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**Development of Drainage Systems to Mitigate Floods in Isiolo.**

**A concept Note from Isiolo County Municipality.**

**April 2023**

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| Project Information Brief | | | | |
| PROJECT NAME [ | Isiolo Storm Water Management project. | | | |
| COUNTRY [countries of intervention] | Kenya | | | |
| LOCATION | Isiolo Municipality | | **Scope:**  East Africa;Kenya; Isiolo County, Isiolo Municipality | |
| RECIPIENT(S) | Isiolo Municipality | | | |
| EXECUTING AGENCY(IES) | County Government of Isiolo. | | | |
| PROJECT TYPE\* | Climate change adaptation and ecosystem management | | | |
| BENEFICIARY NUMBERS | youths, persons with disability, children, the elderly, and women | **Project Duration** | | 3 years |
| **Total Cost (Euro)**  **Kshs:** | | USD12,000,000.00 |

**Executive Summary**

siolo Municipality has initiated the Isiolo Urban Economic Plan, which aims to make Isiolo town flood resistant, and also improve water infrastructure in the municipality. The project aims to address the problem of the poor transport network that is brought about by floods. The project purposes to improve the drainage system and acknowledges the significance of a comprehensive strategy for stormwater management that addresses issues in both the CBD and its upstream catchment areas.

Isiolo Municipality is set to implement this project in four phases, and in each phase, climate change and climate-resilient activities will be conducted to cushion the affected population from the adverse impacts of climate change. The drainage project will cost around £70M and is expected to run for five years.

The county is yet to implement the project because of a number of shortcomings that include but are not limited to; insufficient funding, poor stakeholder coordination between the municipality and key stakeholders, and an unharmonized approach to the management of shared catchment areas with Meru County.

**Rationale (Background, the problem addressed, and impact)**

Isiolo Municipality has for some time now been experiencing uncontrolled floods that have continued to cause havoc in the area. it is indisputable that these floods have brought with them their fair share of harm to the residents and the environment in the Municipality. Isiolo Municipality has initiated the Isiolo Urban Economic Plan, which aims to make Isiolo town flood resistant, and also improve water infrastructure that involves the construction of strategic water harvesting and storage systems. The project aims to address the problem of annual floods in the area as a result of the topography, urban

planning issues, and population pressure on the existing drainage systems. Additionally, the project will solve the problem of the poor transport network that is brought about by floods. It will as well improve residential and commercial activities, and make the destruction of property and loss of life because of floods a thing of the past. More recently, floods caused 10 deaths in 2005, and in 2006 they caused 18 deaths and displaced 500 people. The recurrent floods further led to the displacement of over 1,320 households between 2009 and 2019 with the floods in 2015 destroying property worth KES 800 million and displacing about 349 households. Isiolo County has experienced adverse climate change with the major floods recorded in 1982 that destroyed the Food and Agriculture Organisation (FAO) Irrigation Schemes in Garfasa and Merti bordering Isiolo town.25

**Project objective(s)**

The project is invaluable to Isiolo Municipality since it will provide an effective town planning approach for the municipality. With an effective town-planning approach, the Isiolo Urban Economic Plan project will make Isiolo town flood-resistant through river flow management and the building of sustainable urban drainage systems. The project will also make Isiolo Municipality develop a robust water infrastructure that includes the construction of strategic water harvesting and storage systems. Other objectives of the project include; improving the drainage systems in Isiolo and making them have a high capacity to channel the amount of stormwater flowing in the area, aligning the already misaligned water paths, constructing drainage channels around the airport and on feeder roads within the municipality, and rehabilitation of drainage channels. Phase II of the project aims to expand the Marire River and the resettlement of the households on riparian land and road reserves.

In Phase III, the project focuses on facilitating the development of a semi-natural bio-park north of Isiolo town. The bio-park will allow the attenuation of 25% of the stormwater flowing in the municipality for productive use. The construction of four check dams in catchment areas within Meru County seeks to reduce the volume and velocity of floodwater flowing to Isiolo Municipality.

**Project description**

The project purposes to improve the drainage system and acknowledges the significance of a comprehensive strategy for stormwater management that addresses issues in both the CBD and its upstream catchment areas. Three steps are to be implemented for the project. The project's first phase, which was scheduled to begin in October 2021, aimed to build a 25-kilometer drainage channel around the airport and on feeder roads in the municipality, as well as to renovate drainage channels and the main culvert on the A2 road and build two 3 by 2-meter culverts there. The second phase aimed to increase the size of the Marire River and relocate the houses to riparian areas and road reserves. Phases IV and V of the project were designed to ensure that the project develops a semi-natural bio-park north of Isiolo town, and also the construction of four check dams in catchment areas within Meru County.

Among the proposed activities of the project include; the construction and rehabilitation of drainage systems, expansion of the Marire River and resettlement of populations residing on riparian land, construction of the bio-park, and the construction of check dams in catchment areas within Meru County. The target beneficiaries of this project are; youths, persons with disability, children, the elderly, and women.

The project will be implemented in four phases as prioritized below (with potential timelines) based on the SuDS impact potential. The breakdown is as follows:

* **Phase I (Starting October 2021):** This phase involves retrofitting the culverts on the A2 road and constructing drainage channels on feeder roads within the CBD and around the airport at KES 119 million.
* **Phase II (Starting January 2022):** This phase encompasses the expansion f the Marire River at KES 98 million and with the resettlement cost of populations residing on riparian land to be determined.
* **Phase III (Starting July 2022):** The phase involves the acquisition of land north of Isiolo town CBD and the construction of the bio-park costing KES 122 million.
* **Phase IV (Starting October 2022):** Construction of check dams in catchment areas within Meru County for KES 95 million.

**Climate change adaptation, mitigation, and building resilience aspects**

The SuDS project incorporates an Ecosystem-Based Adaptation (EBA) approach toward responding to the impacts of flooding due to the changing climate in Isiolo Municipality. The project has taken actions in each phase to cushion the vulnerable population, infrastructure, and ecosystem from the effects of climate change. The actions to be undertaken in phase I are; the construction of 25km drainage channels around the airport and on feeder roads within the municipality, rehabilitation of drainage channels and the main culvert on the A2 road, and construction of two 3m by 2m culverts on the A2 road. Those in phase II include; Expansion of the Marire River and the resettlement of the households on riparian land and road reserves. The development of a semi-natural bio-park north of Isiolo town, and the construction of four check dams in catchment areas within Meru County to reduce the volume and velocity of floodwater flowing to Isiolo Municipality are the activities set to be conducted in Phase III and Phase IV respectively.

The construction of the drainage channels, expansion of the Marire River and resettlement of the households on riparian land and road reserves, development of a semi-natural bio-park north of Isiolo town, and the construction of four check dams in catchment areas will see communities and ecosystems cope with the effects of climate change and adapt to changing circumstances. This will ensure the sustainability of water and sanitation systems in the face of changing climate conditions.

The ecosystem-based features of the project will further enhance adaptation and resilience to mitigate climate change and encourage adaptation by the populations in Isiolo Municipality. In addition to attracting rainfall, the bio-park will supply water resources needed for the irrigation of farmlands and livestock watering points. The SUDS project integrates aspects of effective flood control that reduce the stormwater's risk of destruction of urban structures. Implementing the SuDS components such as drainage channels helps redirect the stormwater from the residential places and other key development structures such as boreholes to ensure water safety, reducing the risk of frequent waterborne diseases.

**Social inclusion, gender equality, youth & women empowerment in water and Sanitation aspects**

The Sustainable Drainage Systems (SuDS) project will enhance the economic and social resilience of vulnerable groups to flooding. The project will work to reduce the risk of damage to women and youth’s residential and commercial spaces, especially those near road reserves and water paths. Through the project, Isiolo Municipality will also reduce the level of damage to the roads allowing people with disability, the elderly, and children to commute safely to and from their homes.

Women are consistently the largest recipients of aid to mitigate the loss of homes and commercial enterprises to flooding. Lastly, the implementation of the drainage systems provides an opportunity for vulnerable groups, particularly women and youth, to engage in construction and maintenance. With this engagement, women will get some extra cash and with that, their livelihoods will be greatly improved.

**Employment, livelihood, governance, operation & maintenance and sustainability aspects**

Implementation of the SuDS project will provide opportunities for vulnerable groups to participate in construction and maintenance. For example, the municipality can employ women and youth to rehabilitate the existing drainage networks by deepening shallow drainage channels and unclogging sealed culverts. Contractors involved in the implementation of the SuDS could also leverage local youth labor in the projects. Women could play a vital role in convincing and mobilising household members to relocate from high-flood risk areas such as riparian land, and the open-air market, in collaboration with the municipality. This will help the women, and youths improve their livelihoods.

The project will be governed by Isiolo County government and the Meru County government. The national government will e a key stakeholder that will be consulted in this project because it is the body that will offer approvals for the continuation of these projects. The other stakeholders that will provide governance for this project include; the World Bank, Ewaso Ng'iro North Development Authority (ENNDA), and the National Construction Agency (NCA.

The SuDS components will improve the resilience of the municipality’s economy by reducing the damage caused by floods to trade premises and residential properties. The recurrent floods are estimated to destroy property worth KES 1.08 billion annually compared to Isiolo County’s gross county product of KES 15.9 billion as of 2019. The implementation of SuDS will reduce the flow of stormwater over roads and into commercial spaces, strengthening the resilience of the business environment to flooding and potentially underpinning more sustainable growth.

**Basin level/transboundary cooperation, water governance, and ecosystems protection**

The municipality engaged the Meru County government to set up dams in upstream catchment areas. In the last phase of the project, the Municipality of Isiolo will construct four check dams in catchment areas within Meru County to reduce the volume and velocity of floodwater flowing to Isiolo Municipality. The municipality has worked with several other stakeholders including, the World Bank, Ewaso Ng'iro North Development Authority (ENNDA), the National Construction Agency (NCA), the Isiolo County government and the Meru County government, to design drainage systems that would mitigate flooding in the municipality.

The SuDS project incorporates an Ecosystem-Based Adaptation (EBA) approach towards responding to the impacts of flooding due to the changing climate in Isiolo Municipality.

Some of the components included in the SuDS project to incorporate the Ecosystem-Based Adaptation (EBA) approach include revegetating the Marire riverbank and constructing a seminatural bio-park. This will increase the chances of rainfall in the town and its environs through evapotranspiration. The ecosystem-based features will further enhance adaptation and resilience to mitigate climate change and encourage adaptation by populations in Isiolo Municipality. In addition to attracting rainfall, the bio-park will supply water resources needed for irrigation of farmlands and livestock watering points. These features will directly counter the effects of droughts on agricultural produce.

**Governance, implementation responsibilities, and arrangements**

For the effective implementation of the project, Isiolo Municipality will coordinate with key stakeholders to develop a resettlement plan: The stakeholders include, WRA, NEMA, KeNHA, and the county Land and Physical Planning Department. It can also hold public engagement and consultation forums to discuss to the general communities on the importance of the project and why they should buy t

The private sector landowners need to be engaged before even the project is implemented. This is because they can help lease the bio-park and also acquire land to set up the bio-park. For better implementation and governance, there is a need for the county government to conduct detailed climate change and GESI assessments. Additional assessments will be conducted in these two areas during the due diligence stage to project outcomes across incomes, access, control, leadership, and other recommended empowerment indicators.

It is crucial for the municipality to determine potential government funding contributions to this effort and engage key potential funders such as the World Bank, AfDB, KeNHA, NEMA, WRA, and JICA, among others, to understand fit within similar programs in Kenya, and also to determine potential structure and timing for funding. SUED will also support the Municipality in identifying potential funders, preparing capital raise documentation, initiating the investment outreach process, and backstopping due diligence processes.

**Potential partners, investors, stakeholders and co-financing aspects**

SuDS is a social infrastructure project with distinct interventions and will need a coordinated multistakeholder funding approach from local and international investors. Among the key stakeholders and financing partners include; the World Bank, Africa Development Bank Group (AfDB), County Government of Isiolo, Kenya National Highway Authority, DANIDA, African Water Facility, Kenya Innovative Finance Facility for Water (KIFFWA), and Adaptation Fund. The SuDS project will require an investment of KES 574 million. In the financial year 2019/2020, the county government allocated KES 40 million to upgrade the drainage systems in Isiolo Municipality. For the 2020/2021 annual budget, tthrough the county budget the exutive has allocated KES 93 million from the World Bank for urban development including the construction of stormwater management systems. Consequently, the municipality needs an additional KES 155 million to implement the prioritized SuDS in phase I and II with a total budget of 248 million and KES 95 million to implement phase IV in the medium-long term. Public sector and international development grants are most suitable to fund these phases of the SuDS project.

**Alignment and contribution to Country/regional and continental priorities, policies and international commitments (SDG, Paris Agreement, etc)**

The national and county level legislations currently guide the implementation of the municipality's drainage systems. At the national level, the Kenya Constitution and Urban Areas and Cities Acts set out the municipality's functions in service delivery. Other Acts that influence the municipality's operations are the Roads Act 2007, Water r Act 2016, Environment Management and Coordination Act 2012 and amendment of 2015, and Resettlement Policy Framework 2011. The Acts broadly outline the responsibility of the established authorities in implementing the drainage systems infrastructure. The table below summarises the requirements of the different legislations.

To reinforce the national acts, Isiolo County Assembly has developed legislation on finance, water, and climate change to govern the municipality's implementation of social infrastructure projects. The Water Bill and Climate Change Fund Bill explains the systems and processes in stormwater management within Isiolo County. The Bills have been integrated into the County Development Plan 2018 – 2022 to enhance funds allocation for the county's stormwater management goals.

**Potential project risks**

The following are some of the risks that might impede or hinder the project from effective implementation. They are as discussed below together with their mitigation measures.

* Inability to obtain timely stakeholder buy-in due to the lack of an existing common framework on the construction of drainage systems. To solve this, the municipality will need to o accelerate engagement with key stakeholder organizations and define the collaboration framework between the parties to fast-track the development of the SuDS.
* Resettlement of affected residents may delay project implementation given that the municipality is yet to develop a Resettlement Action Plan (RAP) and lack of political will. The municipality will need to collaborate with WRA and NEMA to map the riparian and then with the Lands and Physical Planning Department to resettle the affected residents. The municipality must as well collaborate with WRA and NEMA to map the riparian and then with the Lands and Physical Planning Department to resettle the affected residents.
* Insufficient project financing may stall the phased implementation given that the municipal receives limited funds from the county. To mitigate this, the municipality will need to reach out to potential local funders such as the county government and KeNHA, and external funders to ensure the project components are adequately funded.
* Dependence on the county government for procurement may be time-consuming and lead to the mismanagement of project funds. This can be addressed by forming a project implementation committee to partner with the County Procurement Unit in contracting and giving oversight to the project funds management.
* Lack of technical capacity to oversee the design and construction of the drainage systems. The municipality will need to liaise with KUSP to ensure the contracting of experts with the capacity to execute the project to best-practice standards and incorporate robust monitoring and evaluation elements to satisfy prior concerns about the quality of work undertaken.