ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT(ESIA)

THE PROPOSED WATER INNOVATION CENTRE FOR THE JUBALAND STATE OF SOMALIA

European Union

iskaashiga jarmalka
DEUTSCHE ZUSAMMENARBEIT

giz
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

JPLG
Joint Programme on ernance and Decentralised Service Delivery

Jubbaland State of Somalia
Civil Service Commission

CLIENT:

GOVERNMENT: JUBALAND STATE OF SOMALIA
P. O. BOX 00000 JUBA KISMAYO

PROPONENT:

LOCAL COMMUNITIES: FARMERS, PASTORALISTS, VILLAGE LEADERS
DEVELOPMENT PARTNERS: NGOs, UN AGENCIES, AND INTERNATIONAL DONORS
PRIVATE SECTOR: RENEWABLE ENERGY AND WATER TECHNOLOGY COMPANIES

REPORT PREPARED AND SUBMITTED BY:
VITAL CARE CONSULTANCY
P.O.BOX 14167-00100
NAIROBI.

Registered, Licensed & Practicing Consultants & Firm of Expert

LEAD EXPERT:
IBRAHIM AHMED
Email: ibrahim@vitalcareconsultancy.net, Cell No. 0721-171-916

ASSOCIATE EXPERT:
TIMOTHY MBUVA (Mr.)
Email: mbuva@vitalcareconsultancy.net, Cell No. 0723-969-791

PROJECT COORDINATOR,

JUBALAND MINISTRY OF WATER AND ENVIRONMENT.

This Environmental Impact Assessment (EIA) report was prepared in accordance with the Environmental Management and Coordination Act (EMCA) 1999 (Amendments) Act, 2015 and the Environmental Impact Assessment and Audit Regulations, 2003, Rev. 2018 in order to meet the statutory requirements for implementation of projects under schedule ii.

I, the undersigned, confirm that the contents of this report are a true representation of the EIA process for the proposed WATER INNOVATION CENTRE for the Jubaland State of Somalia.

Firm of Experts

NEMA Registration **Number: 8332**
VITAL CARE CONSULTANCY, a Firm of Experts in Environmental Impact Assessments and Audits REG NO: 8332. Has prepared this ESIA project study report. It has been done with reasonable skill, care and due diligence in accordance with the Environmental (Impact Assessment and Audit) Regulations 2003 and within the study limitations, resources and literature reviewed.

IBRAHIM AHMED _____ _____

TIMOTHY MBUVA _____ _____

ACRONYMS

ASAL	Arid and Semi-arid Lands
SNWS	Somalia National Water Strategy
ESIA	Environmental and Social Impact assessment
WSB	Water Service Board
NEMA	National Environment Management Authority
EMCA	Environmental Management Coordination Act
EMP	Environmental Management Plan
EIA	Environmental Impact Assessment Studies
MM	Millimeters
WHO	World Health Organization
WRRS	Water Resource Reports for Somalia
FGoS	Federal Government of Somalia
UN	United Nations
OSRF	Own Source Research and Findings
PDO	Project Development Objective
TIMPS	Technology, Innovation Management practices
TOR	Terms of Reference

TABLE OF CONTENTS

LIST OF TABLES

Title Page

EXECUTIVE SUMMARY

In the commitment to protect the environment and also recognizing the requirements of the government of Somalia on the fulfillment of environmental and social impact assessment regulations, the Vital Care Consultancy, GIZ, Jubaland Water Agency and European Union, Climate-resilient Water Resource Management (CrWRM) engaged in carrying out an environmental and social impact assessment report for proposed water innovation Centre for the jubalant state of Somalia.

The report presents the assessment findings in accordance with the environmental management and coordination act (EMCA) 1999, Environmental and Social (Impact Assessment and Audit) regulations and the EIA and audit guidelines. The ESIA Assessed the existing environmental conditions and predicated the possible negative impacts and mitigation measures and an environmental management plan for the proposed Water Innovation Centre.

Further it has highlighted the relevant legislation for the project and documented evidence-based baseline data on the project. The measures proposed herein in the report need to be implemented to enhance sustainable utilization of our environment. It is hereafter reinforced that Project specifications, guidelines, licenses and permits must be in possession of the contractor and the proponent prior to commencement of innovation process. Through regular safety meetings, Jubaland Water Agency, employees and contractors working in the project will have to be made aware of these documents and their contents.

Innovation of the project will lead to increased water accessibility to the project beneficiaries, improved soil erosion control, improve water management and conservation in Jubaland state, enhance climate resilience and mitigate the impacts of drought, support local agriculture through water solutions, promote renewable energy for water purification and distribution. Being a new project, very minimal negative impacts are expected a part from health and safety concerns of which mitigation measures have been suggested.

CHAPTER 1

1 INTRODUCTION

This Environmental and Social Impact Assessment was carried out on behalf of Jubaland State of Somalia (JSS) under Department of Jubaland Water Agency (JWA), Climate-resilient Water Resource Management (CrWRM) funded by GIZ, NGOs, European Union, UN agencies and international donors in Bilateral agreement with GoS for Local Communities, on the proposed Water Innovation Centre which is found 30Kms Yontoy Area, Luglow North of Kismayo, Jubaland State, Somalia.

The Jubaland Water Innovation Centre Project (JWICP) is implemented by the Government of Somalia (GoS) through the Ministry of Jubaland Water Agency, Climate-resilient Water Resource Management (CrWRM) with funding from the GIZ, UN, EU and International donors. Implementation of Water Innovation Centre (WIC) involves a three-tiered institutional arrangement (national, state, and community). The first tier is at the national level where the National Treasury (NT) represents the Government of the Republic of Somalia and the JWA is the main implementing agency. The project is anchored in the Juba Water Agency. The second tier is at the State level, with the State Governments as the executing agencies of the project. The third tier is at the community level, where beneficiaries implement community-led interventions.

The project is part of Multinational program which top priority is assigned to states with higher: (i) vulnerability to climate change and
Extreme weather events (ASAL states being the most adversely impacted by droughts); (ii) Volatility in agricultural production and presence of fragile ecosystems (natural resources are Highly degraded in ASALs); and (iii) poverty indices (poverty incidence and poverty rates— ASALs have the highest poverty rates

1	Juba
2	Kajo-Keji
3	Lainya
4	Morobo
5	Terekeka

1.1 Project rationale

The project idea emerged from a brainstorming session between the Jubaland Ministry of Energy and Water Resources and the GIZ Climate-resilient Water Resource Management (CrWRM) project. The minister emphasized the urgent need for a water storage dam to boost agricultural production in Yontoy Area, Luglow North of Kismayo, Jubaland State, aligning with the project's objectives. In response, the CrWRM project team developed the idea further to match the project indicators and achieve broader outcomes.

Additionally, Dr. Shukrie's gender transformation study highlighted the necessity for greater gender inclusion in water management. This synergy provided an opportunity to address both the minister's request and Dr. Shukrie's findings by developing an integrated Innovation Centre. This centre would serve as a model for agricultural empowerment, promoting women's involvement in water resource management and productive water use. The Centre will also function as a hub for water innovation, where new technologies can be piloted, tested, and launched for scaling up, contributing to Output 3 (water innovation). By collaborating with the ministry and integrating the learning and innovation Centre's outcomes into state and national plans, along with constructing a lined earth dam, the project will contribute to Outputs 1 and 2 of the CrWRM project. This initiative corresponds to the need for this project to address the damages and losses sustained by the population, especially the poor and vulnerable communities of the arid and semi-arid lands (ASALs), in order to restore a sense of normalcy and resumption of economic and social activities as rain fed agriculture suffers most of the losses due to hot weather year round with seasonal monsoon winds and irregular rainfall with recurring droughts. The rains, also known as the Southwest Monsoons, begin in April and last until July producing significant fresh water and allowing lush vegetation to grow. The season is followed by the dry season. In rural areas, individual family water systems sustain partial damage due to the lowering of the groundwater table and rural inhabitants who are forced to collect water from far away sources.

The project has five components as summarized below:

Component 1: Research and Training Centre- A facility for water conservation and management studies that focuses on interventions that promote and facilitate the increased productivity; enhanced resilience (adaptation) and reduced emissions (mitigation) per unit of output, as co-benefits.

Component 2: Water Quality- A Lab for water testing and purification research that supports water purification and distribution, management and conservation

Component 3: Demonstration Farms- Agricultural plots showcasing sustainable irrigation techniques that supports development of agro-weather forecasting and marketing information system and their dissemination tools.

Component 4: Community Engagement Hub- A space for awareness programs and stakeholders meetings that supports activities related to national and state-level project coordination and management, including annual work planning and budgeting (AWP&B); fiduciary aspects (financial management and procurement); human resource (HR) management; safeguards compliance monitoring; development and implementation of Management Information System (MIS) and information, communication technology (ICT)-based platforms; monitoring and evaluation (M&E) and impact evaluation (IE) studies; and communication strategy and citizen engagement.

Component 5: Solar-Powered Water Treatment System-, That will provide clean water for the community. The proposed project would go a long way in increasing access to the surrounding community in addition to improving sanitation conditions and safety of the water dam.

1.2 Project Objective

The Project Development Objective (PDO) is "to increase agricultural productivity and build resilience to climate change risks in the targeted smallholder farming and pastoral communities in Jubaland, and in the event of an Eligible Crisis or Emergency, to provide immediate and effective response."

-The project will develop a Water Innovation Centre for research, training, and capacity-building.
-Improving water management and conservation in Jubaland State.
-Enhance climate resilience and mitigate the impacts of drought.
-Support local agriculture and livelihoods through water solutions.
-Promote renewable energy for water purification and distribution.

1.3 Scope

The environmental impact assessment covered the proposed project site and to larger extent the catchment area for the dam, it focused on the following;

- Describing nature of the project, location and rationale
- Describing the pertinent policies, legislation regulation
- Identification of both positive and negative environmental and social impacts of the project
- Propose environmental mitigation plan to minimize the negative impacts
- Conduct a public participation exercise during the process
- Develop Environmental Management Plan (EMP)

1.4 Terms of Reference for EIA

The EIA was undertaken in accordance with the requirements of the Government of Somalia in conformity with the National Environment Management Authority (NEMA) guidelines following the requirements of the Environmental Management and Coordination Act (EMCA), 1999 which makes it mandatory for such projects to undergo EIA process

1.5 Methodology

The EIA process adopted the following approaches: -

- Site observations and transect walk across the proposed project area
- Focused group discussion and brainstorming
- Collection of baseline data from both primary and secondary sources
- Use of semi-structured questionnaire and interviews
- Community Public Barazas and awareness campaigns
- Use of key informants and opinion leaders
- Analysis of collected data

CHAPTER 2

ESIA BACKGROUND, OBJECTIVES, TERMS OF REFERENCE AND CONSULTANCY TEAM

2.1 ESIA Background

Environmental and Social Impact Assessment is a systematic analysis of projects to determine their potential environmental impacts, the significance of such impacts and to propose measures to mitigate the negative ones. EIA is both a planning and a decision-making tool. As a planning tool, EIA presents methodologies and techniques for identification, prediction and evaluation of potential environmental impacts of projects as per the project cycle (planning, implementation and decommissioning phases).

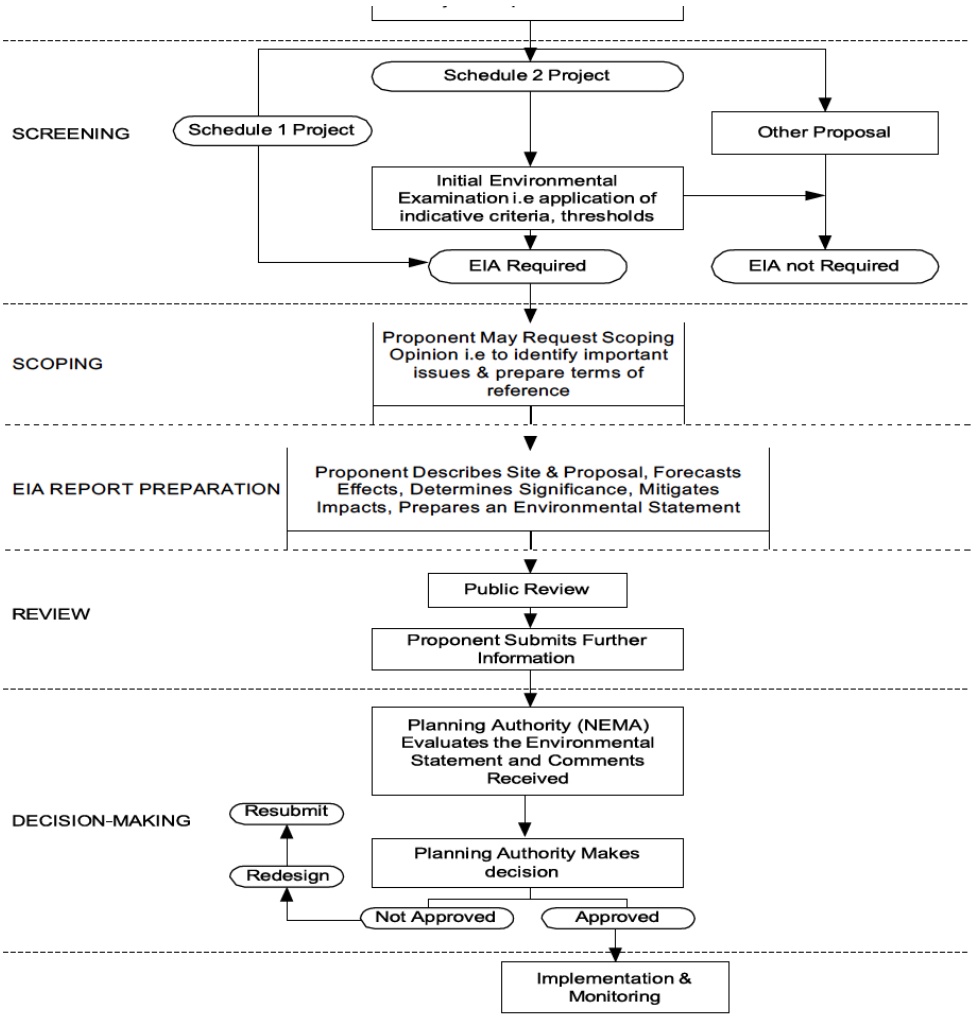


Figure *1: Illustrates general ESIA process steps in assessing projects.*

The need to conduct an ESIA report for water innovation Centre Project was commissioned by Jubaland Ministry of Water and Environment in order to comply with the NEMA ESIA/EA requirements for projects. An Environmental and Social Impact Assessment study is to be carried out in accordance with NEMA's Environmental Impact / Audit Regulations of 503 and be in consonance with Environmental Assessment Guidelines of the World Bank, European Commission and United Nations Environment Program.

Also, reference will be made to:

-The Somalia National Water Strategy (2021 -2025).

-Jubaland Environmental Protection Guidelines.

OWN SOURCE RESEARCH AND FINDINGS.

This Environmental and Social Impact Assessment (ESIA) was primarily aimed at establishing the impacts of Innovation Centre, Project's development plan on the environment, bio-diversity, sustainability of resource utilization, resource use conflicts arising from human interactions; and the socio-economic, socio-cultural and socio-political well-being of the beneficiaries, to meet requirements

2.2 Objectives of ESIA Study

The specific objectives of the ESIA study were to:

a) To review existing policy, legal and institutional framework on environmental management on water dam projects

b) To collect and collate baseline information of Water Innovation Centre

c) To conduct interviews through the community participatory process.

d) To identify and assess positive and negative impacts of the innovation of Water Innovation Centre to the community and Environment at large

f) To develop mitigation measures and cost estimates from all the negative impacts of project.

g) To design an Environmental Management Plan (including cost estimates) and a monitoring framework for the environmental impacts of the project.

2.3 Terms of Reference of ESIA Study

The ESIA was undertaken in accordance with the requirements of the Government of Somalia in conformity with the Environmental Management and Coordination (Amendments) Act, 2015 and Environmental (Impact Assessment and Audit) Regulations, 2003; Rev. 2018 which makes it mandatory for such projects to undergo EIA process.

- The terms of reference to be observed were in conformity with the environmental (impact and audit) regulations Legal Notice 101 (2003)
- To collect baseline socio economic data of the project area and potential impact expected from the project planning, construction, operation and decommissioning phases of the project.
- To review existing policy, legal and institutional framework and environmental management as relates to the project
- To identify and contact stakeholders, plan and undertake participatory stakeholders and public consultation as may be appropriate.
- To develop mitigation measures and possibly cost estimates for all the identified negative impacts of the project
- To gather and provide any other data and information that will be useful or may be required for EIA by NEMA

CHAPTER 3

LOCATION

2.1 ESIA Background

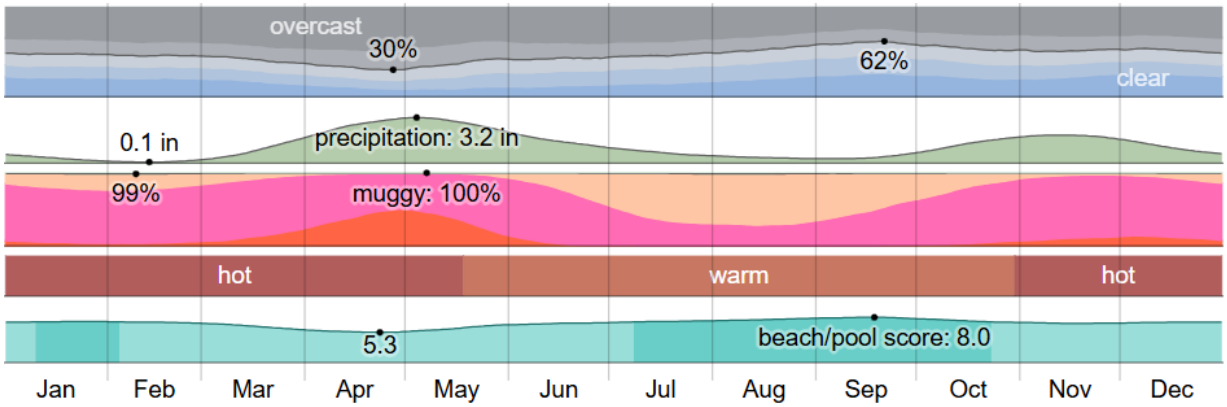
Yontoy Area, Luglow is in the Jubaland region of Somalia, characterized by a semi-arid climate with hot temperatures and minimal rainfall throughout the year. Situated near the confluence of the Juba and Shabelle rivers, Yontoy is strategically positioned to benefit from water resources critical for agriculture. The area is in proximity to Kismayo, a key urban centre, and serves as a significant location for internally displaced persons (IDP) settlements, providing refuge to those affected by regional conflicts and climatic challenges. The population of Yontoy is predominantly involved in agricultural activities, leveraging the fertile land for crop production and livestock rearing. Despite its agricultural potential, Yontoy faces security challenges due to the presence of militant groups, which impact the stability and development efforts in the region.

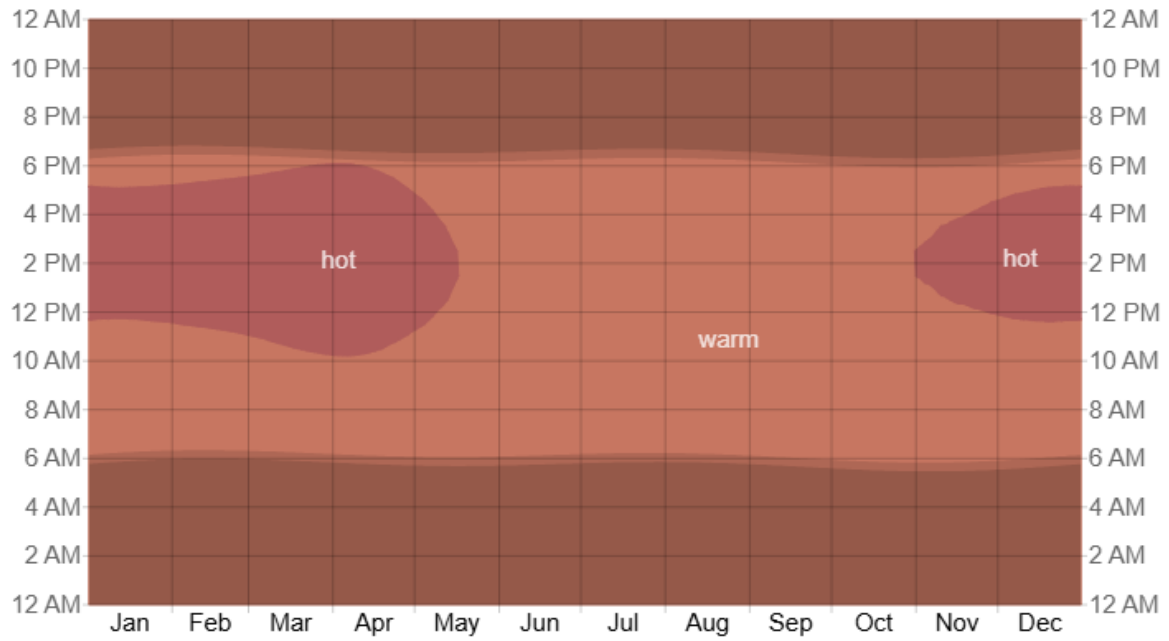
3.2 Physical and Topographic Features

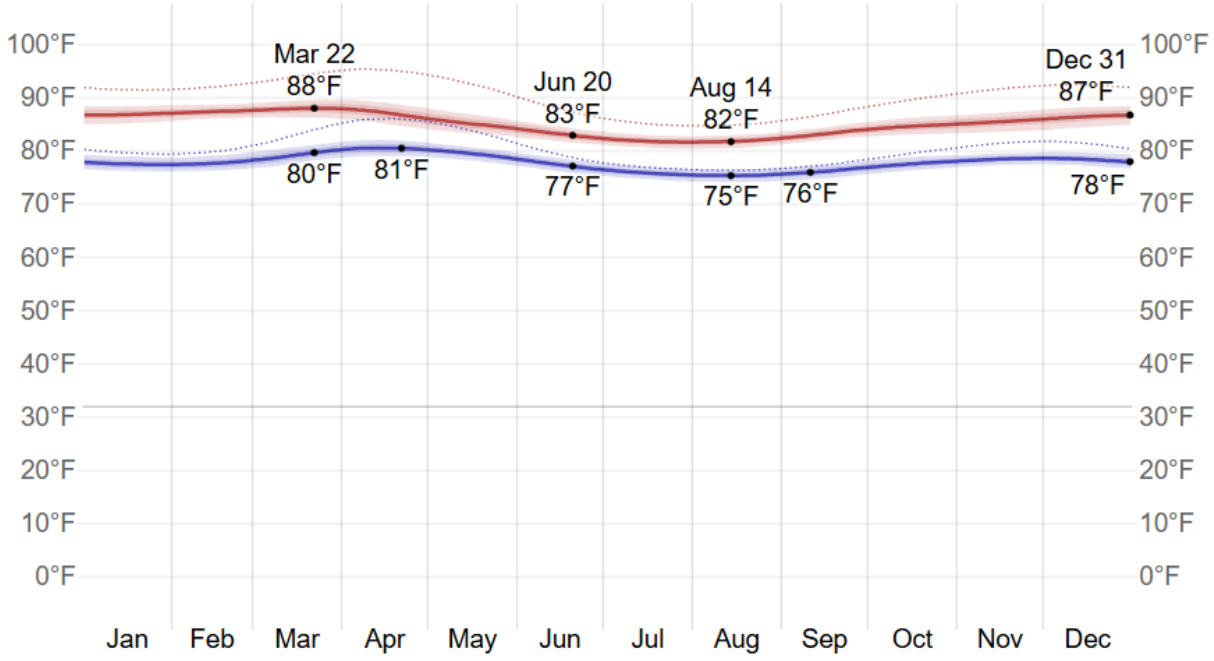
Yontoy is located at kismayo which is the third largest city in Somalia and the capital of both the Lower Juba region and the Jubaland state. The city is located on the coast of the Indian Ocean near the mouth of the Juba River approximately 528km southwest of Mogadishu. The port city is of not only regional but also national strategic significance as it lies halfway between Mogadishu and the Somalian border. For a long time Kismayo has derived its importance from this fact. In the past, it possessed the only well-protected roadstead between Mogadishu and Lamu, and thus merchandise designed for the inland towns and southern Somalia passed through its port. To date, its location makes it the commercial hub of the Jubaland region and southern Somalia. It provides an avenue of import and export trade.
Kismayo is divided into five districts: Farjano, Shaqaalaha, Calanley, Faanoole and the new district of Gulwade where the most recent expansion is taking place. The 2014 population for Lower Juba is estimated at 489,307; comprising an urban population of 172,861, a rural

3.3 Climatic Conditions

The climate in Kismayo is hot, oppressive, extremely windy, and partly cloudy. Over the course of the year, the temperature typically varies from 75°F to 88°F and is rarely below 74°F or above 90°F. Based on the beach/pool score, the best times of year to visit Kismayo for hot-weather activities are from mid-January to early February and from early July to late October.


overcast
30%
62%
clear
0.1 in
precipitation: 3.2 in
99%
muggy: 100%
hot
warm
hot
5.3
beach/pool score: 8.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


12 AM
10 PM
8 PM
6 PM
4 PM
2 PM
12 PM
10 AM
8 AM
6 AM
4 AM
2 AM
12 AM
hot
hot
warm
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


100°F
90°F
80°F
70°F
60°F
50°F
40°F
30°F
20°F
10°F
0°F
Mar 22
88°F
80°F
81°F
Jun 20
83°F
77°F
Aug 14
82°F
75°F
76°F
Dec 31
87°F
78°F
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

3.4 Forest Vegetation

The area north of Kismayo is characterized by swamps and marsh where during high floods the Shabelle and, more south, the Laag Dheera join the Juba River. The land cover shows extensive crop fields as one gets closer to the River Juba estuary to the Indian Ocean. Coconut crop is present and remains closer to the river, while other crop fields are found also further away from the river, with cereals still being present.

3.5 Livelihood zones

The pastoral production system forms the bulk of the main livelihood zones in the state and includes about 80% of the population. The other type is agro pastoral livelihood system which accounts for about 16% of the population. Other minor livelihood zones include formal employment and fish folk found around in Juba River.

3.6 Administrative and political units

Somalia is a Federal State composed of two levels of government: the federal government and the federal member states (FMS), which include both state and local governments. FMS also dispose their own constitutions and armed forces. Since the 15 May 2022 election, Hassan Sheikh Mohamud (HSM) is the new president of Somalia. On 7 August 2022, the Parliament endorsed the new Somali Government, comprising 26 Ministers, 24 State Ministers and 25 Deputy Ministers. Somalia is de-facto ruled by a gentlemen agreement among the major clan-families that dominate the country. Based on this agreement, also known as the 4.5 power-sharing formula, key positions in the State apparatus, including parliamentary seats, are (more or less) proportionally distributed among the four main clan families as well as the 0.5 quota representing minorities.

South-Central Somalia includes the following FMS: JUBALAND, South-West, Benadir, Hirshabelle and Galmudug. Mudug region is divided between Galmudug and Puntland, with Galmudug controlling the southern half of the region

3.7 Infrastructure And Access

Somalia is emerging from years of conflict. Key economic infrastructure such as roads, ports, and airports need improvements through public and private sector investments. Of the 21,830 kilometres of roads in the country, only 2,860 kilometres are estimated to be paved (13 percent), and most of this paved network is believed to be in poor or deplorable condition. According to recent reports, only 31.2 percent of the rural population has access to an all-season road, with the majority without reliable access roads. Key business and investment opportunities include public sector financing and development of major roads and highways, partnerships with local road contractors through provisions and sales of road machinery, equipment, and engineering services.

Somalia's major seaports are Berbera, Mogadishu, Bossaso, and Kismayo. Somalia also has other small and medium-sized ports such as Hobyo and Garacad that have attracted interest from both public and private entities for potential investments and expansion. Mogadishu and Berbera are the two largest ports. Berbera Port is under the management of a UAE company—DP World—and recently received over $400 million of investment in port improvements and cargo transit routes, with the aim of providing logistics capacity to Ethiopia of approximately 500,000 twenty-foot equivalent units (TEUs) per year. The Port of Mogadishu is under the management of Al-Bayrak, a Turkish company. Most Somali ports need critical infrastructure improvements such as additional berths, logistics support, cargo storage, cold chain storage and handling, and management services. The concept of an economic free zone is gaining traction. Berbera is establishing an economic free zone, and opportunities may exist in Mogadishu and Bossaso to create similar structures. In addition to port infrastructure, Somalia—with a long coastline of 3,333 kilometres—has the potential for the development of fishery jetties, deep sea fish harvesting and collection, and offshore fish cold chain storage and handling.

The country's major airports are Mogadishu, Hargeisa, Bossaso, Garowe, and Kismayo. Through efforts led by the Somali Civil Aviation Authority in partnership with IATA and ICAO, Somalia regained its Class A airspace classification after more than 30 years. Several international airlines operate in the country, including Turkish Airlines, Qatar Airways, Ethiopian Airlines, and numerous local airlines connecting passengers within and outside the country. There has been a substantial growth in passenger traffic in recent years due to diaspora returnees/visitors, religious travellers (including those making a pilgrimage to Saudi Arabia), and improved regular flights and interconnectivity with neighbouring countries. As business opportunities rise in the aviation sector, Somalia-based airlines seek partnerships and investments in the industry. In 2023, Daallo Airlines signed a deal with ACC Aviation to source new aircraft to support its expansion in Somalia. Areas of business and investment opportunities include public-private development models in airport passenger terminals, runways, ground handling, airport cargo handling and operations, and private sector financing and partnerships for local airline expansion through equity injections and loan.

3.7.1Posts and Telecommunication

While there is a good network coverage in Somalia, there are locations that may be left out or have an erratic coverage, especially in remote locations. During military operations, not only the Internet but the whole network might be shut down in some cases, thus affecting all types of phone communication.

3.7.2Financial Institutions

About 10 commercial banks and 11 money transfer businesses in jubaland state but without any banks in the vicinity of the project

3.7.3Energy Access

Main source of energy is fire wood while the electricity coverage is only found in urban Centre. The project area has no access to electricity.

3.7.4Markets and Urban Centers

Main traded goods are: livestock with 50% livestock herding, 30% crop farming and 20% trade and small businesses

3.7.5 Housing

The proportion of household living in mud/wood walled houses stand at 60% with majority living below poverty line.

3.8 Environment And Climate Change

Major Contributors to Environmental Degradation in the State

Environmental degradation in the state is mainly as a result of deforestation and forest encroachment due to dependency on firewood and overgrazing. Inadequate solid waste collection and its disposal coupled with lack of sewerage system and unsustainable management practices of ecosystems and their inherent biodiversity are major contributors to environmental degradation in the county. Other contributors to environmental degradation include non-compliance of law due to weak enforcement of the environmental provisions, inadequate disposal of non-biodegradable materials like plastics and polythene and low levels of environmental awareness, low social responsibility at individual and community levels on environmental matters.

CHAPTER 4

INSTITUTIONAL, POLICY AND LEGAL FRAMEWORK

This chapter describes the existing institutional and legal frameworks in Somalia that are directly related and influence the implementation of projects in regard to the environment in ASALs. Policies and legal statutes in Somalia play a significant role in ensuring the ultimate protection and sustainable development in Somalia and the focus of this chapter is to highlight the relevant policies and Acts and point out how it relates to the project.

4.1 Environment Management and Coordination Act, 2015

The Environmental Management and Coordination (Amendments) Act, 2015 is an Act of parliament that was enacted to ensure sound environmental management of our environment.
Every Somali citizen according to the environmental management and coordination (Amendment) Act 2015 is entitled to a clean and healthy environment and has the duty to safe guard and enhance the environment. The project falls in the 4th category of second schedule (s.58(1), (4)) of projects which require environmental impact assessment to be done. Further section 58 of EMCA gives general guidelines in relation to the process which are

(1) Notwithstanding any approval, permit or license granted under this Act or any other law in force in Somalia, any person, being a proponent of a project, shall, before financing, commencing, pro ceeding with, carried out, executing or conducting or causing to be financed, commenced, pro ceeded with, carried out, executed or conducted by another person any undertaking specified in the Second Schedule to this Act, submit a project report to the Authority, in the prescribed form, giving the prescribed information and which shall be accompanied by the prescribed fee.

(2) The proponent of a project shall undertake or cause to be undertaken at his own expense and envi onmental impact assessment study and prepare a report thereof where the Authority, being satisfied, after studying the project report submitted under subsection (1), that the intended project may or is l ikely to have or will have a significant impact on the environment, so directs.

(3) The environmental impact assessment study report prepared under this subsection shall be submitt ed to the Authority in the prescribed form, giving the prescribed information and shall be accompan ied by the prescribed fee.

(4) The Minister may, on the advice of the Authority given after consultation with the relevant lead agenc ies, amend the Second Schedule to this Act by notice in the Gazette.

(5) Environmental Impact Assessment studies and reports required under this Act shall be conducted or prepared respectively by individual experts or a firm of experts authorized in that behalf by the Authority. The Authority shall maintain a register of all individual experts or firms of all experts duly authorized by it to conduct or prepare environmental impact assessment studies and reports respect ively. The register shall be a public document and may be inspected at reasonable hours by any person on the payment of a prescribed fee.

(6) The Director-General may, in consultation with the Standards Enforcement and Review Committee, approve any application by an expert wishing to be authorized to undertake Environmental Impact Assessment. Such application shall be made in the prescribed manner and accompanied by any fees that may be required.

(7) Environmental impact assessment shall be conducted in accordance with the environmental impact assessment regulations, guidelines and procedures issued under this Act.

(8) The Director-General shall respond to the applications for environmental impact assessment license within six months.

(9) Any person who upon submitting his application does not receive any communication from the Director-General within the stipulated time may within nine months of such submission start his undertaking.

The act further makes it an offence for anyone any person who –

(a) Fails to submit a project report contrary to the requirements of section 58 of this Act;
(b) Fails to prepare an environmental impact assessment report in accordance with the requirements of this Act or regulations made thereunder;
(c) Fraudulently makes false statements in an environmental impact assessment report submitted under this Act or regulations made thereunder;

Commits an offence and is liable on conviction to imprisonment for a term not exceeding twenty-four months or to a fine of not more than two million shillings or to both such imprisonment and fine.

4.2 The National Water Act (No. 49 of 2011).

This Act makes provision for the conservation and development of water resources in Somaliland. Water is defined in article 1. The Act consists of 81 sections (divided into 16 Chapters), which define the objectives and general principles of the Act and provide with respect to, among other things: improvement of access to water resources; water distribution services; promotion of public and private partnership; duties and responsibilities of the Ministry responsible for water; duties and rights of water users; ownership of water; registration of water rights; settlement of disputes related to water rights; water user associations; water production licenses; urban water supply; rural water supply; water need priorities; livestock watering; waterworks; environmental protection and water resources; water conservation zones; water quality standards and quality of drinking water; agricultural water rights; highlands water conservation; groundwater protection; water pollution.

The Act makes the Ministry of Water Development (MoWRD) solely responsible for the water resources development and management of national water resources and it is mandated to act on behalf of Government of Somaliland in all matters relating to the Water Resources. Ministry's strategic purposes are included: 1) development of underground and surface water resources, 2) improvement of regulatory framework and oversight of water sector and sustainable management, 3) strengthening capacity of MoWRD and its constituent bodies, 4) coordination and information management of the sector in Somaliland, 5) converting floods from forces of disaster into livelihoods, and 6) mitigation of droughts and impacts of climatic and environmental changes to national water resources.

4.3 The Agriculture Act

The Agriculture Act Cap 318 of the Laws of Somalia seeks to promote and maintain a stable and sustainable agriculture, to provide for the conservation of the soil and its fertility and to stimulate the development of agricultural land in accordance with the accepted practices of good land management and good husbandry. This Act primarily guides and regulates farming practices especially in relation to the proximity of farming within the riparian section. The Act specifies that no agricultural activity is allowed and or permitted within the riparian area of a wetland, river or Lake. The Agriculture Act is the principal land use statute covering, inter- alia, soil conservation, and agricultural land use in general.

It is, indeed, a crucial piece of legislation insofar as it relates to both small scale and medium- scale farms within the project area and catchment.

4.4 The Forest Act

The Forests Act, Cap 385 of the Laws of Somalia addresses reservation, protection, management, enforcement and utilization of forests and forest resources on government land and provides for the establishment, control and regulation of Central Forests, forests and forest areas and on un-alienated Government land in Somalia. The Act, therefore, applies not only to state plantations and land controlled and managed by the Forestry Department for research purposes or for establishment of commercial timber plantations, but also areas which have been set aside for the conservation of fauna and flora, for the management of water catchment area, for the prevention of soil erosion or for the protection and management of indigenous forests on alienated Government land.

4.5 Public Health Policy

The Act protects human health. Prevent and guard against introduction of infectious diseases into Somalia from outside, to promote public health and the prevention, limitation or suppression of infectious, communicable or preventable diseases within Jubaland, to advice and direct local authorities in regard to matters affecting the public health to promote or carry out researches and investigations in connection with the prevention or treatment of human diseases. This Act provides the impetus for a healthy environment and gives regulations to waste management, pollution and human health.

This Act controls the activities of the project with regard to human health and ensures that the health of the surrounding community is not jeopardized by the activities of the project such as water development.

The project can be a public health hazard as well as beneficial to the greater public health. A case example is of innovation dam which can be breeding ground for mosquitoes and other water borne diseases and provision and protection of domestic water

4.6 The Land Planning Act

The Land Planning Act the Laws of Jubaland makes provision for planning the use and development of land. Sec 6 (1) of the subsidiary legislation provides that "a local authority may, after consultation with, and with the agreement of the Minister, prepare and submit to the Minister for his approval an area plan, as the case may be, for that part of the area under its jurisdiction to which these regulations apply."

4.7 Physical Planning Act

This Act provides for the preparation and implementation of physical development plans for connected purposes. It establishes the responsibility for the physical planning at various levels of Government in order to remove uncertainty regarding the responsibility for regional planning. A key provision of the Act is the requirement for Environmental Impact Assessment (EIA).

It provides for a hierarchy of plans in which guidelines are laid down for the future physical development of areas referred to in a specific plan. The intention is that the three-tier order plans, the national development plan, regional development plan, and the local physical development plan should concentrate on broad policy issues.

The Act also promotes public participation in the preparation of plans and requires that in preparation of plans proper consideration be given to the potential for socio-economic development needs of the population, the existing planning and future transport needs, the physical factors which may influence orderly development in general and urbanization in particular, and the possible influence of future development upon natural environment.

Any change of use of the actual development without authority constitutes an offence. Similarly, anyone who deposits refuse, scrap or waste materials in a designated area without the consent of the planning authority or the relevant local authority shall be guilty of an offence under the regulations. The general sentence under the regulations is a fine of not

exceeding five thousand shillings or Imprisonment not exceeding six months, or to both, such fine and imprisonment.

4.8 Occupational safety and health act (OSHA) 2007

The act also sets minimum standards that are to be maintained in such workplaces to safeguard safe, safety and welfare of workers. These are aimed at elimination of hazards from workplaces. The act further requires all workplaces to display the abstract of the for all workers to read and remind themselves on how to protect themselves from hazards. The act makes it mandatory for occupiers or employers' personal protective equipment and all practicable means to prevent injury to health of workers who are exposed to any potentially harmful substances or conditions act further requires all workplaces to have first aid boxes under the charge of trained first aid attendants of health and safety. Such rules include the following.

•Building operations and works of engineering implementation rules

The rules guide health and safety matters in all implementation activities. The provisions of OSHA 2007 relevant to building operations and engineering implementations works are contained in building operations and works engineering construction rules. The rules have general safety measures to be observed in any building operations and works of engineering implementation. These state "every contractor shall comply to with the requirements of these rules designed to ensure health ,safety and welfare of all persons engaged in building operations or works of engineering implementation undertaken by him or in any activity incidental to and at the site of the building operations or works of engineering implementation where dust or fumes likely to be injurious to the health of persons employed are given off, all reasonably practical measures shall be taken to prevent the inhalation of the dust or fumes by the persons employed by ensuring adequate ventilation or providing suitable respirators at the workplace.

•First aid rules

These have details on first aid requirements in terms of facilities and capacity building among non-medical workers

•Noise rules

The rules have established levels beyond which workers may not be exposed without protection. The noise prevention and control rules are described in legal notice no and apply to every workplace, premises place process and operations to which the provisions of the factories and other places of work act.

4.9 Draft National Policy for the Sustainable Development of ASAL of Somalia 2025-2029

This policy allows for a pro-poor growth strategy that emphasizes sustainable poverty reduction and economic growth accompanied with appropriate economic policies and adequate investments in these considerably marginalized and vulnerable regions. Since economic growth, poverty reduction and inequality are inextricably related, the policy document promote changes in resource distribution enhancing equity and access to economic resources while providing viable incentives to pastoralists, agro-pastoralists, small scale farmers and traders in the ASALs. The strategy underpins the fact that growth policies without effective resource distribution will have limited impact on poverty reduction. The policy framework focuses attention on:

- Improving natural resource management and utilization by strengthening pastoral land tenure Systems
- Reducing ASAL populations relying on livestock through human capital development and Diversification of income sources
- Improving markets and providing social services to ASAL communities
- Providing financial services such as appropriate credit facilities to traders, pastoralists and farmers;
- Reducing and managing risks due to drought, floods, food and human insecurity
- Engaging ASAL communities in policy reform and the enhancement of participatory governance and,
- Encouraging stakeholders and policy makers to undertake participatory policy formulating based on objective analysis and research.

The policy provides a framework to reverse the situation in the ASALs districts from one of despair, poverty and need to one of hope and a bright future. The Government aims at taking measures that facilitate the realignment of public expenditure towards investment. The strategy is to improve public investment in the ASALs by taking advantage of the renewed Government commitment to the development of the ASALs. This public investment will hopefully encourage private investment and human capital development in the ASALs. Public expenditure will be targeted to ASAL priorities in order to improve the quality of expenditure and to ensure that the priorities are achieved in an effective and efficient fashion

3. Key Institutional Organs

In summary, the key institutional organs of relevance to the proposed project
Institutional Organs of relevance to the proposed Project.

Institution Parent Ministry Responsibility
Public Health Department State Government Inspection of the project

EMCA
Ministry of Environment water &Natural resources Approval of ESIA Project Report
Water Catchment Boards (WCBs) Ministry of Environment water &Natural resources Catchment conservation and issuance of water permits
SMALF

Ministry of Agriculture, livestock & fisheries.Project implementation

CHAPTER 5

PROJECT DESCRIPTION

This chapter describes the project and major activities that will be involved during project implementation, the materials that will be used and the possible alternatives (which are detailed in the next section).

5.1 Overview

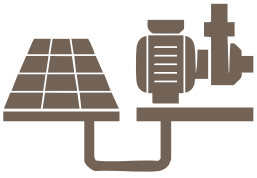
The objective of proposed water innovation Centre is to improve water management and conservation, Centre for research, training and capacity building, enhance climate resilience and mitigation of the impacts of drought, support local agriculture and livelihood through water solutions and to promote renewable energy for water purification and distribution.

5.2 The proposed project

5.3 Proposed Elements of the Project

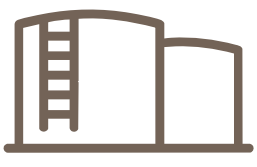
EARTH DAM CONSTRUCTION

The dam is intended to create a reservoir for storing and managing floodwater. A earth dam will be constructed near the Juba River to capture and store floodwater during the rainy season through an overflow pipe that directs water to the reservoir. This dam will also collect runoff water and be built to withstand seasonal floods, ensuring an adequate water supply to support agricultural activities during the dry season. It will be strategically situated in Yontoy to maximize water capture and minimize environmental impact



SOLAR PUMPING SYSTEM

The solar pumping system is designed to offer a sustainable and energy-efficient method of transferring stored water to overhead storage tanks, which will supply the Centre using gravity. Solar panels will be installed to power electric pumps, ensuring a renewable and cost-effective approach to water extraction, thereby reducing dependence on non-renewable energy sources. The system will be engineered to meet the water requirements of both the overhead storage tanks and the demonstration farms, with a focus on reliability and minimal maintenance.

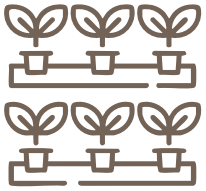


EARTH DAM CONSTRUCTION

This infrastructure is designed to provide a consistent water supply for irrigation and other uses, enabling gravity-fed distribution systems. Two elevated storage tanks will be constructed to store water pumped from the earth dam. These elevated tanks will facilitate gravity-fed irrigation systems, eliminating the need for additional pumping. An efficient distribution network with pipelines and drip irrigation systems will be installed to deliver water from the storage tanks effectively.

DEMO AGRICULTURAL FARMS

The demonstration farms will be managed by local women, aiming to empower them through training and practical experience in innovative agricultural practices and water management. The project will set up several small-scale demonstration farms operated by women from the community. These farms will function as training centers, where women can learn about sustainable farming techniques, efficient water use, and crop management. Regular workshops and training sessions will be held to educate women on best practices in agriculture, water conservation, and the utilization of solar pump technology.



HYDROPONIC FARMING

Considering that the soil in Yontoy is suitable for only certain crops, successfully piloting hydroponic farming could offer farmers an opportunity to diversify. This technique does not require soil, relying instead on mineral nutrient solutions. According to literature, hydroponic farming is proven to be safe, fast, more economical, and, most importantly, sustainable. The hydroponic farms will also be managed by women, representing one of the innovative approaches that can contribute to output 3.

BEEKEEPING

Due to the proximity to the river and the abundance of vegetation, which can provide good sources of nectar, an educational apiary can be established in one corner of the Centre. This will also create an additional opportunity to boost income and support the innovation Centre's business model.

INTERLOCKING BLOCKS

This could also serve as an additional income stream like apiaries, supporting the business model and enhancing the sustainability of the Centre. However, the inclusion of the inter-locking blocks will depend on the availability of materials, economies of scale, and market demand.

. BIO-SAND FILTERS

Bio-sand filters were initially tested in Yontoy by the GIZ Climate-resilient Water Resource Management (CrWRM) and demonstrated effective water filtration. The Centre will provide an opportunity to further develop and scale up this technology to enhance water access.

5.3 Back ground of project

The beneficiary community through Jubaland Ministry of Water and Environment with the support of the NGOs, UN agencies and international donors and GIZ Climate-resilient Water Resource Management (CrWRM) identified the need for Innovation Centre of Jubaland State Kismayu for increased water access. The project engineers carried survey and design works and procurement activities are ongoing and there after construction is set to begin immediately.

The components will entail

- Desilting works
- Construction of silt trap
- Construction of sanitation facilities
- Construction of embarkment walls
- Dam ancillary works comprising: -
    - i. Planting of 5000 seedlings around the inlet as proposed by the community and being taken of for 3 months.
    - ii. Construction of spillway concrete sills
    - iii. Construction of cattle trough
    - iv. Construction of communal water points.
    - v. Fencing of the water dam as described in the bill of quantities and technical drawings
    - vi. Construction of pit latrine
    - vii. Construction of two silt traps with sills

The project will be fully funded by World Bank, NGOs, UN agencies and international donors.

5.4 Present situation of the project

There is an existing Juba River but fluctuates seasonally hence the need to introduce solar panel to pump water from the river.

5.5 Project concept

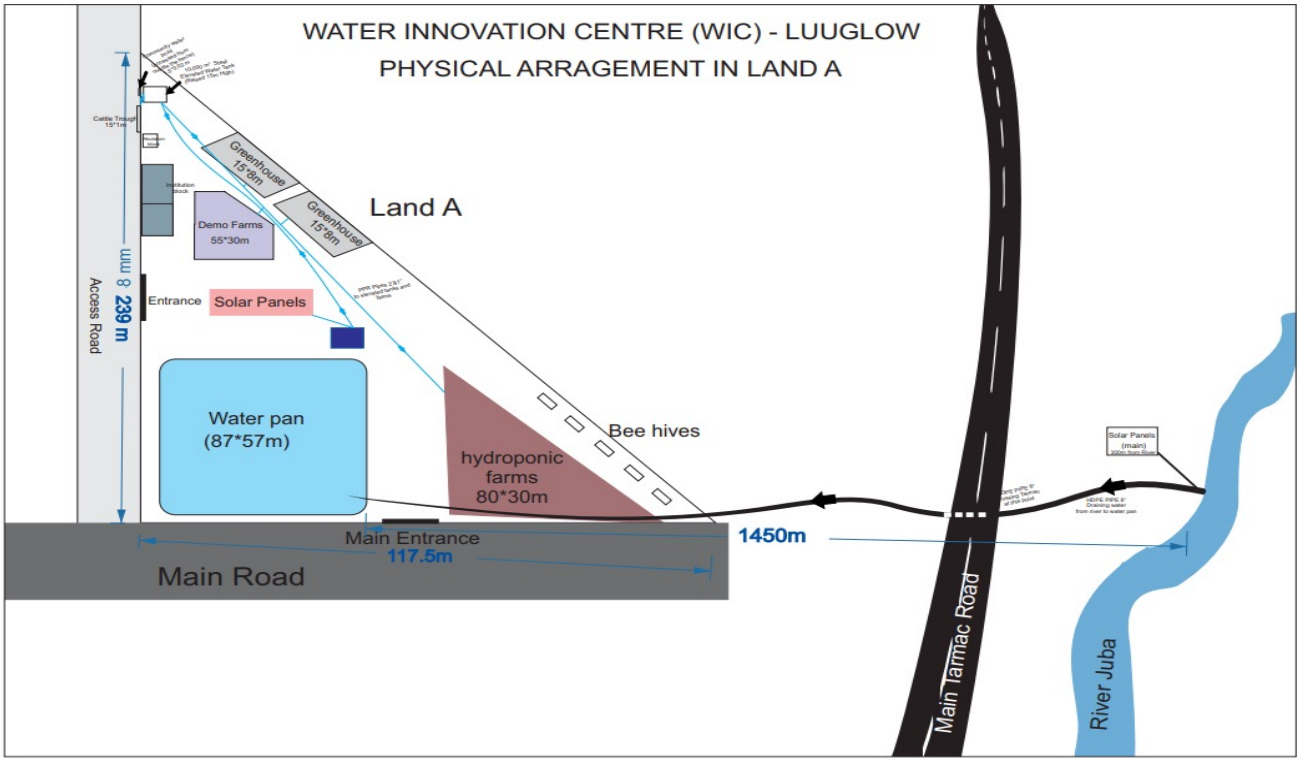
The project innovation Centre works has been developed through consultation with Engineers and community beneficiaries and experience is drawn from locals. The location has shown to have potential of collecting maximum runoff from the catchment area to serve the large community

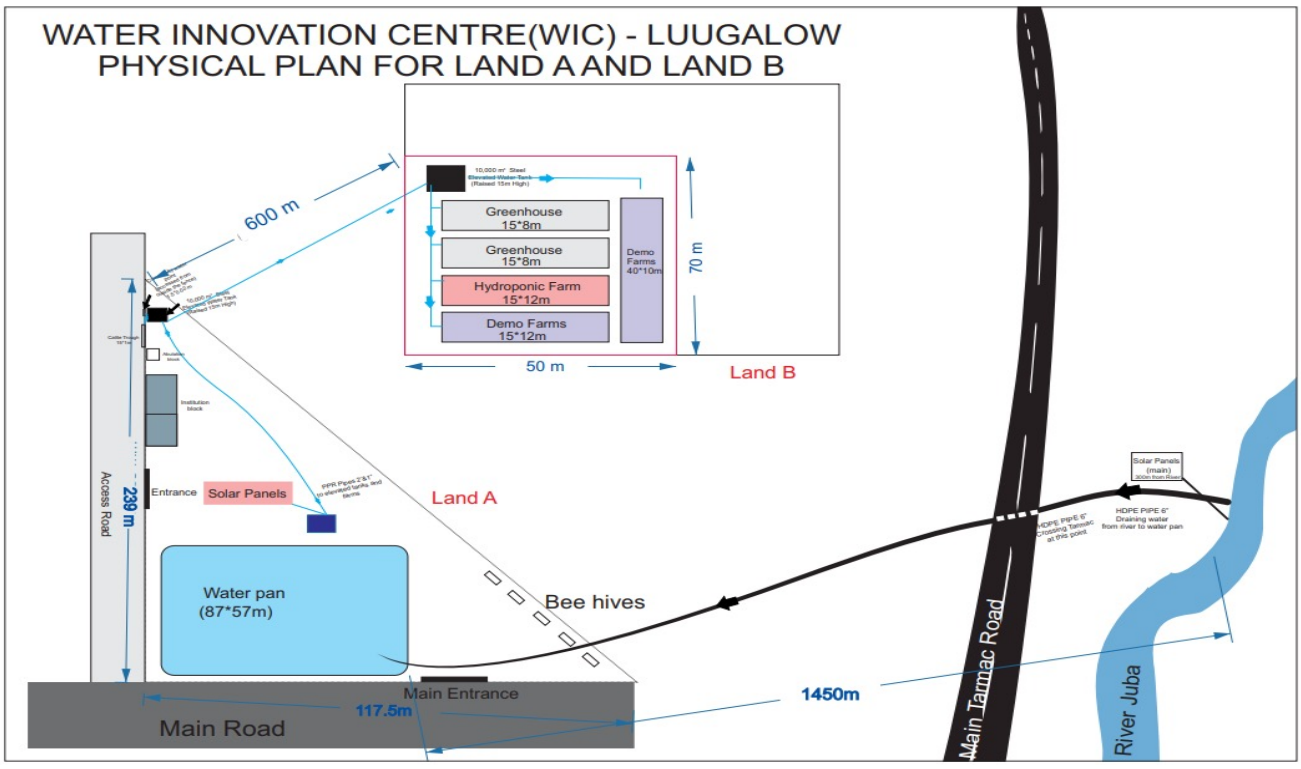
5.6 Project Cost

The project will have a total investment cost of up to 500,000 USD.

5.7 Design of the innovation Centre.

The setting, design concept and criteria was developed in accordance with the general guidelines and standards used in the design of water harvesting and water supply projects in Somalia and are in line with international standards for best practice.





5.7.1 Design Concept
The proposed activities are mainly Innovation works in addition to construction of auxiliary works aimed at delivering better services and improvement of efficiency.

5.7.2 Implementation Phase
The implementation phase will proceed after the preparatory phase, during which all recommended elements will be installed and operationalized. Experts engaged during the preparatory phase will continue to be involved in the implementation phase. Implementation may be facilitated through the support of a contractor or via financing or grant agreements with government entities, local NGOs, or international NGOs.

5.7.3 Project Monitoring
The project will be overseen by project staff located in Kismayo, namely Mohamed Abdi and Kiman Noor. Additionally, a technical team in Nairobi, including an advisor and a monitoring and evaluation team, will provide remote support. Their supervision will ensure that the project maintains alignment with its objectives and achieves the desired outcomes in an efficient and effective manner.

5.8 Project Construction Phase

5.8.1 Support Infrastructure
Support infrastructure will comprise of silt trap pods up stream to control soil erosion

5.9 Materials and Equipment Needed

Materials	Construction/D Tools & Equipment
Automotive Diesel fuel, water Soil, cement, and sand pipes and ballast	Dozer -150 Hp and above Lorry-10 Tonne Pick Up-one tonne Water Boozer (500 litres) Vibrator Foot Sheep Roller

5.10 Proposed Project Activities

The activities associated with the proposed project have been categorized under three phases of project implementation visa-vi planning, desilting & embankment, auxiliary works construction, operation, closure/ decommissioning as discussed in the following subsection.

5.10.1 Planning Phase Activities
The main activities considered during this phase are: production of site layout drawing, dam and innovation Centre sitting entails reviewing and survey of the project area, identification of suitable auxiliary works site, and determination so as to achieve the desired results.

5.10.2 Construction Phase Activities
Construction phase entails the following activities:

I. Equipment mobilization
II. Transportation and delivery of materials to the siting
III. Silting
IV. Embankment construction
V. Construction of Auxiliary works– (fence, water through, toilets community tap)

1.1.1 Operation Phase Activities
After successful construction of the dam and innovation facility and runoff collection in the dam, the community will access the water through the community tap access point and livestock through the water troughs. The activities will be managed by a management committee which is already in be place.

1.1.2 Decommissioning Phase Activities

Decommissioning of the constructed innovation facility and the dam will become necessary if or when the dam attains its end of life i.e., when if they no longer become productive or when the need arises. Once this occurs, the affected dam will be deactivated according to the well closure procedure. Non-reusable pipes will be sold to licensed scrap metal dealers. The closure of the dam will involve removing the piping system and backfilling of the depression left behind by as necessary. The affected dam will be back filled, landscaped and replanted with suitable indigenous grass and trees.

1.2 Types of Waste to be generated

Table below indicates the types of waste to be generated during project implementation and proposed options for their management.

TYPE OF WASTE	PROPOSED WASTE MANAGEMENT OPTION
Used oil filters	Accumulate safely and dispose-off through licensed hazardous waste handler
Used fuel filters	Accumulate safely and dispose-off through licensed hazardous waste handler
Used oil	Accumulate safely and sell to licensed scrap metal dealers
Empty plastic & metal containers	Issue out to staff for reuse Issue out to the local community as part of Corporate Social Responsibility (CSR) contribution Reuse within household e.g., for fabricating solid waste containers Return to the supplier
Empty gunny bags	Issue out to the local community Reuse within household

Table 3; SWOT Analysis of Jubaland State of Somalia Water Innovation Centre.

The SWOT analysis in the Project to identify the internal factors (strengths and weaknesses) and the external factors (opportunities and threats) are shown in the table below.

A. Strengths

- Government support & donor support
- Ready funding
- Local capacity building
- Hygiene and environmental sanitation improvement.
- Temporary Employment creation.
- Community organization and participation.
- Institutional sustainability of project activities.
- Logical frame approach.
- Economic benefits of project activities.
- Unity of all stakeholders.
- Existing infrastructure
- Increased household incomes.

- Ongoing project activities
- Cohesive community\
- Suitable soils
- Large catchment

B. Weaknesses

- Stringent donor requirements.
- Limited expansion area
- Inadequate communication and co-ordination of activities (Committees/farmers/ Management)

C. Opportunities

- Donor and community support.
- Increased participation by women and girls
- Community cohesiveness in project activities.
- Participatory planning & monitoring at scheme and management levels
- Support of local leadership (Administrative leaders)
- Increased income generating activities.
- Increased participation by women and children.
- Collaboration and networking among institutions.
- Adoption of new agricultural technologies.
- Increased Access to clean water.
- Community mobilization on water management and environmental conservation.

D. Threats

- Persistence drought
- Increase in water borne diseases
- Political interference
- HIV/AIDs
- Soil erosion from road construction activities
- Financial constraints
- Water use conflicts
- Corruption
- Climate change
- Community clashes
- Contamination by municipal waste
- Poor quality of construction materials

1.3 Project Alternatives

1.3.1 Project Site

The existing Juba River has already proved that the site was suitably selected having in mind that the river has been in existence for many years. The community is already used to accessing water from the river.

1.3.2 Roof water harvesting

The community has no supply of piped water though if the construction supply of dam is completed could go a long way into the providing a reliable source for water to entire Community. The community can be encouraged to adopt roof harvesting in their homes though the volumes which can be harvested will not run long enough in supporting the large number of livestock the members keep.

1.3.3 No project Alternative

The Innovation alternative would imply that the site be left in its present state which means the community continues to collect no water and hence degrading the entire site which would be unable the serve the community throughout. The community would be likely to suffer more during prolonged dry period, where they would be required to look for alternative water sources once the water would be exhausted. This decision is unacceptable because it would greatly affect the progressive development in this part of Kismayu, as the dam would impart negatively on water, sanitation and livestock security status in the project area. While the "No Project' alternative may ensure non-interference with the current conditions which are likely to deteriorate.

This option is not favorable as it would predispose the community to water shortage and the related problems. The community would continue to experience high water stress during prolonged dry period while the project would have eased this problem. The 'No Project' option is the least preferred.

CHAPTER 6

PUBLIC CONSULTATIONS AND DISCLOSURE

This chapter describes the project and major activities that will be involved during project implementation, the materials that will be used and the possible alternatives (which are detailed in the next section).

BACKGROUND

The objective of proposed water innovation Centre is to improve water management and conservation, Centre for research, training and capacity building, enhance climate resilience and mitigation of the impacts of drought, support local agriculture and livelihood through water solutions and to promote renewable energy for water purification and distribution.The welfare of societies and the quality of life is directly linked to sustainable use of our natural resources. This has been duly recognized in Agenda 21, where it is stated that: "Special attention should be paid to the demand for natural resources generated by unsustainable consumption and to the efficient use of those resources consistent with the goal of minimizing depletion and reducing pollution."

The Somali government has enshrined the need for communities and stakeholders' involvement in project development. This has been set out in the EMCA, 1999 and Environmental (Impact and Audit) Regulations, 2003. Community consultation and participation ensures that communities and stakeholders are part and parcel of the proposed developments and in so doing assures the sustainable use of resources. It has also demonstrated successfully that projects that go through this process will acquire high level of acceptance and accrue benefits to a wider section of the society.

Public consultations form a useful component for gathering, understanding and establishing likely impacts of projects determining community and individual preferences and selecting alternatives. Furthermore, through public participation, it is possible to enhance project designs and ensure sustainability of the projects. The proposed project has incorporated public consultations in order to understand the local impacts, needs and wishes of the community and eventually incorporate them into the final designs and operations of the project.

1.5 Objectives

The main objectives of the public consultation process were to:

- Inform the public of the details of the proposed Project construction;
- Collect views on the positive and negative impacts anticipated by the local residents and how these can be overcome; and
- Build community consensus and acceptance of the proposed project.

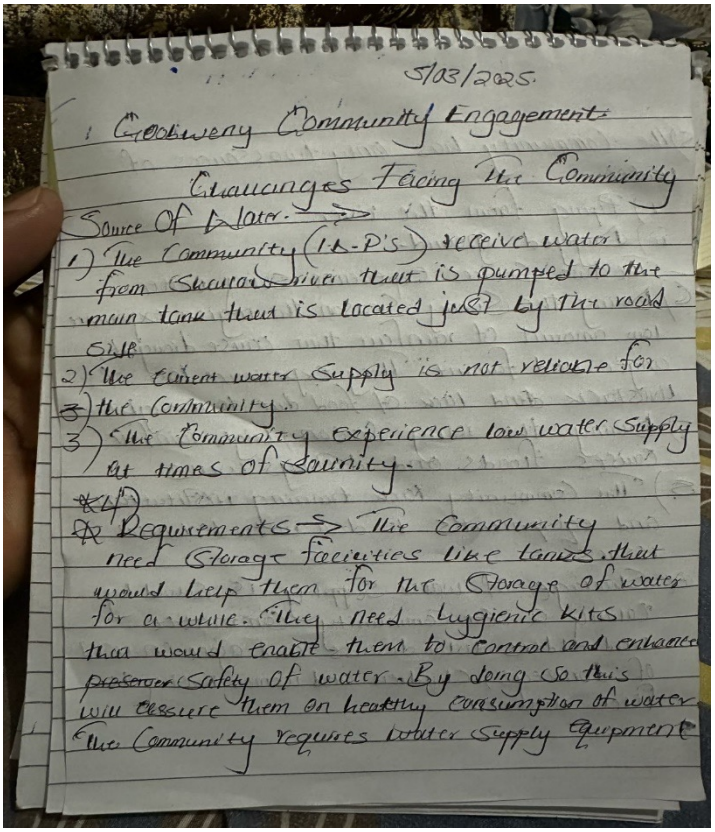
1.6 Methodology

Public participation for the proposed water innovation Centre for the Jubaland state of Somalia project was conducted through a questionnaire and public baraza to allow for systematic understanding and interaction of the beneficiary community and the Proponents. Copy of the Questionnaire with Pictorial evidence has been attached for reference.

A second stage involved holding of a stakeholder public baraza on site. During the baraza, stakeholders had a chance to interact with the proponent and presentation of project scope was outlined, after which an open discussion forum followed during which all pertinent issues were raised and agreed upon with all stakeholders.

1.7 Consultation and Disclosure outputs

The Appendices presents the information on the public consultations undertaken under the environmental impact assessment for the proposed water innovation Centre. This information includes selected responses.


5/03/2025.

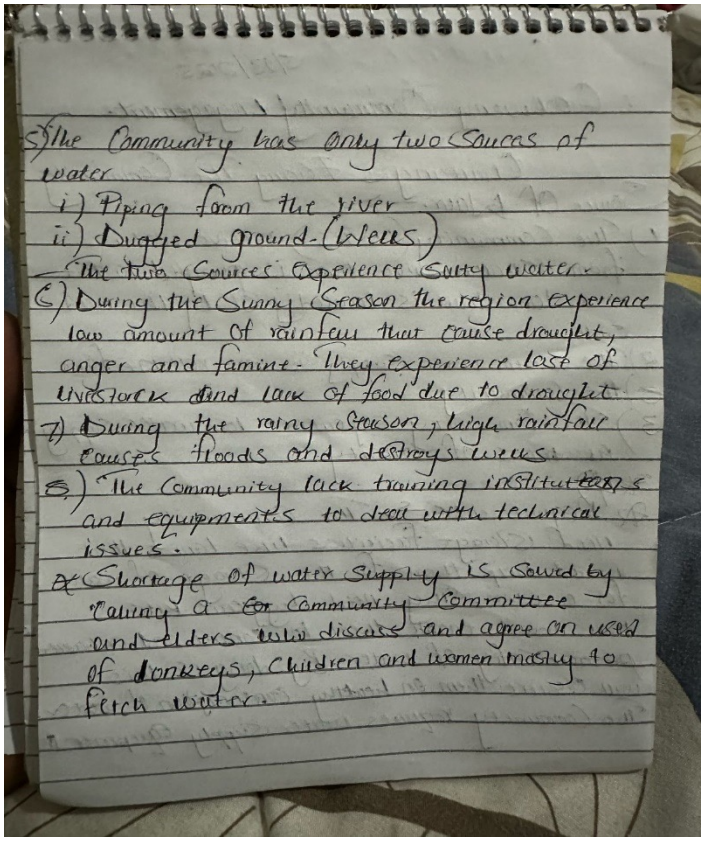
Geobweny Community Engagement:

Challenges Facing the Community

Source Of Water. →

1) The Community (IDP's) receive water from Shabelle river that is pumped to the main tank that is located just by the road side.
2) The current water supply is not reliable for the community.
3) The Community experience low water supply at times of scarcity.

Requirements → The Community need Storage facilities like tanks that would help them for the Storage of water for a while. They need hygienic kits that would enable them to control and enhance preserve safety of water. By doing so this will assure them on healthy consumption of water. The Community requires water supply equipment


5) The Community has only two sources of water
i) Piping from the river
ii) Dugged ground (Wells)
The two sources experience salty water.
6) During the Sunny Season the region experience low amount of rainfall that cause drought, anger and famine. They experience lose of livestock and lack of food due to drought.
7) During the rainy season, high rainfall causes floods and destroys wells.
8) The Community lack training institutions and equipments to deal with technical issues.

Shortage of water supply is solved by having a Community committee and elders who discuss and agree on used of donkeys, children and women mostly to fetch water.

1.8 Salient issues

Public participation for the proposed water innovation Centre for the Jubaland state of Somalia project was conducted through a questionnaire and public baraza to allow for systematic understanding and interaction of the beneficiary community and the Proponents. Copy of the Questionnaire with Pictorial evidence has been attached for reference.

A second stage involved holding of a stakeholder public baraza on site. During the baraza, stakeholders had a chance to interact with the proponent and presentation of project scope was outlined, after which an open discussion forum followed during which all pertinent issues were raised and agreed upon with all stakeholders.

1.7 Consultation and Disclosure outputs

The Appendices presents the information on the public consultations undertaken under the environmental impact assessment for the proposed water innovation Centre. This information includes selected responses.

CHAPTER 7

IMPACT IDENTIFICATION

a. Impacts Prediction: Project Location
The following potential impacts were considered and evaluated for their likelihood of taking place

a) Resettlement and compensation
It is generally recognized that people affected by the construction of dams and reservoirs meant for public benefits are liable for compensation for three basic categories of loss namely: -

- Permanent loss of possessions for example land required for dam site and reservoir and for crops or buildings and trees lost or damaged
- Temporary loss of possessions for example land required and leased for construction
- Partial loss of legal rights

The land on which the innovation Centre is proposed to be constructed including the auxiliary water works was set aside for community use. B) Encroachment Into Catchments
The proposed facilities have the potential of opening up to 'development' or other forms of exploitation by community and others previously denied access due to the lack of the water. For the case of the dam the predicted impacts will be increased soil erosion due to diversion of drainage channels and siltation rates due to increased activities near the dam due to heavy traffic of animals with potential of shortening the working life of the reservoir. This impact has been noted to be major and negative and as such adequate mitigation measures have been considered.

c) Impairment of historic and cultural sites
According to information gathered from the community leaders there are no documented cultural sites that could be affected by the innovation works. Consequently, no mitigation measures have been considered.

d) Catchment erosion and siltation
The Proposed site for the construction of the Innovation Centre is generally flat without any construction activities going on around neither in the vicinity. This does not have any potential to accelerate soil erosion or to impose economic costs to the project. This is considered to be a positive impact.

No any other construction activities around the proposed site for construction.

e) Impacts on surface and groundwater hydrology

Impacts on surface and groundwater resources can be severe if the annual evaporation and seepage from the impounded reservoir is higher than total annual discharge. This is proposed for investigation during the design stage where appropriate measures will be instituted. Overall it is anticipated that gradual ground water recharge, flood control will be improved while encouraging economical utilization of surface water. This is a positive impact which need to be enhanced.

However induced changes in the water quality during the construction process of the proposed project may have negative impact on groundwater

f) Water use conflicts

During prolonged dry spells the community suffers from water exhaustion and it is forced to travel long distances in search for alternative sources and more this has resulted to community conflicts. Since the Innovation Centre will improve water availability related conflicts are likely to be reduced if well managed. The Project committee is advised to come up with water use by laws to ward off possible conflicts in future

g) Health & Safety

Health and safety of the local community and construction workers may be affected in the following ways: -

- Introducing animal wastes directly through urinating in the reservoir
- Accumulation of water in borrow pits pose health risks such as providing conducive habitat for disease vectors like malaria and other direct water borne infections.
- High risk to HIV/AIDS among the community as a result of social interactions with the contractors' workforce and other outsiders.
- Pollution of water sources from point sources as (cattle sprays, pit latrines, lack of sanitation, animal waste)
- Risks of falling or slipping into borrow pits and dam reservoir.

b. Impacts Prediction: Construction Phase

i. Dust and noise pollution

During excavation and transportation of material there is bound to be emission of dust from the excavation sites and also from the vehicles transporting the material. Similarly, the equipment for excavation can generate considerable noise which could negatively affect the construction workers or people living near the excavation sites. These impacts are considered to be negative, major and temporary. Mitigation measures have been considered.

ii. Workers' safety

Worker's safety could be affected in a variety of ways ranging from injury from falling objects, inhalation of dust from construction sites to impairment of hearing due to noise from construction equipment. These impacts are considered to be negative and major and mitigation measures have been considered.

iii. Sanitation of construction camp

The wastes generated by the construction crew can have disastrous effects on the local environment if not disposed appropriately. For example, wastewater including excreta, solid waste and used oils can pollute the ground water. These impacts are considered to be major and negative and mitigation measures have been proposed.

c. Impacts Prediction: Project Operations

i. Reduced downstream erosion

Dam construction leads to reduced downstream water course erosion but in case of dam failure, this can lead to considerable erosion of valley bank due to increased velocity of the surface flow. Adequate measures are therefore needed during the design stage to avert this situation.

ii. Changes in water quality of the impounded reservoir

Storage of water in a reservoir alters its quality in proportion to the storage period. Due to photosynthesis water at the surface of such reservoirs will naturally exhibit algal growth whereas water at the bottom of the reservoir will be silt laden and anaerobic. Thus, water for domestic use should be drawn from the reservoir at such a level as to avoid such conditions. Additionally, the enrichment of water stored in the reservoir with plant nutrients which can come from domestic and agricultural wastes and fertilizers and from decaying vegetation inundated by the reservoir can lead to the reservoir becoming eutrophic, a situation where the reservoir will have excessive aquatic weed growth. This will lead to: -

- Impaired water quality for the downstream users
- Increase water loss via vapor-transpiration
- Provide favorable habitat for disease vector

These are considered major and negative potential impacts and suitable mitigation measures have been suggested.

iii. Introduction of disease vector problems

Standing water bodies such as reservoirs provide habitat for water borne disease causing organisms such as mosquitoes and snails. These are considered to be major and negative impacts especially when it is noted that malaria and water related diseases are already the main ailments affecting the local community as pointed out in the socio-economic survey. In addition, high concentration of livestock in the area could easily lead to increased or introduction of disease vectors such as ticks or can lead to increase of diseases. Possible mitigation measures have been suggested.

iv. Overgrazing and loose soils.

A high number of livestock is expected to access the water at the waterpoint. It's anticipated that during the waiting time the animals will be grazing and this could easily lead to overgrazing which will lead to loosening of the soils near the water pan making the area susceptible to all types of erosion. The project has considered of planting trees to mitigate against drastic catastrophic.

CHAPTER 8

ENVIRONMENTAL MITIGATION MEASURES

Table 4: Impact Classification and Mitigation Measures

Phase	Impact Description	Nature of Impact	Proposed Mitigation Measures	
Siting	Reservoir siltation and erosion	Major		Install silt traps in suitable locations Integrated land use management involving all stakeholders to ensure catchment protection and watershed management
	Encroachment into reservoir riparian		Minor	Riparian boundary marking Sensitize community on protection
Construction	Impacts on surface and groundwater hydrology		Minor	involve local community in formation of dam management committee with clear mandate of ensuring soil conservation. Increased recharge rates
	Dust and noise pollution		Minor	Ensure that emission levels of machinery are within permissible limits. Ensure that there is no work at night Public to be disgorged from idling near excavation site
	Risk of accidental drowning. Injuries during dam construction and/or due to vehicular traffic		Minor	Keep unauthorized persons away from dangerous zones Put warning signs (written in Kiswahili, and English languages) at strategic sites Ensure regular monitoring of embankment and spillway.
	(Pollution from oil spills and other solid wastes	Major		Good site management including provision of onsite sanitation facilities, disposal sites. Contract specifications to include these requirements
	Alterations in the flow of water and changes in water quality during the construction of the dam embankment	Major		Adequately divert the runoff away from construction areas Ensure good engineering practices
	Enhanced erosion / changes in topography due to excavation.	Major		Obtain earth fill from flooding zone. Re-vegetate with native species Fill borrow sites

	Social pressure on local community		Minor	Enlighten personnel about STDs (HIV/AIDS) and use of condoms. Partner with NGOs in campaign to stop the spread of HIV/AIDS. Strengthen basic facilities Avoid actions that could cause or escalate tension
	Downstream erosion		Minor	Provide stilling basin to check velocity of released water
	Changes in water quality of the impounded reservoir	Major		Check upstream sanitation practices Partner in enlightenment for increased environmental awareness in surrounding communities. clear vegetation and remove it from area to be impounded
	Overgrazing	Major	Major	Introduce agroforestry Fence the water pan area
	Introduction of disease vector problems	Major		Monitor the presence of disease vectors Contribute to strengthening of local health facilities through public enlightenment Contribute to public health programs to eradicate / protect against malaria, schistosomiasis Enhance community animal spraying and immunization programs

De co

d. Environmental Monitoring & Management Plans

Environmental monitoring is a key aspect of environmental management as it ensures a continuous or periodic follow-up on the identifiable environmental parameters both in quantity and or quality. To achieve the foregoing, a clear tabulation of all impacts, mitigations measures, those responsible and respective timeframes have been proposed in the table below:

Environmental Management and Monitoring Plan: Design & Construction Phase						
Activity	Potential negative impact	Mitigation Measures	Responsibility	Frequency/Timing	Cost	Verifiable Indicators
1.Project Design Phase						

Planning, Surveying, EIA study,	Trampling on vegetation, lack of consensus towards the project between Stakeholders	Avoid unnecessary vegetation destruction, intensify consultations	Somalia Climate Smart Project and the design/EIA team	Throughout project design stage, throughout the project cycle	As provided in the contract	Vegetation destroyed, project acceptability
2. Site Preparation Phase						
Clearing	Loss of Biodiversity, Soil erosion,	Selective and careful de-vegetation, have minimum interference with vegetation	Somalia Climate Smart Agriculture/Communities/ stakeholders	All through construction period	As per the project cost	Incidences of haphazard vegetation clearing, lack of backfilling in excavated areas
Transportation of materials	Noise, trampling of vegetation	Maintain modicum of silence, use designated tracks, avoid using noise prone vehicles such as old tractors, tighten machine parts	Construction supervising Engineer/communities	Construction period	Included in the Bills of Quantity	Number of vegetation destroyed, increase in people stress
Excavation, trenching works and desilting works	Soil erosion, solid wastes	Backfilling of excavated areas, solid waste put in bins are transported outside the project area proper disposal of desilted soils	Somalia Climate Smart Agriculture/community	Construction period	As per project budget	Evidence of exposed soil, and solid waste in the project area
Project operation	Loss of life due to animal attacks, injuries due cuts, snake bites, falling, accidents	Adherence to safety requirements and standards, awareness creation on possible accidents, training of technicians, installing warning signs	Resident engineer /Contractor	Throughout the project cycle	As per budget	Number of accidents/incidences recorded, number of technicians trained, number of warning signs installed and their intervals

Table 6: ESMP During preliminary and construction phase

Environmental Management and Monitoring Plan Matrix for Civil Works: Construction Phase						
Project Activities	Potential Impact Description	Mitigation/Enhancement Measures	Cost of Mitigation /Enhancement	Responsibility	Frequency	Verifiable Monitoring Indicators
1. Construction Phase						
Procurement of various goods and services	Non- incorporation of environmental considerations resulting to negative environmental impacts	Undertaking Annual Audits	As per budget	Proponent	Once	EA project report; comments from NEMA; environmental audit reports
Clearing and fencing of project site	Destruction of vegetation	Leaving all green areas intact, planting of trees, shrubs and grass sods;	Perimeter fence Chain link round the dam areas.	Resident engineer	Project cost	Trees left intact after construction; number of trees planted. Number of surviving trees and other plants
Excavation of site	Increased soil erosion, and loss of top-soil, dust increase	Minimization of excavation area; provision of dust masks, watering site	50,000 USD	Resident engineer	Initial planting, thereafter replacement of dead trees; improvement of surroundings	Number of masks bought, area of excavated site from design reports.
Sourcing of materials	Off-site impacts	Procurement from known sustainable sources	5% more on construction material costs	Resident engineer	First month of construction	Receipts of sourced materials
Construction works	Employment creation	Giving priority to locals and disadvantaged groups	As the project cost	Resident engineer	1 month	Number of employed persons and wages received.
Substandard works	Poor dam retention, high water losses, dam collapsing and endangering person down strip	Close supervision by qualified personnel during construction works	Project cost	Project coordinator	Throughout Project period	Number of supervision visits and instruction records

Table 7: ESMP Framework: Operation Phase

	Major environmental issue	Recommended Environmental Monitoring & Management Plan				
		Mitigation/Enhancement Measures	Frequency	Cost (USD)	Responsibility	Verification indicators
1.	Control of vector borne diseases and infections	Routine water quality & vector surveillance	Semi annually	Project cost	Chairman – dam management committee	Water test results
		Installation of perimeter fence around the dam.	1 month	Project cost		Visual observation of the fence
		Review the ecological capacity of the dam to carry the mud fish or any other biological mosquito control.	3 months	Project cost		Feasibility study report and action taken
		Enhance community spraying and immunization and training on disease control	3 months	Project cost		Spraying & immunization frequencies
		Building of a pit latrine	3 months	Project cost		Visual observation of the pit latrine
2.	Control of operator and dam user injures		Chairman – dam management committee			
		Installation of the safety signs	1 month	Project cost		Visual observation of the safety signs
3	Tree planting and environmental conservation	Initiate tree planting	2 months	Project cost	Chairman – dam management committee	Visual observation of tree nurseries and trees
4..	Structural suitability and maintenance	Repair and maintenance of dam structures	Seasonally	Project cost	Chairman – dam management committee	Quarterly Inspection report
		Development of proper silt screening mechanism around the dam	3 months	Project cost	Chairman – dam management committee	Twice a year
5	Soil erosion & siltation	Construction of silt traps at various points upstream	3months	Project cost	Somalia Climate Smart Agriculture Project	Visual

CHAPTER 9

CONCLUSIONS AND RECOMMENDATIONS

The innovation Centre will provide great water access opportunity to the beneficiary communities. Innovation works would provide maximum benefits to the community, from an environmental point of view, the project poses minimal negative impacts for the normal impacts usually associated with any excavation works. The negative impacts were found to be of low magnitude and can be easily mitigated at minimal costs. On the other hand, the positive impacts of the project are mainly socio- economic and would contribute immensely towards the achievement of vision 2030 objectives of wealth creation, income generation and poverty reduction within the respective rural communities of Jubaland State.

4. CONCLUSION

The importance of the proposed project to national development and improving of community resilience to the local community cannot be overemphasized. In addition to the following laid down guidelines has also considered sound environmental management practices during its implementation. Having considered all the information collected and analyzed during the study, it is the experts considered opinion that:

- The Innovation works would improve environmental conditions of the project and greatly contributes to its sustainability, minor scale negative impacts that accompany most development activities are expected
- The positive environmental impacts outweigh the negative ones, which can be contained by following the prescribed EMP
- The proposed project will not compromise the well-being of the community, ecology or any other prevailing conditions
- The innovation works should be allowed to commerce and activities being managed within the provisions outlined in the EMP.
- The proponent has taken the necessary steps to adhere to the appropriate laws and procedures that govern implementation of projects in the country by commissioning the EIA and embracing public participation.

8.2 Recommendations

•The work force of the dam should be oriented away from sensitive wildlife areas, recreation areas and temporary and permanent settlements. This practice will direct noise away from environmentally sensitive areas and minimize potentially negative aesthetic impacts. Garbage, debris, or refuse shall not be discarded into the excavated areas.
•All materials from the excavation to be disposed according to the existing rules and regulations
•The dam project will lead to improved water accessibility security at community level, the few negative impacts identified have been adequately mitigated through diverse measures proposed in the EMP and thus we recommend that the project be considered for an EIA clearance and subsequent implementation.
•In summary the potential negative impacts of the project are low, easy to mitigate, and the benefits to the community are very significant. In addition, if the proponent and the beneficiaries undertake the necessary measures to mitigate the negative impacts as identified and recommended in the EMP, then there should be no reason to prevent the project from proceeding on as planned.

5. BIBLIOGRAPHY

Republic of Somalia, Environmental Management and Coordination (Amendment) Act 2015 Government Printers JUBALAND STATE
Republic of Somalia, Forest Act (2005), Government Printers JUBALAND STATE
Republic of Somalia, Water Act (2002), Government Printers JUBALAND STATE
Republic of Somalia, Factory and Other Place of Work Act Cap 514, Government Printers JUBALAND STATE
Republic of Somalia, Public Health Act Cap 242, Government Printers JUBALAND STATE
Republic of Somalia, Environmental Management audit/audit Regulation 2003(Legal Notice N0 101),

Government Printers JUBALAND STATE.
Republic of Somalia, Legal Notice N0 31, Factory and Other Work Place {Safety and Health Committees Rules, 2004, Government Printers JUBALAND STATE
Republic of Somalia, Constitution, Agriculture (Farm Forestry) Rules, 2009 Government Printers JUBALAND STATE

6. ANNEXES

Somalia Discharge Guidelines for Wastewater

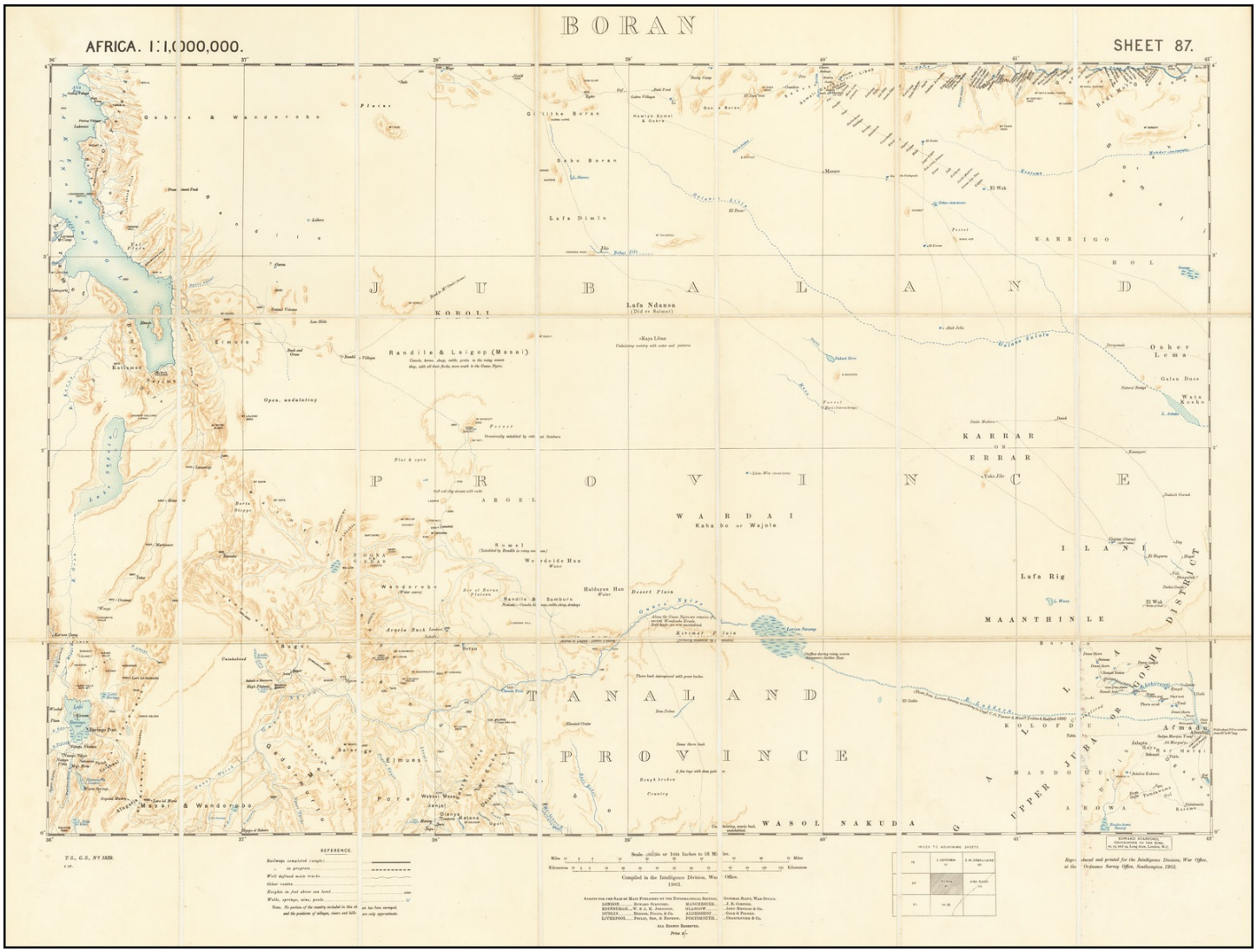
Parameter	**Discharge in public sewers (mg/1)**	**Discharge into water bodies (mg/1)- assuming 10% - assuming 10% dilution**
PH	6.0-9.0	6.0-9.0
BOD 5 (20 0C)	500	20
COD	1000	50
Suspended solid	500	30
Detergents	30	Nil
Heavy metals (combined)	1	0.1
Oils/Grease	50	Nil
Nitrates (TP)	20	10
Phosphates (TP)	30	5
Conductivity	-	1500 us/cm
4hrs PV Value	No limits	20
Fecal Coliforms	No limits	1000/100ml for big water bodies otherwise< 10/ml)
Sulphates	-	500
Dissolved Oxygen	No limits	2
Phenols	-	2
Cyanides	-	0.1
Chlorides	-	1000
PCB	-	0.003
Color	No limits	5 Hazen units
Adour	No limits	Not objectionable

Photo 1: Area leader addressing the beneficiary

Photo 1: Area leader addressing the beneficiary

Photo 1: Area leader addressing the beneficiary

Photo 4: The proposed construction site



contour lines for Yontoy Area Ludlow Juba land state of Somalia