and outputs. The monitoring systems shall be designed to meet the ongoing information needs of project managers and provide information for progress reports

for internal and external use. Evaluations shall focus on outputs, outcome, and impact, and these are also intended for a wider audience within and outside the organisation. Monitoring is mainly descriptive and evaluation is more analytical and involves addressing the impact assessment and concerned with longer-term outcomes. Monitoring shall be conducted regularly and frequently throughout the project. Evaluation is infrequent and shall take place at any point in the project cycle (and after the project has ended).

5.2 Establishment of Monitoring, Evaluation and Learning (MLE) Unit

NIA shall review its current organization structure and reconsider establishing an MLE unit that shall be responsible for the design, coordination and implementation of the monitoring and evaluation, research, and learning framework of the NIA Projects, both for direct NIA projects and for coordination levels as contemplated in the Irrigation ACT 2019. The department will develop a systematic monitoring framework to improve the qualitative and quantitative evidence gathered by NIA. The unit will also provide technical assistance to other departments and also to external implementing agencies, particularly in relation to monitoring, reporting and governance issues. Some of the specific roles to be undertaken by the unit shall include:

Setting up the system:

- Assist in the revision of the project log frame matrix, particularly in the areas of performance indicators and their measurement;
- Assist in the development and/or finalization of the project Annual Work Plans and keep it updated in accordance with project activities and timeframes as relevant.
- Develop the overall framework, for project M&E, for example mid-term project review, impact assessment, final evaluation, develop project Performance Monitoring Plan with relevant data collection systems.
- Review the quality of existing data in the project subject areas, the methods of collecting it, and the degree to which it will provide good baseline statistics for impact evaluation.
- Develop baseline data for each project component and for all project indicators.
- With collaborating partners, review their existing approaches and management information systems and agree on any required changes, support and resources.
- Develop a plan for project-related capacity-building on M&E and for any computer-based support that may be required.
- Organize and undertake training with collaborating partners on M&E as required.

Implementation of M&E and coordination:

- Collect data on a regular basis to measure achievement against the performance indicators.
- Check data quality with partners.
- Maintain and administer the M&E database; analyse and aggregate findings.
- Support project progress reporting, project mid-term review and final evaluation.
- Identify areas where technical support to project partners is required. Organize refresher training on M&E for partners as required.
- Identify lessons learned and develop case studies to capture qualitative outputs of the project. Provide advice to other departments and implementing agencies/organizations on improving project performance using M&E findings.

5.3 Monitoring Framework at the Board Level

The Board of NIA will take the overall responsibility in ensuring the implementation of this strategic plan. A Strategic Plan Implementation Team (SPIT) shall be constituted and assigned tasks to ensure effective implementation of the Plan. The team shall be required to develop annual work plans based on this strategic plan, and to cascade the plan downwards to other departments and progress reports made. The team shall be required to deliberate and take corrective action on areas of implementation that are not meeting the set performance parameters.

5.4 Monitoring and Strategic Plan Review Framework

The Strategic Plan will be reviewed annually and at the mid-term by an external consultant to ensure that it remains relevant, feasible and delivers outputs that contribute to sustainable development. Annual review will evaluate the year's activities and indicate the extent to which the implementation of the actions in the Strategic Plan Pillars are

being addressed. A comprehensive review of the strategic plan will be undertaken at the end of the third financial year.

5.5 Strategic Plan Implementation Challenges and Assumptions

The Board and Management Team of NIA recognize that the path to the implementation of this plan would face a number of challenges, given the number and magnitude of the changes in structures, systems, and behaviors (personal and group levels) expected for the effective service delivery at the institution. For this matter, there could be resistance to change coupled with resource constraints to facilitate effective implementation. However, all these will be considered and measures put in place to mitigate them. The risk management of this strategic plan shall be considered in order to take precautionary measures in good time and thus prevent failure of the strategic plan implementation. The following are some of the risks/risk factors to be considered:

1. Collaboration and Goodwill: Collaboration and goodwill from all concerned and interested parties is necessary for the implementation of this Strategic Plan. If collaboration and goodwill, especially from the Board members, management team, staff members and external stakeholders is lacking, there remains the risk of failure in implementing the plan. For instance, it means that considerable amount of time and resources shall be devoted to handle the resistance.
2. Availability of resources: Resources, financial and time, are essential for implementation of the strategic plan. Inadequate human, financial and other resources pose risks to the implementation of the planned activities. For instance, shortage and/or a high staff turnover in the organization, especially the professional irrigation engineer and top management level, may result in disruptions or failure in the coordinated strategic plan implementation and effective service delivery. This would thus require sound and effective human capital strategy that would attract, retain, and develop competent human resources for the organization.
3. Information flow and Corporate Image: The absence of an effective and well-embraced Communication Strategy may result in poor information flow and thereby delaying decision making. This will result in a risk of failure/delay in the implementation of the strategic plan. NIA shall put in place measures/strategy to address them through the development and implementation of proactive Corporate Communications Strategy targeting both internal and external stakeholders.
4. Ownership: The lack of ownership by the stakeholders, especially the NIA Board, top management, and staff may lead to failure in the implementation of the strategic plan.
5. Resistance to change: Usually, staff in any organization resist change because of the ‘fear of the unknown’ or due to the comfort zones associated with an existing status quo. Resistance to change may itself result in failure or delay in the strategic plan implementation. The provision of strategic leadership skills coupled with training and capacity building of staff shall facilitating in creating and sustaining an environment of adaptive management mindset and recognition of change as a way of life.

5.6 Conclusion

This Strategic Plan for NIA is designed to make the organization become relevant in creating a competitive and sustainable irrigation sector with an aim of addressing food and nutritional security challenges in Kenya. It is intended to put in place structures and systems for effective and responsive service delivery and enhance the corporate capabilities of NIA in addressing the duties and responsibilities as contemplated in the Irrigation ACT 2019. However, all these can only be achieved if all parties and stakeholders in the irrigation sector join hands to play a role, however small it might look, to create a difference to the sector and above all, to our ASAL communities and the Kenyan public at large.

PART 6

ANNEXURE

6 ANNEXURE

6.1 STRATEGIC PLAN IMPLEMENTATION FRAMEWORK FOR NIA 2019-2023

Pillar 1		Sustainable Irrigation Development												
Strategic Objective 1.1:		Increase area under irrigation by 518,000 acres in the plan period												
Key Result Area:		Sustainable Irrigation Development												
Expected Outcome:		Increased irrigated agricultural production and productivity												
Outcome Indicator:		Area under irrigation												
Strategy	Activity	Expected Output	Output Indicators	Target for 5 Yrs.	Annual Targets					Annual Budget (KES.'000,000)					Total	Responsibility
					2019/20	2020/21	2021/22	2022/23	2023/24	2019/20	2020/21	2021/22	2022/23	2023/24		
1. Map out strategic irrigation schemes of *at least* 10,000 acres and above per county	1. Undertake feasibility studies, detailed design of large scale and small holder irrigation projects	Mapping of strategic irrigation schemes Conducted	No of acres identified	1.9M	0	0	637,980	637,980	637,980	0	1,000	1,000	1,000	1,000	4,000	DGM(IIDS)
		Feasibility Studies and detailed design for strategic irrigation schemes Conducted	No of acres Designed	1.9M	0	0	637,980	637,980	637,980	0	1,000	1,000	1,000	1,000	2,000	DGM(IIDS)

	Develop large scale irrigation projects	Construction of irrigation infrastructure	No of acres developed	175,000 acres	5,000	25,000	40,000	45,000	60,000	2,000	7,500	15,000	22,500	30,000	77,000	DGM-IDS
	Construction *of new small-scale* irrigation projects	Irrigation Infrastructure for Small scale project Designs Completed	No of acres developed	100,000 acres	6,250	12,500	18,750	31,250	31,250	1,563	3125	4,688	7,812	7,812	25,000	DGM-IDS
	Construction of household irrigation water pans.	Irrigation infrastructure developed	Acres under irrigation	125,000 acres	10.2 MCM	10.2 MCM	34.9 MCM	34.9 MCM	34.9 MCM	800	1,325	5,235	5,235	5,235	17,830	DGM-IDS
2. Exploit groundwater irrigation projects in all areas including arid and high potential areas	1. Hydrogeological studies for ground water potential	Potential volume of water available for irrigation	Sub-basin ground water maps & No of potential acres that can be put under irrigation	55,000 acres	0	0	18,000	18,500	18,500	0	0	10	5	5	20	DGM-IDS
	Construction of groundwater abstraction and irrigation *infrastructure*	Borehole drilled and equipped	No. of boreholes drilled and equipped with storage	470	-	118	118	118	118		354	354	354	354	1,416	DGM-IDS
2. Adopt PPs approach in implementa	1. Feasibility study for national	PPPs	No. of PPP	2	0	0	1	1	0	0	20	40	40	0	100	DGM-IDS

tion of National schemes	schemes to PPP projects.		agreements													
	Construction of PP*P* irrigation *infrastructure*	Irrigation Infrastructure for irrigation schemes	No of acres irrigated under PPP	10,000 acres	0	0	0	0	10,000	0	0	0	0	2,500	2,500	DGM-IDS

Pillar 2	Sustainable Irrigation Water Harvesting and Storage															
Strategic Objective 2.1:	Enhance Irrigation Water Storage capacity by 400 million cubic meters															
Key Result Area :	Increased irrigation water security															
Expected Outcome:	Reliable irrigation water supply															
Outcome Indicator:	Volume of water harvested and stored.															
Strategy	Activity	Expected Output	Output Indicators	Target for 5	Annual Targets					Annual Budget					Total	Responsibility
					2019/20	2020/21	2021/222	2022/23	2023/24	2019/20	2020/21	2021/222	2022/23	2023/24		
1. D*evelop ment* of water storage at household level	1. Feasibility studies, detailed design of household irrigation water pans.	Potential volume of water to be harvested for irrigation	Volume of water that can be harvested for irrigation	150 MCM	10.2 MCM	10.2 MCM	43.3MCM	43.3 MCM	43.3 MCM	10	20	20	20	20	90	DGM- IDS
	2. Construction of household irrigation water pans.	Volume of storage facilities	Volume of water harvested for irrigation	125 MCM	10.2 MCM	10.2 MCM	43.3MCM	43.3 MCM	43.3 MCM	800	1,325	6,495	6,495	6,495	21,610	DGM- IDS

Pillar 2	Sustainable Irrigation Water Harvesting and Storage															
Strategy	Activity	Expected Output	Output Indicators	Target for 5	Annual Targets					Annual Budget					Total	Responsibility
					2019/20	2020/21	2021/222	2022/23	2023/24	2019/20	2020/21	2021/222	2022/23	2023/24		
Strategic Objective 2.1:		Enhance Irrigation Water Storage capacity by 400 million cubic meters														
Key Result Area :		Increased irrigation water security														
Expected Outcome:		Reliable irrigation water supply														
Outcome Indicator:		Volume of water harvested and stored.														
		constructed for irrigation	Acres under irrigation													
3. Increase capacity of existing community water pans and small dams	1. Rehabilitation and expansion of existing community water pans and small dams	Volume of storage facilities increased	Volume of water stored	400 MCM	3.2 MCM	4 MCM	130 MCM	130 MCM	130 MCM	300	600	19,500	19,500	19,500	59,400	DGM- IDS
Development of large and medium dams for irrigation projects.	Feasibility studies, detailed design and construction of large and medium scale dams.	Feasibility reports for 3 No. large dams identified	Volume of potential storage identified	30 MCM	0	1	1	1	0	0	150	150	150	0	450	DGM- IDS
	Construction of three medium/large scale	Procurement of contractors for EPCF contract	Commercial Contract agreement and	9 No.	0	2	3	4	0	0	10	10	10	0	30	DGM- IDS

Pillar 2		Sustainable Irrigation Water Harvesting and Storage														
Strategy	Activity	Expected Output	Output Indicators	Target for 5	Annual Targets					Annual Budget					Total	Responsibility
					2019/20	2020/21	2021/222	2022/23	2023/24	2019/20	2020/21	2021/222	2022/23	2023/24		
Strategic Objective 2.1:		Enhance Irrigation Water Storage capacity by 400 million cubic meters														
Key Result Area :		Increased irrigation water security														
Expected Outcome:		Reliable irrigation water supply														
Outcome Indicator:		Volume of water harvested and stored.														
	dams for Irrigation Projects		commencement of works													
		% of completion for Construction of 1 No. dam	% completion	100%	25%	60%	100%	0	0	2,000	2,000	3,100	1,000	0	8,100	DGM- IDS
Development of new water pans/small dams	Construction of new water pans/small dams	Volume of storage facilities constructed for irrigation	Volume of water harvested for irrigation Acres under irrigation	125 MCM	10.2 MCM	10.2 MCM	43.3 MCM	43.3 MCM	43.3 MCM	800	1,325	6,495	6,495	6,495	21,610	DGM- IDS
Exploiting water stored in existing dams for irrigation under IWRM principles	Determine the potential of utilizing water stored in existing dams for irrigation	reports	reports	15 No.	0	0	3	5	5	0	0	20	30	30	80	DGM- IDS
	Detailed design for irrigation infrastructure	Reports	reports	5 No.	0	0	0	0	5	0	0	0	0	500	500	DGM- IDS

Pillar 3	**Sustainable Irrigation Management (SIM)**
Strategic Objective 3.1:	Ensure 100% utilization of all existing schemes
Key Result Area :	Sustainable Irrigation Management (SIM)
Expected Outcome:	Improved national and household incomes, food and nutritional security
Outcome Indicator:	Incomes and poverty status of the irrigation farming community

Strategy	Activity	Expected Output	Output Indicators	Target for 5 Yrs	Annual Targets					Annual Budget					Total	Responsibility
					2019/20	2020/21	2021/222	2022/23	2023/24	2019/20	2020/21	2021/222	2022/23	2023/24		
Increase utilization of irrigation infrastructure to 200%	Develop and implement scheme sustainability plans for public schemes including other schemes with NIA Offices	Business Plans for NIA schemes and projects developed (Mwea, Ahero, Bunyala, West Kano, Lower Kuja, Perkerra, Usueni, Hola, Bura, Lokubae, Katilu and Elelea)	No. of plans	12	3	6	3	0	0	9	18	9	0	0	36	DGM-O
	Formulate water allocation and management plan within the schemes.	Water Efficiency Management Strategy Developed	No. of Manuals	12	3	6	3	0	0	9	18	9	0	0	36	DGM-O
Improve the operation and maintenance service/function	Determine Operation and maintenance fee and water	Scheme O&M Strategy Developed	No. of O&M Manuals	12	0	1	2	2	2	0	10	20	20	20	70	DGM -O

in irrigation schemes	use charges per scheme Operate														
	Collect 100% O&M fees for schemes under NIA Management	100% O&M fee collection	% O&M Fees collected per Scheme	100	100	100	100	100	100	0	0	0	0	0	0	DGM -O
	Operate and maintain primary irrigation infrastructure including the main water storage facilities Provide technical advisory services on irrigation water management, operation and maintenance	Scheme O&M Strategy for all NIA schemes and projects	No. of O&M Manuals	150	12	28	50	50	50	36	84	150	150	150	570	DGM-O
	Partner with Water Service Providers to provide operation and maintenance services in the irrigation schemes	Partnership and Collaboration Strategy	No. of MoU's signed	2	0	1	1	-	-	0	2	10	5	-	17	DGM-O

	Mitigate against environmental degradation out of operation of irrigation schemes. (Fruit Tree nurseries)	Strategy for Mainstreaming Climate change Adaptation and Mitigation Developed	No. of Interventions	5	1	2	2	0	0	15	30	30	0	0	75	DGM-O

Pillar 3		Sustainable Irrigation Management (SIM)														
Strategic Objective 3.2:		Form and strengthen at least one farmer organization in every NIA developed scheme to enter into agreements.														
Key Result Area :		Sustainable Irrigation Management (SIM)														
Expected Outcome:		Improved national and household incomes, food and nutritional security														
Outcome Indicator:		Incomes and poverty status of the irrigation farming community														
Strategy	Activity	Expected Output	Output Indicators	Target for 5 Yrs	Annual Target					Annual Budget					Total	Responsibility
					2019/20	2020/21	2021/222	2022/23	2023/24	2019/20	2020/21	2021/22	2022/23	2023/24		
Formation and strengthen farmers organizations.	Formation and strengthening of IWUA as provided in the irrigation Act	Scheme/Project Based IWUAs established for all existing projects	Number of IWUAs formed	150	10	30	50	30	30	30	90	150	90	90	450	DGM-O
Improve the operation and maintenance service/function	Build capacity of farmer's leadership and beneficiaries on operation and	Capacity Development of IWUAs conducted	No. of farmers	10,000	0	3500	2500	2000	2000	0	3.5	2.5	2	2	10	DGM-O

in irrigation schemes.	maintenance functions.															
	Partner with Water Service Providers to provide operation and maintenance services in the irrigation schemes	Partnership and Collaboration Strategy Developed	Partnership and Collaboration Strategy Report	1	0	0	1	0	0	0	0	10	0	0	10	DGM-O
Collaborations on production and development of value chains.	Collaborate identification of value chains for irrigation schemes for contract farming considering the agro-climatic zones, irrigation water requirements, irrigation systems and markets., Warehouse receipts systems, contract farming	Partnership and Collaboration Strategy Developed	No. of value chains (rice & maize, soya beans and sorghum,)	4	1	3	0	0	0	15	45	0	0	0	60	DGM-O
	Develop typical cropping programmes for identified value chain	Irrigation Farming Practices and Guidelines Developed for all schemes and projects	No. of cropping programs	150	12	138	0	0	0	6	69	0	0	0	75	DGM-O
	Develop a collaboration framework for farmers, aggregators, financing institutions and	Partnership and Collaboration Strategy Developed	No. of MoUs/ Agreements	1	0	0	1	0	0	0	0	5	0	0	5	DGM-O

	county governments															
Designate the public irrigation schemes as agricultural hubs and centers of excellence in agriculture	Designation of Mwea, Ahero, Perkerra, Katilu, Bura, Kuja as agro-processing centers as planned in the ASTGS	Lobby and Advocacy Strategy developed	% completion of study	1	0	0	9	91	0	0	0	10	100	0	110	DGM-O
	Implementation of agricultural hub		% of implementation	100	0	0	0	2	98	0	0	0	20	480	500	DGM-O

Pillar 4		Irrigation Oriented Research (IOR)													
Strategic Objective 4.1:		Identify irrigation development advancement technologies													
Key Result Area:		Irrigation Oriented Research (IOR)													
Expected Outcome:		Improved decision making in irrigation development and management services													
Outcome Indicator:		Availability of relevant and timely irrigation data for decision making													
Strategy	Activity	Expected Output	Output Indicators	Target for 5 Yrs	Annual Targets					Annual Budget					Total	Responsibility
					2019/20	2020/21	2021/222	2022/23	2023/24	2019/20	2020/21	2021/22	2022/23	2023/24		
Develop a baseline on the irrigation investments in the country	Conduct a comprehensive mapping of current NIA irrigation schemes/projects to determine their current status and viability	Irrigation Mapping (audit) in Kenya Conducted	Status report	1	0	0	1	0	0	0	0	50	50	50	150	DGM-P
Establishment of alternative irrigation water sources	Seek collaboration of mapping of ground water resources	Ground Water Resources for Irrigation	No. of Regional basin ground water Status report	7	0	1	3	3	0	0	30	90	90	0	210	DGM-P
	Explore alternative water sources including waste water (reuse), drainage water, ground.	Irrigation Water research Strategy Developed	Irrigation Water Strategy Report	1	0	0	0	1	0	0	0	0	50	0	50	DGM-P
Collect, analyse and disseminated data on	Develop a framework for collecting data on production	Annual production report development	No. of reports	1	0	0	0	1	0	0	0	0	25	0	25	DGM-P

irrigation water use and contribution to food security.	Analyze report on contribution of irrigation to food security and economic prosperity.	Water Efficiency Management Information Developed	Water Efficiency Management Information Report Manual	150	0	0	3	2	2	0	0	15	10	10	35	DGM-O
Adopt climate proofed irrigation infrastructure and climate smart irrigation farming to build resilience against climate change.	Develop guidelines on climate mitigation and adaptation measures for climate proofed irrigation infrastructure	Strategy for Mainstreaming Climate change Adaptation and Mitigation Developed	Climate change Adaptation and Mitigation Mainstreaming Strategy Report	1	0	1	0	0	0	0	35	0	0	0	35	DGM-P
	Domesticate guidelines on climate smart irrigation	Strategy for Mainstreaming Climate change Adaptation and Mitigation Developed	Climate change Adaptation and Mitigation Mainstreaming Strategy Report	0	1	1	0	0	0	125	125	0	0	0	250	DGM-P
Develop irrigation technologies to increase irrigation efficiency.	Distill farmer-led irrigation concept	IWUA Capacity Development Strategy Developed	IWUA Capacity Development Strategy Report	1	0	0	1	0	0	0	0	10	15	24	60	DGM-O
	Investigate, develop and promote efficient irrigation water management technologies including lining.	Water Efficiency Management Strategy Developed	Water Efficiency Management Strategy Report	1	0	1	0	0	0	0	30	0	0	0	30	DGM-O

Pillar 4		Irrigation Oriented Research (IOR)															
Strategic Objective 4.2:		Develop and adopt sustainable irrigation management frameworks															
Key Result Area :		Irrigation Oriented Research (IOR)															
Expected Outcome:		Improved decision making in irrigation development and management services															
Outcome Indicator:		Availability of relevant and timely irrigation data for decision making															
Strategy	Activity	Expected Output	Output Indicators	Target for 5 Yrs	Annual Target					Annual Budget					Total	Responsibility
					2019/20	2020/21	2021/222	2022/23	2023/24	2019/20	2020/21	2021/222	2022/23	2023/24		
Utilization of findings to operationalize schemes into production Through enhanced innovations in all fields	Pilot service oriented irrigation management in irrigation schemes	Irrigation Scheme/Project Business Plans Developed	No of Irrigation Scheme/Project Business Plans	1	0	0	1	0	0	0	0	20	0	0	20	DGM-P
	Pilot volumetric allocation and pricing of water in irrigation in a scheme in eastern and western region.	Water Efficiency Management Strategy Developed	Water Efficiency Management Strategy Report	2	0	0	1	1	0	0	0	20	20	0	40	DGM-P
	Pilot & roll out an insurance premium for ALL irrigation schemes	Develop an Insurance product for irrigated agriculture	2 insurance products developed	2	0	0	2	0	0	0	0	50	0	0	50	DGM-O

Identify/ prioritize irrigation research areas/needs	Development of priority research and areas of impact by NIA	Research programs developed	No. of Research programs	4	0	2	2	0	0	0	50	50	0	0	100	DGM-O
Operationalize research centers for informed irrigation development	Restructure, Rehabilitate and restock existing irrigation research & training centers	Operational centers to serve key irrigation regions	No. of Rehabilitated centers/ Stations	4	0	0	2	2	0	0	0	150	150	0	300	DGM-O

Pillar 5		Governance and institutional Capacity Development (GCD)															
Strategic Objective 5.1:		Enhance the Governance capacity of the NIA over the plan period															
Key Result Area 1:		Ensure conformity with the Irrigation Act No.14 of 2019 and other relevant legal documents to NIA															
Expected Outcome:		Improved irrigation service delivery															
Strategy	Activity	Expected Output	Output Indicators	Target for 5 Yrs (%)	Target (%)					Budget (M)					Total	Responsibility
					2019/20	2020/21	2021/22	2022/23	2023/24	2019/20	2020/21	2021/22	2022/23	2023/24		
Operationalize the Irrigation Act.	Audit the irrigation Act 2019 to ensure that there are no overlaps	Irrigation Act audited and any overlaps submitted for redress	Irrigation Act audit report	100	100	-	-	-	-	3	-	-	-	-	3	Planning
	Develop a transition plan to the Irrigation Act, No.14 of 2019	Transition Plan for NIA Developed	Transitional Plan	100	100	-	-	-	-	15	-	-	-	-	15	Planning
	Implement the transition plan to the Irrigation Act, No.14 of 2019	Implementation level	Implementation status reports	100	40	20	20	20	-	120	60	60	60	-	300	Planning
	Reorganizing functions/titles in the structures of the organogram	NIA Organization Structure Reviewed	Revised functions in the Organization Structure	100	100	-	-	-	-	4	-	-	-	-	4	Corporate Services
	Review of all institutional policies	Institutional policies reviewed	Reviewed policies	100	40	30	30	-	-	10	5	5	-	-	20	Corporate Services

	Review and implement Board Charter	Board Charter Revised	Updated Board Charter	100	100	-	-	-	-	5	-	-	-	-	5	Corporation Secretary/legal services
Strategic Objective 5.2		*Enhance the institutional capacity of NIA over the plan period.*														
Key Result Area 2:		*Enhanced operational capacity*														
Strategy	Activity	Expected Output	Output Indicators	Target for 5 Yrs	Target (%)					Budget (M)					Total	Responsibility
					2019/20	2020/21	2021/22	2022/23	2023/24	2019/20	2020/21	2021/22	2022/23	2023/24		
Strategy operationalization	Cascade the Strategic Plan/Develop Departmental plans/ Business Plans	Departmental Plans Developed	4 departmental Plans	100	100	-	-	-	-	8	-	-	-	-	8	Planning
	Implement the departmental plans	Level of implementation of the plans	Implementation level	100	100	100	100	100	100	-	-	-	-	-	0	Infrastructure Operations Corporate services Planning
	Activity	Expected Output	Output Indicators		Target %					Budget (M)					Total	Responsibility

				Target for 5 years	19/20	20/21	21/22	22/23	23/24	19/20	20/21	21/22	22/23	23/24		
	Monitor the implementation of the departmental plans	Status on the implementation of the departmental plans	Monitoring and evaluation reports	100	100	100	100	100	100	0.2	0.2	0.6	0.2	0.6	1.8	Planning
	Develop an integrated Project Management guidelines throughout the project lifecycle	Guidelines for Integrated Project Management Developed	Project Management Guidelines Report	100	100	-	-	-	-	10	-	-	-	-	0	Planning
	Develop a comprehensive monitoring, evaluation and learning plan/strategy for the institution	Monitoring, evaluation and learning plan/strategy in place	Monitoring, evaluation and learning plan/strategy	100	100	-	-	-	-	10	-	-	-	-	10	Planning
	Come up with a fully-fledged M&E Unit	Fully fledged M&E unit in place	M&E Unit	100	100	-	-	-	-	5	-	-	-	-	5	Corporate Services
	Implement the overarching Monitoring, Evaluation and Learning framework	Status/progress of operations	MEL report	100	20	20	20	20	20	0.2	0.2	0.2	0.2	0.2	1.0	Planning
	Key Result Area 2: Enhanced NIA's Human Resource Capacity															

Develop a Human Resource strategy	Human Resource Strategy Developed	Human Resource Strategy Report HR Audit Schemes of service Institutional capacity assessment Re-categorization of the institution Training needs assessment Training plan Capacity building Recruitment	100	100	-	-	-	-	12	-	-	-	-	12	Corporate Services
Implement Human Resource strategy	HR Strategic interventions realized	HR strategy implementation report	100	20	20	20	20	20	420	420	420	420	420	2100	Corporate Services
Key Result Area 3: Enhanced NIA's Financial Capacity															
Establish a liaison and resource mobilization unit	Liaison and Resource Mobilization Unit established	Liaison and Resource Mobilization Unit	100	100	-	-	-	-	5	-	-	-	-	5	Corporate Services
Activity	Expected Output			Target %					Budget (M)						Responsibility

		Output Indicators	Target for 5 Years	19/20	20/21	21/22	22/23	23/24	19/20	20/21	21/22	22/23	23/24	Total	
Develop a resource mobilization strategy	Resource Mobilization Strategy in place	Resource Mobilization strategy	100	100	-	-	-	-	7	-	-	-	-	7	Planning/Corporate Services
Implement the resource mobilization strategy	Amount of revenue realized	Implementation report	50	10	10	10	10	10	3	3	3	3	3	15	Corporate Services
Develop an institutional policy on PPP	PPP policy in place	PPP policy	100	100	-	-	-	-	5	-	-	-	-	5	Planning
Streamline financial management processes and controls	Financial management and processes controls streamlined	Financial reports	100	100	100	100	100	100	-	-	-	-	-	0	Corporate Services
Improve institutional staff capacity on resource mobilization lobbying and advocacy	Staff trained in resource mobilization lobbying and advocacy annually	Training reports	20	-	5	5	5	5	-	1	1	1	1	4	Planning/Corporate Services
	Number of bankable proposals developed and marketed annually	Bankable proposals developed and marketed annually	*20*	-	5	5	5	5	-	2	2	2	2	8	Planning/Corporate Services

		Entrench resource mobilization in the performance contracts and appraisals of managers and technical staffs	Targets on RMS incorporated on performance contracts and appraisals of managers and technical staffs	*100*	-	50	50	100	100	-	-	-	-	-	-	Planning/Corporate Services
	Increase corporate communication actions for improved resource mobilization	Develop user friendly publications on operationalization, management and benefits of irrigation and development	Different forms of publications annually	*20*	-	5	5	5	5	-	1	1	1	1	4	Planning/Corporate Services
		Develop and air 1 documentary annually on popular TV station on impacts of irrigation and development for increased visibility	Documentary developed and aired	*5*	-	2	1	1	1	-	6	3	3	3	15	Planning/Corporate Services
	Activity	Expected Output	Output Indicators	Target for 5 Years	Target %					Budget (M)						Responsibility
					19/20	20/21	21/22	22/23	23/24	19/20	20/21	21/22	22/23	23/24	Total	

	Arrange visiting program for development partners and government to showcase successful irrigation and development models	Visit trip to successful cases	*5*	-	1	1	1	1	-	2	2	2	2	8	Planning/Corporate Services
Key Result Area 4: Enhanced Communication and Stakeholder Relations															
Develop a comprehensive communication Strategy.	Corporate Communication Strategy Developed	Corporate Communication Strategy Report	100	100	-	-	-	-	12	-	-	-	-	12	Corporate Services
Implementation of the comprehensive communication strategy	Implementation level	Implementation status	100	20	20	20	20	20	50	50	50	50	50	250	Corporate services
Rebranding of NIB to NIA	NIA rebranded	All aspects of NIA rebranded	100	100	-	-	-	-	80	-	-	-	-	80	Corporate Services
Undertake customer satisfaction survey translating to a customer service charter	Customer satisfaction survey undertaken	Customer Satisfaction survey Report	100	20	20	20	20	20	1.9	1.9	1.9	1.9	1.9	9.5	Corporate Services
		Service Delivery charter	100	20	20	20	20	20	0.75	0.75	0.75	0.75	0.75	3.75	

	Implement the customer service delivery framework translating to a customer service charter	Level of implementation of the customer service charter	Implementation report	100	20	20	20	20	20	1.8	1.8	1.8	1.8	1.8	9	Corporate Services
	Continuous branding of the institution			100	20	20	20	20	20	2	2	2	2	2	10	Corporate Services
	Development of a CSR Policy for the NIA	CSR policy in place	CSR policy	100	100	-	-	-	-	3.5	-	-	-	-	3.5	Corporate Services
	Activity	Expected Output	Output Indicators	Target for 5 Yrs	Target %					Budget (M)						Responsibility
					19/20	20/21	21/22	22/23	23/24	19/20	20/21	21/22	22/23	23/24	Total	
	Develop a CSR Strategy	CSR strategy in place	CSR strategy	100	100	-	-	-	-	5.8	-	-	-	-	5.8	Corporate Services
	Implement the CSR strategy	Level of implementation of the strategy	Implementation report	100	20	20	20	20	20	2	2	2	2	2	10	Corporate Services
Community and Stakeholder Engagement	Develop a policy for community stakeholder engagement	Community and stakeholder engagement policy in place	Community and stakeholder engagement policy	100	100	-	-	-	-	15	-	-	-	-	15	Planning
	Develop a framework for community stakeholder engagement	Framework on community and stakeholder engagement developed	Community and stakeholder engagement report	100	100	-	-	-	-	3	-	-	-	-	3	Planning

	Implement the framework for community stakeholder engagement	Implementation level	Implementation report	100	20	20	20	20	20	4	4	4	4	4	20	Planning
	Community stakeholder sensitization and engagement in all projects and at all levels of project cycle	Community stakeholder sensitized	Sensitization report	100	20	20	20	20	20	30	30	30	30	30	150	Planning
Key Result Area 5: Enhanced infrastructural capacity of NIA																
Maintain ISO certification including risk management	Ensure compliance of ISO 9001:2015 QMS.	Quality and Risk Management Policy and Strategy reviewed	Quality and Risk Management Policy and Strategy Report	100	100	100	100	100	100	1	1	1	9	1	13	Planning
	Activity	Expected Output	Output Indicators	Target for 5 years	Target %					Budget (M)						Responsibility
					19/20	20/21	21/22	22/23	23/24	19/20	20/21	21/22	22/23	23/24	Total	
	Seek ISMS certification as per ISO 27001	ISO 27001 Certification Acquired	QMS Risk Management Report	100	-	50	50	-	-	-	-	14	6	-	20	Corporate Services
	Conduct environmental audits for schemes and projects	Environmental audits conducted	Schemes and projects environmental audits	100	20	20	20	20	20	2	2	2	2	2	10	Planning

Mainstreaming ICT in NIA processes	Develop Automated Budget, procurement plan and document management systems	Automated Budget, procurement plan and document management systems in place	No. of automated systems	50	10	10	10	10	10	50	50	50	50	50	250	Corporate Services
	Develop ICT infrastructure	ICT infrastructure developed	ICT infrastructure	100	20	20	20	20	20	30	30	30	30	30	150	Corporate Services
	Integrate procurement processes in the ERP system	Procurement processes integrated in ERP system	Integration report	100	100	-	-	-	-	15	-	-	-	-	15	Corporate Services
Enhanced work environment	Conduct work environment survey	Work environment conductivity levels	Work environment survey report	100	20	20	20	20	20	2	2	2	2	2	10	Corporate services
	Implement work environment recommendations	Implementation levels	Implementation report	100	20	20	20	20	20	5	5	5	5	5	25	Corporate Services

6.2 RESOURCE REQUIREMENTS AND FINANCING STRATEGIC PLAN

6.2.1 Strategic plan 2019-2023 funding requirements

Inadequate financing for development and management of Irrigation came out as a critical strategic issue under all the five pillars among other identified issues of stagnant funding stream from government and development partners, inadequate capacity on proposals development, lobbying and fundraising, inadequate structure, guidelines and mechanisms for internal revenue generation and weak partnerships and linkages. Together with the MTEF budgets for expenditure, National Irrigation Authority's funding strategic plan requirements are estimated to be KES 250 Billion over the next 5 years as shown in Table 5 below.

Financial Year	19/20	20/21	21/22	22/23	23/24	TOTAL
Approximate Budget (KES 000000000)	9.47	20.96	64.43	73.2	82.43	250.48

Table 5: Strategic Plan Financial requirements

Thus human and financial resources are making it essential to harness varying strategies and actions with specific targets to realize target resources. From the situational analysis NIA has three key sources of financing; exchequer, internally generated revenue and donor funding. As per FY 2018/2019 financing source for NIA projects exchequer stood at KES 4.79 Bn while internally generated revenue was at KES 300M and donor funding was at KES 1.369 Billion. This section has recommended robust financing strategies for adoption to supply the huge resources gap required for mechanization, operations and infrastructure development, maintenance, upgrading human capacity and delivery of all irrigation development aspects for food security. Among the proposed strategies is for NIA to put in place an organizational-wide Resource Mobilization Strategy (RMS) to improve co-ordination, capacity and focus in resource mobilization. The RMS is a framework which recognizes that opportunities for resource mobilization exist at the global, regional, national and institutional levels and that by putting in place a calculated approach can improve quantity and quality. Below are some projected targets to grow the various funding streams for NIA:

6.2.2 Projected Sources of Funding

Government of Kenya Funding: Lobby for additional KES 500 M annually from Government of Kenya

As per the Constitution of Kenya, 2010 the Government of Kenya operates at two levels, National and County Government. NIA main source of funding is the National government that finances recurrent and development expenditures on varying amounts annually. In the next 5 years, NIA will continue to ensure quality service delivery while guaranteeing value for money and ensure increased visibility to both the public and government on contributions of irrigation and development to national development and achievement of key government policies and legislations such as the Vision 2030, Big Four Agenda and Ministry of Agriculture manifestos on food security. NIA will in addition strengthen economic planning skills for existing budget committee, improving corporate communication and strengthening internal financial and management controls for transparency and accountability. NIA will also explore and strengthen opportunities for collaboration with county governments in co-funding various irrigation and development initiatives. NIA will continue to embrace a proactive approach in expenditure planning and prioritization of projects and efficiently utilize the funds to undertake priority activities.

Internal revenue generation: To strengthen internal revenue generation to at least Kshs 400M annually

In the next 5 years NIA intends to increase revenue generation to at least Kshs 400M annually. Some of the initiatives that will lead to this include optimizing to 100% collection of O&M fees as well as expanding irrigated areas for schemes under NIA Management. Other aspects to be explored will include restructure, rehabilitate and restock existing irrigation research & training centers among others to draw revenues from their operations. NIA will optimize profits from rice mills and explore establishing operational PPP models which will become sources of internal revenue as well. Other avenues for generating revenue internally will include offering consultancies services and training.

Support from development partners: To grow funds from development partners by 20% annually

NIA will continue to mobilize financial resources from its long term development partners through existing collaborative frameworks as well as explore new funding opportunities. In the strategic period a liaison and Resource Mobilization Unit will be established and equipped with competent staff to take up lobby and fundraising as a full time responsibility. A resource mobilization strategy will also be developed containing strategic objectives, strategies and activities with annual work plan harnessing efforts from departments to improve resources realization. The liaison and Resource Mobilization Unit will be instrumental in implementing the 5-year cycle work plans in the subsequent resource mobilization strategies. NIA has a good number of committed and competent management team and support staff members with sound knowledge and technical expertise of irrigation and water services sector and its competitive landscape for growth and development. In order to enhance the resource mobilization, lobby and fundraising capacity; NIA will support a sizeable number of staff to competent trainings on successful resource mobilization proposals writing and marketing annually as a means to widen the pool of resource mobilization champions. Further the authority will establish a database of possible funding partners and their funding cycles matching potential partners with the strategic objectives of the plan. There will be coordinated joint development of concepts, proposals, and consultancy bids while ensuring regular revision of resource mobilization strategies through proactive approaches such as benchmarking with similar successful local and international agencies.

Public Private Partnerships: 2 national schemes to PPP projects.

The government through Public Private Partnerships (PPP) Act, 2013 encourages public agencies to form partnerships with private sector to facilitate enhanced public service delivery. NIA through Strategic Plan 2019-2023 will continue to engage private sector players in linking irrigation and development to industry. The authority collaboration with interested private companies, groups and individual entrepreneurs will pilot viable PPP business models. Successful cases of PPPs with appropriate collaboration frameworks will also act as source of revenue. NIA will also seek to sign joint Memorandum of Understanding both locally and internationally with like-minded institutions/organizations for improved service delivery and benefits to the public.

6.2.3 Strategic Actions

Below table shows FLAGSHIP activities that will be undertaken at different scales and timeframe - short term; medium term; and long term in the next Strategic plan dispensation to realize projected resource:

Activity	Expected Output	Output Indicators	Five Year Target
1. Establish a liaison and resource mobilization unit	Liaison and Resource Mobilization Unit established	Liaison and Resource Mobilization Unit	100
2. Develop a resource mobilization strategy	Comprehensive Resource Mobilization Strategy in place	Resource Mobilization strategy	100
3. Implement the resource mobilization strategy	Grow annual resource targets from all sources	Implementation report	50
4. Improve institutional staff capacity on resource mobilization lobbying and advocacy	Staff trained in resource mobilization lobbying and advocacy annually	Training reports	20
	Number of bankable proposals developed and marketed annually	Bankable proposals developed and marketed annually	20
	Entrenched resource mobilization in the performance contracts and appraisals of managers and technical staffs	Targets on RMS incorporated on performance contracts and appraisals of managers and technical staffs	100
5. Increase corporate communication actions for improved resource mobilization	Develop user friendly publications on operationalization, management and benefits of irrigation and development	Different forms of publications annually	20
	Develop and air 1 documentary annually on popular TV station on successful impacts of irrigation and development for increased visibility	Documentary developed and aired	5
	Arrange visiting program for development partners and government to showcase successful irrigation and development models	Visit trip to successful cases	5

6.2.4 The guiding principles in resource mobilization and financing

These principles include:

i. Build funding partners' and government confidence through efficient delivery of NIA commitments and prudent management of resources
ii. Undertake strategic and regular dialogue with major funding partners/government
iii. Provide satisfactory reporting and information on management and use of funds
iv. Promptly address any issues raised by funding partners/government on the management and use of funds
v. Use creative approaches and innovative resource mobilization techniques with non-traditional development partners
vi. Exploit the wealth of knowledge and skills of the well trained staff at NIB to undertake fund raising and consultancies
vii. Exploit opportunities for internal revenue generation
viii. Recognize role of in-kind contributions and develop strategies for acquiring the non-financial resources as a cost cutting measure

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