



ADAPTATION FUND

## ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Innovation Small Grant

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Country/Region: **Uganda**  
Project Title: **Enhancing resilience to climate-induced flooding and drought through the deployment of a water-filled barrier**  
Thematic Focal Area: **Innovation/Disaster Risk Reduction**  
Implementing Entity: **Ministry of Water and Environment Uganda (MOWE)**  
Executing Entity:  
AF Project ID: **AFRDG00060**  
IE Project ID: Requested Financing from Adaptation Fund (US Dollars): **250,000**  
Reviewer and contact person: **Alyssa Gomes** Co-reviewer(s):  
IE Contact Person:

### Technical Summary

The project aims to increase the resilience of communities to the risk of floods and droughts at the Obongi district through the deployment of a scalable water-filled barrier technology known as SLAMDAM to prevent flooding and simultaneously store and harvest water. The project aims to increase the adaptation capacity of the pilot local population and the resilience of the ecosystems, while improving water availability for times when there is drought. This will be achieved through three main components:

Component 1: Assessment of flood and drought risk profile and anticipated benefits from flood resilient solutions using innovative intelligence software.(USD 54,000)

Component 2: The development and implementation of the SLAMDAM-technology to manage the identified flood and drought risks effectively.(USD 76,000)

Component 3: Developing and strengthening climate change adaptive capacities of institutions and communities.(USD 21,100)

Component 4: Promoting the flood intelligence software and the SLAMDAM-technology as effective measures to enhance resilience to floods and drought. (USD 68,900)

Requested financing overview:

Project/Programme Execution Cost: USD 15,000

Total Project/Programme Cost: USD 220,000

	<p>Implementing Fee: USD 15,000 Financing Requested: USD 250,00</p> <p>The initial technical review raises a few pending issues relating to sustainability, clarification on restoration efforts and budget discrepancies which are discussed in a few Clarification Requests (CRs) and Corrective Action Requests (CARs) in the review.</p>
Date:	28 January 2022

Review Criteria	Questions	Comments
Country Eligibility	1. Is the country party to the Kyoto Protocol?	<b>Yes</b>
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	<b>Yes</b> , letter dated 23 August 2021.

	<p>2. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?<sup>1</sup></p>	<p><b>Yes</b>, as per details provided on pages 8-9. 12-14,15.</p> <p>The rationale for the SLAM water barrier technology is based on its dual functionality to strengthen resilience to floods and storage of water in times of drought.</p> <ul style="list-style-type: none"> <li>• The technology can be adapted if needed;</li> <li>• There is possibility to change the manufacturing to suit local requirements and this is not expected to alter the project timeline or costs;</li> <li>• The project is based around the community with a focus on working with the demonstration community to meet their needs;</li> <li>• Excessive water from flooding can be stored and repurposed when there is a shortage e.g. for irrigation to enhance agricultural production.</li> </ul> <p>The broader context of the project has also been highlighted here in that the innovation is not only the SLAMDAM but also the collection of data and understanding the flood patterns and needs of the region. This is supportive of a wider innovation process at play, not just a deployment of a technology, but as adaptation of a technology to local needs.</p> <p><b>CR1:</b> Please clarify in the proposal main text at the end of the lease, (i) is the SLAMDAM on a continuing lease, gifted, sold or removed? (ii) How the intervention will be sustainable if it will be leased for demonstration only for the duration of the project? (iii) Who is in charge of maintenance and repair.</p> <p>See main text section 23</p>
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		<p><b>CR2:</b> Please clarify in the text who will be included in the flood response team (local government staff, youth)?</p> <p>See main text section 26</p> <p>The proposal in para 14 mentions that women and youth “will be engaged in environmental restoration programs for example planting trees along the flood prone areas, demarcating buffer zones that will eventually reduce negative effects of floods on the environment and in doing so they are paid (cash for works) that would boost their income.”</p> <p><b>CR3:</b> Please clarify where restoration programs are budgeted in the components.</p> <p>The text has been amended accordingly. What is critical here is the encouragement of the community's (especially women and youth) participation in the environmental restoration related activities such as tree planting and river banks restoration in flood prone areas. This is considered as an opportunity to the local communities since it can indirectly boost their income with such regular occurrence.</p> <p><b>CR4:</b> Please clarify where the cost for the high-capacity water pump is budgeted – whether it is included with the cost of the barrier or separately? If separate please include the budget item. Also clarify the energy needs and costing requirements for the water pump.</p> <p>The costs of the pump, and all other accessories, is included in the costs for the barrier. Energy costs of the pump are around USD 50 p/year. However, alternatively there is an option to use a solar power-driven pump, but this option is more expensive and might not be the best option for this small pilot project.</p>
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	3. Does the project encourage or accelerate development of innovative adaptation practices, tools and technologies?	<p><b>Yes.</b> (Pages 13-15)</p> <p>The proposal has clarified that development of the SLAMDAM in Uganda holds a lot of new potential:</p> <ul style="list-style-type: none"> <li>• Deployment through nonprofessionals</li> <li>• Integration of the technology with flood data analytics</li> <li>• Use in the context of drought</li> </ul> <p>The results of this project can influence the future development and deployment.</p> <p>The project includes a specific output 2.4 “Roadmap to scale up the intelligence software and the SLAMDAM-technology across Uganda” which is welcome.</p> <p>A multi-disciplinary management team composed of experts will manage the project along with community-based associations, to monitor the operations SLAMDAM technology and report progress on usage and adoption. (Page 21)</p>
	4. Does the project help generate evidence base of effective, efficient adaptation practices, products or technologies, as a basis for potential scaling up?	<p><b>Yes.</b> (15,17-18)</p> <p>The project’s possible routes for scaling of the project if proven to be effective. These relate to public, commercial or hybrid pathways (both government and market actors) for scaling.</p> <p>The options identified here are supportive to considering future roll outs or scaling and help to further develop the proposal. The time taken to move this project from demonstration stage (the current proposal) to a future scaling is not however clear. The current considerations do show a desire to further the work and thus scaling potential.</p>
	5. Does the project engage, empower and/or benefit the most vulnerable communities and social groups?	<p><b>Yes.</b> (10,17-18)</p>

		<p>Women will be included in training activities will be engaged in environmental restoration programs for example planting trees along the flood prone areas, demarcating buffer zones that will eventually reduce negative effects of floods on the environment and in doing so they are paid (cash for works) that would boost their income.</p> <p>This text should be amended (see CR3). Indeed, women will be included in training, workshops. More importantly, women will also be part of the flood response team ! The benefits for vulnerable groups (women, poorer segments, children, elderly, people with disability) will be closely monitored and their interests come at the forefront when deciding how to enhance resilience to floods using the technology. We need to close the gender and social gaps.</p>
	6. Does the project advance gender equality and the empowerment of women and girls?	<p><b>Yes.</b></p> <p>The project will focus on Namsambya in Obongi Town Council with an estimated population of about 800 people of which 408 male and 392 are female in that 320 are children and about 360 are youth as well as about 50 persons are living with disability.</p> <p>The Results Framework is developed further with clear quantifiable targets.</p> <p>50% of the targeted beneficiaries of training will be women.</p>
Resource Availability	1. Is the requested project funding within the parameters for small grants set by the Board?	<b>Yes.</b>
	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project budget before the fee?	<b>Yes.</b>

	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?	<p><b>Not clear.</b></p> <p><b>CR5:</b> Please clarify the EE for the project. The title page mentions MOWE will execute the project and para 42. Mentions “consulting company”.</p> <p>The title page has been changed accordingly. The EE is that this is the organisation that assumes the project management / leader role; this should be the consulting company.</p>
Implementation Arrangements	1. Is the project submitted through a National Implementing Entity accredited by the Board?	<b>Yes.</b>
	2. Is the timeframe for the proposed activities adequate?	<p><b>Not clear.</b></p> <p><b>CR6:</b> Please justify the duration of 1 year which seems very short. Considering that community involvement in co-design, the unpredictability of the flood event, the duration should be reasonable to ensure that there is actually sufficient time to test the solution within the project time frame and such that lessons can be extracted to inform further uptake and scaling up efforts.</p> <p>Floods occur frequently in this region during rainy season (March – October) and there is no or hardly any need for customized solutions, thus the solution can be designed relatively quickly. Depending on when the project will start, it seems highly feasible to complete this project within one year. If the flood barrier is not at the location before October, the project might need to be extended with a few months (total of 14 months), assuming the project will start in March 2022.</p>
	3. Is a summary breakdown of the budget for the proposed activities included?	<p><b>Yes.</b></p> <p><b>CAR1:</b> Please add the totals of execution cost and IE fee at the end of the detailed budget table as those can't be found other than the ones in the disbursement schedule.</p>

		<p>The costs have been included in the overview as requested</p> <p><b>CAR2:</b> The total of project funds doesn't return \$220,000 as is in the proposal. Please make corrections.</p> <p>Completed as per requested, now it adds up to 220,000</p> <p><b>CAR3:</b> Please add the totals of each component in the components and financing table (Table 1) and detailed budget table (Table 7).</p> <p>Completed as per requested, added rows with the totals of each component</p> <p><b>CAR4:</b> Project Monitoring and evaluation arrangements including M&amp;E plan (Section III.B) and Table 4 does not include Project Performance Reports (PPRs). Please include in the first line item.</p> <p>Completed as per requested</p>
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December 2018



ADAPTATION FUND

**PROGRAMME ON INNOVATION:  
SMALL GRANTS PROJECTS THROUGH DIRECT ACCESS  
MODALITY**

**REQUEST FOR PROJECT FUNDING FROM THE ADAPTATION FUND**



ADAPTATION FUND

## PROGRAMME ON INNOVATION: SMALL GRANT PROJECT PROPOSAL

### PART I: PROJECT INFORMATION

Country:	Uganda
Title of Project:	Enhancing resilience to climate-induced flooding and drought through the deployment of a water-filled barrier
National Implementing Entity:	Ministry of Water and Environment Uganda
Executing Entity/ies:	<del>Ministry of Water and Environment</del> Uganda Consulting company
Amount of Financing Requested:	250,000 U.S. Dollars

### Project Background and Context:

1. Uganda is a landlocked country that occupies a total area of 241,038km<sup>2</sup>. Agriculture is a critical part of Uganda's economy; it accounts for 25.8% of Gross Domestic Product (GDP)<sup>1</sup>, employs 72% of the population<sup>2</sup> and accounts for over 50% of total export<sup>3</sup>. Half of the agricultural labour force is female farmers, focusing mainly on their families' food security rather than the production of cash crops. Uganda lies within a relatively humid equatorial climate zone, but the topography, prevailing winds and water bodies cause large differences in rainfall patterns across the country. Average annual rainfall ranges from 800 mm to 1500 mm.<sup>4</sup> Average daily temperature is around 28°C, but varies with altitude (temperatures can reach 0°C in the highlands).<sup>5</sup> Uganda faces several developmental constraints, including high population growth (3.3%), post-conflict conditions in the north, soil erosion and degradation, and pernicious impacts of malaria and HIV/AIDS.
2. Due to Uganda's poverty, low rural incomes, lack of income diversity and heavy dependence on rainfed-agriculture, the country and its people are very vulnerable to climate change. Uganda is the 14th most vulnerable country and the 48th least ready country – meaning that it is very vulnerable to, yet unready to address climate change effects.<sup>6</sup>

<sup>1</sup> <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS>

<sup>2</sup> <https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS>

<sup>3</sup> CIA (2015). The World Factbook – Uganda. Available via <https://www.cia.gov/library/publications/the-world-factbook/geos/ug.html>

<sup>4</sup> Draws heavily from: Uganda Climate Change Findings, USAID, ARCC brief, 2013 <https://www.climate-links.org/resources/uganda-climate-change-vulnerability-assessment-report> and USAID Climate Change Adaptation Plan, June 2012 <https://www.usaid.gov/sites/default/files/documents/1865/Agency%20Climate%20Change%20Adaptation%20Plan%202012.pdf>

<sup>5</sup> Climate Service Center Germany (2015). Climate-fact-sheet. Uganda. Updated version 2015. [http://www.climate-service-center.de/products\\_and\\_publications/fact\\_sheets/climate\\_fact\\_sheets/index.php.en](http://www.climate-service-center.de/products_and_publications/fact_sheets/climate_fact_sheets/index.php.en)

<sup>6</sup> GAIN index summarizes a country's vulnerability to climate change and other global challenges in combination with readiness to improve resilience. <http://index.gain.org/country/uganda>

## Impact of climate change

3. Changes in sea surface temperatures in the distant tropical Pacific, Indian and Atlantic Oceans strongly influence annual rainfall amounts and timing in Uganda. Year to year variations in annual rainfall can be considerable, and the onset of seasons can shift by 15 to 30 days (earlier or later). In some locations, the length of the rainy season can also change by 20 to 40 days from year to year. Rising temperatures and shifting or increasingly unpredictable rainfall patterns can reduce the amount of agricultural land, shorten growing seasons, hamper crop production, undermine the water resources and alter the occurrence and distribution of pests.
4. The warming trend is projected to continue with some models projecting an increase of more than 2°C by 2030. A warming ranging between 1.4°C and 4.2°C is projected for the end of the century.<sup>7</sup> There is a potential for an increase in the frequency of extreme events (e.g. heavy rainstorms, flooding, droughts, etc.). Uganda has experienced an increase in the frequency and intensity of droughts and floods in recent years. Rainfall coming in the form of heavy precipitation events is anticipated to increase, which would escalate the risk of disasters such as floods and landslides.
5. If temperatures rise and the frequency and intensity of extreme droughts and floods increase, it can reduce crop yields and cause a loss in livestock, which will have important implications for food security. The increase in rain during dry seasons could have a significant impact especially on perennial crops and post-harvest activities such as drying and storage. An overall decrease in the predictability of rainfall intensity and onset of the rainy season increases the chance of crop failure.
6. It has been suggested that climate change significantly contributes to conflicts in Uganda. It is anticipated that as extreme weather events, e.g. floods and droughts, become more frequent due to climate change there will be an increasing risk for conflicts, potentially also due to rising food prices.
7. The Obongi District is located in the West Nile Sub-Region of Northern Uganda. The complete district has 50,000+ inhabitants divided over 3 sub counties, 14 Parishes and 60 villages. Overflowing of the River Nile and heavy rainfall cause serious damage to the communities leading to displacements and loss of livelihoods. The vulnerability became apparent in November 2020 when flooding of the River Nile caused displacements of more than 23,000 residents of the Obongi District<sup>8</sup>. The whole of Obongi District is flood prone; however, there are hotspots that are least prepared for and most affected by the floods. This project will focus on one of those hot spots being Namsambya in Obongi Town Council with an estimated population of about 800 people of which 408 male and 392 are female of whom 320 are children and about 50 persons are living with disability. There are also self-settled refugees from South Sudan who are vulnerable to floods. The area has a level ground surface and lacks structures to prevent flooding of the River Nile. Even though the district experiences floods on a regular basis, there are also times when there is a shortage of water. Water isn't stored anywhere after flooding; subsequently, the water is lost even though it could be repurposed elsewhere or at a different time when there is a shortage. The people in the area therefore lack clean and safe water at times.

<sup>7</sup> Climate Service Center Germany (2015). Climate-fact-sheet. Uganda. Updated version 2015. [http://www.climate-service-center.de/products\\_and\\_publications/fact\\_sheets/climate\\_fact\\_sheets/index.php.en](http://www.climate-service-center.de/products_and_publications/fact_sheets/climate_fact_sheets/index.php.en)

<sup>8</sup> Source: <https://allafrica.com/stories/202011160732.html>

8. Adequate flood and drought risk analyses are missing at Obongi District and perhaps across the whole of Uganda. Reliable flood and drought risk analyses are needed to determine what resilient measures the district should implement to enhance its resilience effectively and cost-efficiently. These analyses require enriched flood and drought data to which the District currently doesn't have access to.

### **Project Objectives:**

9. The overall goal of the project is to strengthen resilience and reduce vulnerability of communities to the risk of climate change-induced floods and droughts within the Obongi District through data-driven risk analyses and the deployment of a scalable water-filled barrier to prevent flooding and simultaneously store and harvest water that will be repurposed for a drought event.

The specific objectives of the project are to:

- Increase the resilience of people, ecosystems and agricultural landscapes by developing and implementing a flood and drought response strategy, based on a software analysis, which centers around the innovative SLAMDAM-technology.
- Generate awareness and capacity building of stakeholders at different levels of society on techniques and processes to mitigate the risk of floods and drought.
- Validate the flood intelligence software and the SLAMDAM-technology, being a water-filled flood barrier, as innovative climate adaptation measures that can be scaled-up across Uganda.

### **Project Components and Financing:**

10. The community-driven project, with its four components, will combine both policy and practice to adapt to climate change at national and local levels. The project components include:
  1. Assessment of flood and drought risk profile and anticipated benefits from flood resilient solutions using innovative intelligence software.
  2. The development and implementation of the SLAMDAM-technology to manage the identified flood and drought risks effectively.
  3. Developing and strengthening climate change adaptive capacities of institutions and communities.
  4. Promoting the flood intelligence software and the SLAMDAM-technology as effective measures to enhance resilience to floods and drought.

Table 1 shows components and expected outputs of the proposed project.

**TABLE 1: PROJECT COMPONENTS AND FINANCING**

Project Components	Expected Outcome	Expected Concrete Outputs	Amount (US\$)
1. Assessment of flood and drought risk profile and anticipated benefits from flood resilient solutions using innovative intelligence software.	1.1 Thorough identification and understanding of the flood and drought risks of the Obongi District	1.1.1 Single source of flood, drought and area data (annual rainfall, perspiration, land use etc.) at the Obongi District.	3,600
		1.1.2 Flood and drought risk assessment at the Obongi District	18,600
		1.1.3 Flood and drought monitoring and evaluation plan to evaluate the effectiveness of the SLAMDAM-technology	3,600
	1.2 Flood and drought risks are managed following an appropriate flood and drought response strategy and framework	1.2.1 Flood and drought response strategy for the Obongi District based on a software analysis of the anticipated benefits from the deployment of flood resilient measures including the SLAMDAM-technology.	11,700
		1.2.2 Flood and drought response framework (plan, processes and governance structure) for the Obongi District to include the SLAMDAM-technology	16,500
Total Component 1			54,000 ←
2. The development and implementation of the SLAMDAM-technology to manage the identified flood and drought risks effectively.	2.1 Flood and drought risks are managed at the Obongi District using the developed SLAMDAM-technology	2.1.1 Design of the SLAMDAM-technology is to manage the identified flood and drought risks at the Obongi District	6,000
		2.1.2 Manufactured water-filled barriers are in accordance with the pre-defined specifications; will be leased for the duration of the project.	60,000
		2.1.3 Stored mobile flood barrier in Uganda	10,000
Total component 2			76,000 ←
3. Developing and strengthening climate change adaptive capacities of institutions and communities.	3.1 Upskilled community having an increased understanding of the root cause and impact of climate change	3.1.1 Attended workshops on climate change by local communities and other stakeholders	10,000
	3.2 Adaptive capacity of communities and other stakeholders to climate change impacts strengthened by using the intelligence software and the SLAMDAM-technology	3.2.1 Customized training material and workshops for stakeholder groups involved in flood response at the Obongi District	3,600
		3.2.2 Well-trained flood response team, and other stakeholder groups, on how to adapt to climate change using the intelligence software and the SLAMDAM-technology	7,500

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Total component 3			21,100 ←
4. Promoting the flood intelligence software and the SLAMDAM-technology as effective measures to enhance resilience to floods and drought.	4.1 Embedded adaptation benefits mechanism to measure and monitor the benefits from flood and drought resilient measures	4.1.1 Comprehensive adaptation benefits methodology	18,000
		4.1.2 Completed monitoring and evaluating plan after a flood and drought event	6,000
	4.2 Increased resilience to floods and droughts using a scalable innovative climate adaptive solution	4.2.1 Dry run demonstration of the scalable technologies held by trained hydrologists and a local flood response team	10,000
		4.2.2 Real-life demonstration of the innovative SLAMDAM-technology during a real-life flood and drought situation at the Obongi District	2,500
		4.2.3 Ex-post benefit analysis of the real-life demonstration using the intelligence software	15,600
		4.2.4 Roadmap to scale up the intelligence software and the SLAMDAM-technology across Uganda	16,800
Total component 4			68,900 ←
5. Project Execution cost			15,000
6. Total Project Cost			235,000
7. Project Cycle Management Fee charged by the Implementing Entity (if applicable)			15,000
Amount of Financing Requested			250,000

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## Projected Calendar:

TABLE 2: PROJECT CALENDAR

Milestones	Expected Dates
Start of Project Implementation	February 2022
First Quarter Review	May 2022
Mid-Term Review	August 2022
Third Quarter Review	November 2022
Project Closing	January 2023
Terminal Evaluation	January 2023

The expected timeframe is a maximum of 1 year to carry out all the objectives: assessment, manufacturing, training, ex-post benefit analysis and trainings.

## PART II: PROJECT JUSTIFICATION <sup>9</sup>

### A. Adaptation measures and contributions to climate resilience.

11. The proposed adaptation measures by the project and their contribution to climate resilience are described below against the four components of the project.

**Component 1:** Assessment of flood and drought risk profile and anticipated benefits from flood resilient solutions using innovative intelligence software.

**Adaptation element**

- Adaptation to floods and drought through information management

**Increases resilience and decreases vulnerability**

- Access to information about floods and drought risks at the Obongi District
- Availability of a flood and drought response strategy and framework

**Component 2:** The development and implementation of the SLAMDAM-technology to manage the identified flood and drought risks effectively.

**Adaptation element**

- Adaptation to drought through management of water availability
- Adaptation to floods through flood risk management

**Increases resilience and decreases vulnerability**

- Availability of the SLAMDAM-technology in Uganda to manage flood and drought

**Component 3:** Developing and strengthening climate change adaptive capacities of institutions and communities.

**Adaptation element**

- Adaptation to flood & drought through knowledge and capacity building

**Increases resilience and decreases vulnerability**

- Improved awareness of communities on causes and impacts of climate change
- Skilled team knowing how to use the technology to adapt to flood and drought
- Gathering best practices and lessons learned for dissemination

**Component 4:** Promoting the flood intelligence software and the SLAMDAM-technology as effective measures to enhance resilience to floods and drought.

**Adaptation element**

- Adaptation to flood and drought through the rapid deployment of effective scalable climate-resilient solutions across Uganda / Africa

**Increases resilience and decreases vulnerability**

- Improved insight in flood and drought risks and the anticipated benefits from deploying resilient measures such as the SLAMDAM-technology.
- No or less damage to people, crops, livestock, infrastructure caused by floods
- Improved water availability in times of drought
- Proven effective climate-resilient solution that can be scaled-up across Uganda
- Information about where to scale-up SLAMDAM across Uganda

<sup>9</sup> Parts II and III should jointly not exceed 10 pages.



## B. Economic, social and environmental benefits of the project

12. The project will enhance communities' resilience to flooding and drought. It is anticipated that the community members will directly benefit in terms of better health, security, food security, access to transportation and employment which form the base for poverty alleviation in terms of shared prosperity and financial stability. People growing crops will benefit from this project; their crops are protected from floods and can be inundated in times of drought. Women and other socially marginalized groups are more vulnerable to floods due to their roles and social structures and they will therefore benefit the most.
13. The project will improve the livelihood of the local women through trainings and access to livelihood sources and health care. It will also improve the access of youth to education. The project will ensure that schools, hospitals, infrastructure, businesses and roads are protected from floods. This allows for the lives of women and children to continue uninterrupted. Children can continue to go to school, which is also a safe haven for many children. Women can continue having access to healthcare facilities.
14. Access to clean water will improve the general health and reduce time spent in accessing safe and clean water from other far sources. Flood prevention of the area means that the area can be used for other purposes. Although out of scope of this project, a co-benefit of the project is The that there is an opportunity for youth and women ~~will to~~ be engaged in environmental restoration programs for example planting trees along the flood prone areas, demarcating buffer zones that will eventually reduce negative effects of floods on the environment and in doing so they ~~are could be~~ paid (cash for works) that would boost their income.
15. The project will focus on Namsambya in Obongi Town Council with an estimated population of about 800 people of which 408 male and 392 are female in that 320 are children and about 360 are youth as well as about 50 persons are living with disability.<sup>10</sup>
16. The interest of other vulnerable groups will be taken into consideration in the project. These groups include, people with a disability, the elderly and the absolute poor. The self-settled refugees from South Sudan will be invited to attend trainings and demonstrations. The project will enhance the knowledge and awareness with regards to climate change amongst these vulnerable groups. To ensure equality amongst the groups, there will be deliberate effort to integrate vulnerable groups into the project by having them directly benefit from project activities by providing incentives such as improved access to clean and safe water.

### Economic benefits of the project

- The project will prevent displacements of people needed to run the economy.
- The SLAMDAM-technology in combination with the intelligence software will prevent loss of crops and livestock.
- The project will reduce damage to transportation such as the ferry to Adjumani.
- The project aims to safeguard 80% of the, often female-held, businesses from being flooded.

<sup>10</sup> Note that the flood intelligence software specifically measures the impact of floods on women and different age groups such as children and the elderly. The tool accurately measures what the impact would be from flood resilient measures on women, children and the elderly.

#### **Environmental benefits of the project**

- Biodiversity (incl. livestock) can flourish despite of floods and drought.
- The agricultural landscape will not be damaged due to floods and drought; this enhances food security.
- The ecological system of the Obongi district will be less impacted by climate change.

#### **Social benefits of the project**

- People, and women and children in particular, have better access to health care.
- Improved food security leads to less diseases and less conflicts.
- There will be better access to roads, homes and infrastructure (incl. schools).
- The nearby Palorinya refugee settlement camp will be protected from floods and drought.

Note that an data-driven intelligence software measures most of above benefits.

### **C. Accelerating development of innovative adaptation solutions**

17. The flood intelligence software is piloted at the Obongi District to assess the impact of climate change-induced flood and drought events and the anticipated benefits from resilient solutions such as a mobile flood barrier. This newly developed tool can be used all over Uganda and at different layers of the society. Regional and national governmental bodies and the private sector (*incl. financial institutions and especially insurance companies*) can benefit when more local communities / hydrological departments use the tool. This will give a granular and reliable insight in the impact of flooding and drought as well as the anticipated benefits from implementing flood and drought resilient solutions. The intelligence software is therefore highly scalable.
18. The newly developed flood intelligence software integrates two areas of expertise viz. (1) flood data analytics and (2) physical flood resilient measures. The tool uses state-of-the-art 3Di hydrodynamic modelling to develop flood risk scenarios at any given location around the world. The tool synthesizes and visualises a flood event (1) with and (2) without a flood resilient measure. A resilient measure could be the SLAMDAM-technology. The intelligence tool calculates the anticipated benefits expressed in pre-defined indicators such as "*Avoided damage to agricultural land*". Ultimately, the tool supports well-founded decision-making on how best to implement resilient measures to ensure effective and (cost-)efficient water and flood risk management activities.
19. The newly developed SLAMDAM-technology is an innovative and low-cost technological solution to enhance resilience against floods and droughts. This technology, being a water-filled flood barrier, is highly scalable seeing as it can be deployed in a wide variety of conditions.
20. This technology is more cost-effective compared to sandbags and other mobile barriers. The unique EPDM material of SLAMDAM has a long lifespan of 70+ years, meaning relatively low costs due to its longevity. The SLAMDAM-technology is also 100% recyclable as opposed to the competing products, which is cost-effective and better for the environment.

21. The SLAMDAM-technology is easy to operate, maintain and repair. It is therefore not complicated to enhance the skillset of people involved in flood risk management through trainings and capacity building workshops. The technology is simple yet highly effective in flood prevention. Once the local flood response team is trained, they are able to deploy the flood barrier independently.



Figure 1: How to operate the technology

22. The SLAMDAM-technology is in fact a versatile and multi-purpose technology. The flood barrier can also be used to enhance resilience to drought. The water can be stored vapor tight between temperatures of minus 35 °C and plus 120 °C and the material of the dams is Ozone / UV- protected. Excessive water from flooding can be stored and repurposed when there is a shortage e.g. for irrigation to enhance agricultural production.

23. The SLAMDAM-technology is preferred for the Obongi District mainly because it is an effective solution and an economical solution. A comparative analysis indicated that other technologies are more expensive than SLAMDAM. Another advantage of SLAMDAM compared to other technologies is that you can carry the units easily with two people. This enables men and women at the district to be self-reliant when enhancing their resilience to flooding and drought. There is no need for heavy equipment to deploy the flood barrier, nor for experts with advanced degrees. This technology has the longest lifespan in the market; the Obongi District can therefore be resilient for decades using this technology. The SLAMDAM flood barrier will be provided on lease terms for the duration of the project after which the flood barrier will be gifted. The flood response team will be trained on how to repair and maintain the technology and repair kits will be provided as well during the project. In the unlikely event of serious damage to the barrier, e.g. due to vandalism, the matter has to be discussed during the Steering Committee and a decision has to be made how to deal with this for example by attaining additional project funding.

24. At the Obongi Town Council, and with floods in general, speed and effectiveness are important to prevent damages. With just 2 men and 1 pump, a barrier of 100 meter can be built in one hour with this technology. In comparison; to build a 10-meter barrier of sandbags, you need 14 people and 2 hours of time. Another problem is that sandbags cannot be reused as opposed to the mobile flood barrier.

25. The pilot site involves the ecosystem of different land users. The pilot site covers, amongst others, agriculture land and residential land. The input of the different land users will be incorporated in the design of the overall solution. Land use is an important metric to determine the success of the project. The project sets targets for indicators such as "Prevented damage to agricultural land", the same for other land uses. These indicators are expressed in monetary and non-monetary values. The project will design the solution, which centres around the SLAMDAM-technology, using the input from the different land users and the software intelligence tool. This allows the project to design the best possible solution with the optimal location of the flood barrier. The benefits will be monitored once an actual flood or drought event has occurred during which the SLAMDAM-technology was deployed.

26. The project will ensure there is a well-trained local flood response team in place who will deploy the flood barrier as soon as a flood has been detected. There is no need for (advanced) degrees to deploy the flood barrier, however the head of the flood response team should have some organising skills. Members of the flood response team include local community members (men and women), a local hydrologist and possibly representatives of the local government. Each member will have a role that will be specified in process and procedure descriptions. The deployment of the SLAMDAM-technology is triggered by an early warning process which has to be in place. It's not necessary to have an advanced early warning system as long as there a trigger that initiates the flood or drought response process for the deployment of the SLAMDAM-technology. It could be as basic as a warning via Twitter by the government. The project will also provide recommendations on how to enhance flood and drought early warning.
27. Uganda is also considering nature-based solutions to reduce vulnerability to floods and drought for sustainable economic development; however, the envisioned nature-based solutions take at least 5 – 10 years to be fully effective. the mobile flood barrier can be used until the nature-based solutions are effective. When the nature-based solutions are effective, the flood barrier can be used elsewhere or complementary to the nature-based solutions.
28. The flood intelligence software gives insight in what the dimensions of the flood barrier should be and where the flood barrier should be deployed. This input will be provided to the Dutch manufacturer who will develop the SLAMDAM-technology as per the requirements; this can be their standard models or customised models (most of the time the standard models are suitable for identified flood risks). This ensures that the suitable SLAMDAM-technology will be provided for the identified risks and therewith preventing maladaptation.
29. The project will encourage uptake and adoption of the flood intelligence software and the SLAMDAM-technology by working closely with the district management, the local / regional hydrologist department and the beneficiary local communities. There will be deliberate effort to sensitize the communities on effects of climate change and the planned interventions to reverse the negative effects in the region.
30. There will be a mechanism to monitor the actual usage of the SLAMDAM-technology by notifying the (national and international) project team members of any flood alerts. A flood alert is a trigger for the flood response team to deploy the flood barrier as per agreed and as per their training. When the project team members are notified of a flood alert, they will contact the head of the flood response team to ensure he/she follows the procedures and deploys the SLAMDAM-technology. Once a flood event has occurred, the benefits of the deployment of the SLAMDAM will be monitored in accordance with the M&E-plan. The realised benefits will be compared with the anticipated benefits to determine to what extent the targets have been realised. Lessons learned will be made to determine improvements for future deployment of the SLAMDAM-technology.
31. It is the first time a project is implemented with this newly developed flood intelligence software. And never has the newly developed SLAMDAM-technology been deployed in combination with this software. The project brings together innovative intelligence software with an innovative flood and drought resilient measure being the SLAMDAM-technology. If the combination of both products is successful, this project could serve as a blueprint of how to enhance resilience effectively and cost-efficiently all over Uganda and beyond.

### 32. Process that accelerates development usage of flood intelligence software and SLAMDAM

- The flood intelligence software measures the anticipated and realised benefits from deploying flood resilient measures. Measuring anticipated benefits from deploying the SLAMDAM-technology using this tool will stimulate **private sector engagements and investments** such as insurance companies. The desired result is to have done benefit analyses using this tool for at least 10 flood prone catchments in Uganda.
- Demonstrations of the SLAMDAM-technology will be given when there is no real-life threat of flooding. The desired result is to have held 10 demonstrations each one attended by >25 people of whom at least two potential investors and two policy makers. Communities in other regions that are vulnerable to floods, such as communities in the Kasese District, will be invited to attend a demonstration.
- A roadmap will be developed to scale-up this solution in other parts across Uganda. The desired result is to have at 10 high priority locations across Uganda for which business cases have been made using the software tool mentioned above. The roadmap should describe these locations and what the costs and benefits would be from deploying the SLAMDAM-technology. The desired result is also to have investment commitments for 20% of the projects in the roadmap.
- The project solutions (flood intelligence software and SLAMDAM-technology) and the project approach are highly standardized. It might be that the SLAMDAM-technology requires minor customizations, however this has little financial impact. The project solutions can therefore easily be replicated / scaled up. There is already a national plan to combat floods and drought in Uganda. Possibly funds can be allocated to scale-up the flood intelligence software and the SLAMDAM-technology once these have proven to be effective. Outside financial support might also be required to scale-up the solution across Uganda. Options for outside financing are instruments from the EU, the Dutch government, the AfDB (ABM program) or other donors such as the Adaptation Fund. Note that the flood intelligence tool gives supports decision-making when investing in flood resilient solutions cost-efficiently.
- The Government of The Netherlands offers financial instruments to further scale up climate resilient solutions. In addition, the government can help attain financial support from e.g. the E.U. The consultant has close ties with the Government of The Netherlands.

The project will track the amount and speed of investments by public and private donors to scale-up the flood intelligence software and the SLAMDAM-technology across Uganda.

### D. Consistency with Uganda's standards, strategies and plans

33. The newly developed flood intelligence tool specifically calculates and visualises the impact of floods and drought. In addition, it calculates and visualises the impact of flood resilient measures. As such, the tool supports decision-making with regards to Uganda's strategies and plans to strengthen resilience to floods and drought. The government is capable of making well-founded decisions with the intelligence software on where to implement which kind of flood and drought resilient measures. Reliable cost-benefits analyses can be made to support investment decisions.
34. The project aligns with Uganda's National government strategies and policies related to the implementation of climate strategies including flood and drought management.

- The project aligns with the *National Adaptation Programme of Action (NAPA)* of Uganda, which has prioritised the “Water for Production Project” and the “Drought Adaptation Project”.
  - The project aligns with the *Nationally Appropriate Mitigation Actions (NAMAs)* of Uganda that aims to enhance the production in agriculture. The technology helps control water availability and protect agricultural landscapes.
  - This project also aligns with *The National Development Plan II (NDPII, 2015-2020)*. The climate-resilient technology can contribute to this national plan that aims to improve climate-proof national development.
  - This project contributes to *The National Vision 2040* of Uganda that prioritizes appropriate adaptation strategies, knowledge and information sharing on climate change and improved M&E regarding climate change intervention.
  - The project is also aligned with Uganda’s *Climate Change Policy* that aims to strengthen prediction and monitoring of climate change, supports integration of climate change issues in planning, decision-making and investments, and facilitates mobilization of financial resources to address climate change. This small-scale project demonstrates the effectiveness of the climate-resilient technology and implements an adaptation benefits mechanism to mobilize funds.
  - The project is aligned with Uganda’s *Nationally Determined Contributions (NDC)*. Uganda’s focus is on climate adaptation and prioritizes the following sectors: i) agriculture and livestock, ii) infrastructure, iii) water, iv) health and v) disaster risk management. The technology has a positive impact on the different sectors.
35. The SLAMDAM-technology is made out of EPDM (Ethylene Propylene Diene Monomer), which is a synthetic rubber which is commonly used all over the world including Uganda.

#### **Standards and Certifications**

- The technology meets Uganda’s technical standards. Important Uganda-recognized certifications are in place such as: TUV-certification, PAS-certification, ISO 9001 and 14001 Certification.
  - The product is an environmentally friendly solution shown by the Sustainability and EPDM Durability Certification that meet Uganda’s technical standards.
36. The project adheres to the environmental and social principles described in the latest Environmental and Social Policy of the Adaptation Fund.

## **E. Learning and knowledge management strategies of the project**

37. The project perceives capacity building and knowledge management and learning as one of its main components. The learning transfer model used consists in a combination of a “learning by doing” and a “learning by seeing” method. Lessons from project implementation will be properly documented and disseminated.

#### **Local knowledge capture and dissemination:**

- The project will give local hydrologists access to the cloud-based flood intelligence software and train them how to use the software. This enables local hydrologists to analyse the impacts of flood and drought risks to support decision-making. Adequate training sessions prevent maladaptation of the flood intelligence software.

- The project will teach local stakeholders how to monitor report and verify benefits from using the SLAMDAM-technology following an M&E framework in combination with the intelligence software.
- The project will enable onsite (learning) visits where the SLAMDAM-technology is stored and where they might be deployed in case there is a threat of flooding. These training sessions are given to the local flood response team and local community members. Effective training sessions help prevent maladaptation of the SLAMDAM-technology.
- The project will send reports to regions / communities that face similar challenges
- The project will develop a clear framework and governance structure specifying the roles and responsibilities of the people involved incl. communication lines.
- The project wants representatives of women interest organisation to be involved in the design of the solution including where to be deploy the flood barrier. The aim is that at least 50% of the attendees of training sessions and demonstrations comprises of women. The aim for the flood response team is to have at least 30% women; probably on managerial / organization level.

**National and international knowledge capture and dissemination:**

- The project will demonstrate the flood intelligence software to national governmental bodies such as the national hydrological department. The demonstration includes showcasing how the tool was used at the Obongi District. The project will further stipulate how the flood intelligence software can help improve insight in flood and drought risk at a national level when the tool is streamlined across different locations and at different levels (local, regional and national). A similar demonstration will be given to insurance companies / organisations such as the African Risk Capacity (ARC).
- The project will share knowledge with national institutions such as researchers and governmental bodies involved in climate adaptation
- The project uses Adaptation Fund Community of Practice for knowledge share
- The project will hold a closeout seminar to present results and lessons learned

## F. The environmental and social impacts and risks of the project

**TABLE 3: ENVIRONMENTAL AND SOCIAL RISKS**

Environmental and social principles	Assessment carried out	Potential impacts and risks
<b>Compliance with the Law</b>	The program complies with the relevant national laws, regulations and policies; and complies with the country's relevant legal framework for water management and use, environmental protection and local rural development.	<b>Risk:</b> Very low <b>Potential impact:</b> High According to Environmental Impact Assessment (EIA) Regulation and Sectorial EIA Guidelines of Uganda most of the activities of the proposed project do not fall within the First Category of projects that require full EIA.
<b>Access and Equity</b>	The intervention logic of the project is to provide benefits in the most vulnerable communities, with fair and equitable access to activities, equipment, resources, and training throughout the planning and execution phases.	<b>Risk:</b> Low <b>Potential impact:</b> High Reducing access and equality would be detrimental to the project. The project will monitor the targeting of all beneficiaries to assure equal access of men, women, children and vulnerable groups such as the elderly, people with disabilities and refugees from South Sudan.

<b>Marginalized and Vulnerable Groups</b>	The program focuses on marginalized and vulnerable groups and aims to help them improve their living conditions and quality of life.	<b>Risk:</b> Low <b>Potential impact:</b> Very high Marginalised communities must be protected, the project observes environmental and social safeguards. When measuring the benefits of the deployment of the technology, we measure benefits for each vulnerable group separately.
<b>Human Rights</b>	Activities are in line with the established international human rights. Project objectives promote basic human rights for equitable access to service and water for irrigated agriculture and capacity building incl. access to information.	<b>Risk:</b> Very Low <b>Potential impact:</b> Very high All program activities within the framework of international and national human rights.
<b>Gender Equality and Women's Empowerment</b>	The activities of the project are oriented to promote a fair and equal access of men and women. The project promotes equal participation in decision-making processes by assuring women representation in flood and drought management activities.	<b>Risk:</b> Low <b>Potential impact:</b> Very high All project activities have been screened and analysed in order to take gender aspects into consideration. An in-depth gender analysis of the involvement of men and women will be undertaken in the initial project phase and when measuring the benefit from the deployment of the technology.
<b>Core Labour Rights</b>	The project respects the labour standards as identified by ILO.	<b>Risk:</b> Low <b>Potential impact:</b> Very high All project members must learn of and adhere to the practical ILO steps and follow the Ethical Trade Initiative guide.
<b>Protection of Natural Habitats</b>	The protection of wetlands and its natural habitats and bio diversity is a core objective of the project.	<b>Risk:</b> Low <b>Potential impact:</b> Very high During the implementation of all the activities related to protection and management of ecosystems shall be closely monitored to evaluate if the expected impact is achieved or if any unexpected negative side effects turn up.
<b>Conservation of Biological Diversity</b>	As per above	As per above
<b>Climate Change</b>	The project does not only increase the adaptation capacity of the local population and the resilience of the ecosystems, but also improves water availability for times when there is drought.	<b>Risk:</b> Low <b>Potential impact:</b> Very high The project will test and demonstrate the innovative flood intelligence software in combination with the SLAMDAM-technology and its climate adaptation potential. Indicators in this regard are included in the M&E-plan.
<b>Pollution Prevention and Resource Efficiency</b>	The project will contribute to efficient use of water and prevention of water pollution. Furthermore, the project will maximize resource availability.	<b>Risk:</b> Low <b>Potential impact:</b> High The project will help control water availability and therewith improve resource accessibility.
<b>Public Health</b>	The project will not have negative impacts on public health. On the contrary the project will contribute to improve health conditions of the communities by reducing water-	<b>Risk:</b> Low <b>Potential impact:</b> High The project will improve health conditions for the population; indicators in this regard are included in the M&E-plan



	borne diseases, improving living environment (healthy surroundings).	
<b>Physical and Cultural Heritage</b>	The project will not have any activity related to affecting physical and cultural heritages.	The project aims to prevent damages to physical heritages at the project location caused by flooding and drought.

## G. Justification for funding requested

38. Assessments indicate that the economic costs of climate change in Uganda could equal an annual loss in GDP of ~1.5-3% by 2030 under a business-as-usual scenario. In Uganda, climate change, water-related disasters, such as floods, landslides, windstorms and hailstorms, contribute well over 70% of the natural disasters and destroy annually an average of 800,000 ha of crops, resulting in economic losses of U Sh120 billion.
39. The budget requested for this project is USD 250,000. It is fully funded by the Adaptation fund to ensure all support is funnelled into the adaptation innovation.
40. The project targets building adaptive capacity and enhancing climate resilience of local communities through implementing concrete adaptation actions. The adaptation activities do not only increase the resilience of ecosystems and agricultural productions systems to the risk of floods, but also enhance the food security and the livelihoods in the Obongi District.
41. Without the funding, the Obongi District's resilience to floods and access to water may remain transient, causing food shortages to vulnerable communities and agricultural landscapes. The Dutch Government has expressed willingness to support further scale-up but only when the project has been completed successfully.

## PART III: IMPLEMENTATION ARRANGEMENTS

### A. Project management arrangements

42. The project will be implemented by the Ministry of Water and Environment (Uganda) and executed by a consulting company in close collaboration with key stakeholders such as the participating local governments. The Ministry of Water and Environment bears responsibility for the overall management of the project including the monitoring and reporting.

#### Steering Committee (*convenes every six weeks*)

- Has final responsibility for the outcome of the project.
- Ensures steering of the project and delegates tasks.

#### Project Manager

- Is central point for the project and is responsible for project execution.
- Ensures collaboration between team members and communication with the Steering Committee.
- Heads project delivery team and guides Steering Committee meeting.

#### Project Delivery Team (*convenes weekly*)

- Delivers project results according to planning.
- Follows decisions made by the Steering Committee.

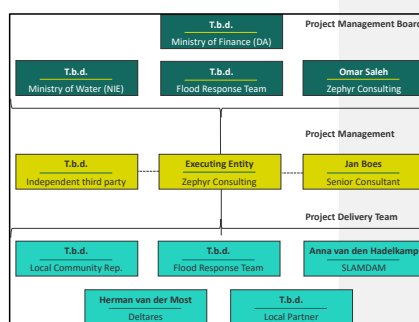


Figure 2: Project Organisation

### B. Monitoring and evaluation arrangements including M&E plan

43. The project will be monitored in accordance with a detailed M&E plan. The monitoring activities will be carried out by the dedicated coordinator. M&E activities enable a learning curve that ensures that the SLAMDAM-technology is deployed more effectively with each flood or drought event. As part of the M&E-activities, local stakeholders will explore why they weren't able to realise certain flood or drought targets or how they can set more ambitious targets. This requires close collaboration between different stakeholder groups.
44. Below reports and evaluations will be developed throughout the project:
- **Monitoring and Evaluation Plan (M&E Plan)** – the Steering Committee approves
  - **Quarterly Status Reports (QSR)** – submissions will be delivered every three months after the start of the project. These reports will monitor progress made.
  - **Project Completion Report (PCR)** – this report will be made after the real-life demonstration to assess whether the targets of component 3 have been realised.
  - **Monthly Steering Committee Report and Weekly Project Delivery Report**
  - **External Audit Report (EAR)** – an external audit report will be prepared in accordance with regulations by the Ministry of Water and Environment (Uganda).
45. The project team will undertake baseline surveys and use the flood intelligence software to prepare a detailed M&E plan that streamlines project objectives, indicators and methodologies of data collection.

**TABLE 4: PROJECT MONITORING AND EVALUATION WORK PLAN AND BUDGET**

<b>Deliverable</b>	<b>Responsible</b>	<b>Cost</b>
Monitoring plan, quarterly status, <u>project Performance Reports (PPRs)</u> reports, final report	Project Manager	USD 4,000
Monthly PMB reports and weekly project delivery reports	Project Manager	USD 4,000
External Audit Report	External	USD 1,000

## C. Project Results Framework including milestones, targets and indicators

TABLE 5: THE RESULTS FRAMEWORK\*

Result	Indicator	Baseline	Target	Means of verification
<b>Component 1 – Assessment of flood and drought risk profile and anticipated benefits from flood resilient solutions using innovative intelligence software.</b>				
1.1 Thorough identification and understanding of the flood and drought risks of the Obongi District	Availability of identified flood and drought risks are made explicit	No risks have been identified explicitly	Overview of the flood and drought risks of the Obongi District	Final flood and drought risk assessment report
1.2 Flood and drought risks are managed following an appropriate flood and drought response strategy and framework	Availability of clear insight in the anticipated benefits from implementing resilient measures	No insight in anticipated adaptation benefits	Detailed analysis of the anticipated benefits from the resilient measures (e.g. SLAMDAM-technology)	Final adaptation benefits analysis report
	Availability of a clear flood and drought response strategy	No flood and drought response strategy available	Disseminated flood and drought response strategy	Final flood and drought response strategy
	Availability of a ratified flood and drought response framework	No formal flood and drought response framework	Disseminated flood and drought response framework	Final flood and drought response framework
	Availability of input provided by female representative(s) of women interest groups	No clarity on how women in particular are affected by floods and drought	Flood and drought response framework that specifies how women are protected from floods and drought	Separate section(s) in the final flood and drought response framework pertaining to the impact and role of women
<b>Component 2 – The development and implementation of the SLAMDAM-technology to manage the identified flood and drought risks effectively.</b>				
2.1 Flood and drought risks are managed at the Obongi District using the developed SLAMDAM-technology	Availability of required design of the mobile flood barrier	No clarity on required design of the mobile flood barrier (standard or customised)	Approved technical design of the mobile flood barrier	Technical design report
	Availability of a mobile flood barrier to manage flood and drought risk	No mobile flood barrier available	500 meters worth of mobile flood barrier available near the Obongi District	Shipping documentation of the mobile dams to the Obongi District
<b>Component 3 - Developing and strengthening climate change adaptive capacities of institutions and communities.</b>				

Result	Indicator	Baseline	Target	Means of verification
3.1 Upskilled community having an increased understanding of the root cause and impact of climate change	Numbers of workshops delivered	0	4	Trainings and workshops delivered
	Number / percentage of women who attended workshops	0 / 0	T.b.d. / >50%	Attendance lists
3.2 Adaptive capacity of communities and other stakeholders to climate change impacts by using the SLAMDAM-technology strengthened	Numbers of trainings delivered to local flood response team and stakeholders	0	3	Trainings and workshops delivered
	Percentage of women involved in the flood response process (early warning team, advisory team, flood response team, management)	0	>30%	Governance and process documents
<b>Component 4 - Promoting the SLAMDAM-technology as an effective climate-resilient measure</b>				
4.1 Strengthened adaptation benefits mechanism for climate resilient technology	Availability of an adaptation benefits mechanism methodology and M&E-plan	No adaptation methodology and M&E-plan available	Steering Committee-approved adaptation benefits mechanism methodology and M&E-plan	Quarterly and final reports
4.2 Increased resilience to floods and droughts using a scalable innovative climate adaptive solution	No of demonstrations to stakeholder to show the workings	0	10	Demonstration sessions held
	No / percentage of women that attended demonstrations of the intelligence software and the SLAMDAM-technology	0 / 0%	T.b.d. / >50%	Attendance list demonstration sessions
	No of households protected from floods and drought	0	150	Ex-post analysis report
	Number of women benefited from the deployment of the flood barrier	0	200	Ex-post analysis report
	Hectares of agriculture protected from floods	0	T.b.d.	Ex-post analysis report
	Percentage of female-held households/ businesses that will be safeguarded	0	60%	
	No of facilities protected from floods	0	T.b.d.	Ex-post analysis report
	No of people whose health is protected from floods and drought	0	T.b.d.	Ex-post analysis report
	No of businesses protected from floods	0	T.b.d.	Ex-post analysis report
	No of jobs protected from floods	0	T.b.d.	Ex-post analysis report

Result	Indicator	Baseline	Target	Means of verification
	No of days traffic (roads / ferry) protected from floods	0	T.b.d.	Ex-post analysis report
	No of ex-ante analysis for other districts in Uganda	0	10	Roadmap

*\* Note that the intelligence software measures many of the indicators included in the results framework. The tool specifically measures benefits male vs. female and for different age groups.*

## D. Alignment of Project Objectives/Outcomes with Adaptation Fund Objectives/Outcomes

TABLE 6: ALIGNMENT WITH ADAPTATION FUND OBJECTIVES

Project Objective(s) <sup>11</sup>	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant (USD)
The project objective is to increase the resilience of communities to the risk of floods and droughts in a district through intelligence software and the deployment of a scalable water-filled barrier to prevent flooding and simultaneously store and harvest water.	<ul style="list-style-type: none"> <li>Reduced impact of heavy rainfall through improved flood protection</li> <li>Reduced impact of drought to food security</li> <li>Reduced impact of floods in the district</li> </ul>	<b>Outcome 1:</b> Reduced exposure to climate-related hazards and threats	1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis	41,400
		<b>Outcome 3:</b> Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses 3.2. Percentage of targeted population applying appropriate adaptation responses	21,100
		<b>Outcome 6:</b> Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.1 Percentage of households and communities having more secure access to livelihood assets 6.2. Percentage of targeted population with sustained climate-resilient alternative livelihoods	Corresponds with below budget related to outcome 8
		<b>Outcome 8:</b> Support the development and diffusion of innovative adaptation practices, tools and technologies	8. Innovative adaptation practices are rolled out, scaled up, encouraged and/or accelerated at regional, national and/or subnational level.	159,900
Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant (USD)
<b>Outcome 1.1:</b> Thorough identification and understanding of the flood and drought risks of the Obongi District	Availability of identified flood and drought risks	<b>Output 1.1:</b> Risk and vulnerability assessments conducted and updated  <b>Output 1.2:</b> Targeted population groups covered by adequate risk reduction systems	1.1.1 No. of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale) 1.2.1 Percentage of target population covered by adequate risk-reduction systems	18,600

<sup>11</sup> The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

<b>Outcome 1.2:</b> Flood and drought risks are managed following an appropriate flood and drought response strategy and framework	<ul style="list-style-type: none"> <li>• Availability of a clear flood and drought response strategy</li> <li>• Availability of a ratified flood and drought response framework</li> </ul>	<b>Output 1.2:</b> Targeted population groups covered by adequate risk reduction systems	1.2.1 Percentage of target population covered by adequate risk-reduction systems	23,400
<b>Outcome 2.1:</b> Flood and drought risks are managed at the Obongi District using intelligence software and the developed SLAMDAM-technology	<ul style="list-style-type: none"> <li>• Availability of intelligence software to manage flood and drought risks</li> <li>• Availability of a technical design of the mobile flood barrier</li> <li>• Availability of a mobile flood barrier to manage flood and drought risk</li> </ul>	<b>Output 8:</b> Viable innovations are rolled out, scaled up, encouraged and/or accelerated.	8.2 No. of innovative adaptation practices, tools and technologies accelerated, scaled-up and/or replicated	88,000
<b>Outcome 3.1:</b> Upskilled community having an increased understanding of the root cause and impact of climate change	<ul style="list-style-type: none"> <li>• Numbers of workshops delivered (50% women)</li> </ul>	<b>Output 3.1:</b> Targeted population groups participating in adaptation and risk reduction awareness activities <b>Output 3.2:</b> Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	3.1.1 No. of news outlets in the local press and media that have covered the topic 3.2.1 No. of technical committees/associations formed to ensure transfer of knowledge 3.2.2 No. of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders	10,000
<b>Outcome 3.2:</b> Adaptive capacity of communities and other stakeholders to climate change impacts by using the SLAMDAM-technology strengthened	<ul style="list-style-type: none"> <li>• Numbers of trainings delivered to local flood response team and stakeholders</li> </ul>	<b>Output 8:</b> Viable innovations are rolled out, scaled up, encouraged and/or accelerated	8.1 No. of key findings on effective, efficient adaptation practices, products and technologies generated 8.2 No. of innovative adaptation practices, tools and technologies accelerated, scaled-up and/or replicated	11,100
<b>Outcome 4.1:</b> Strengthened adaptation benefits mechanism for climate resilient technology	<ul style="list-style-type: none"> <li>• Availability of an adaptation benefits mechanism methodology and M&amp;E-plan</li> </ul>	<b>Output 8:</b> Viable innovations are rolled out, scaled up, encouraged and/or accelerated.	8.1 No. of key findings on effective, efficient adaptation practices, products and technologies generated	24,000



<b>Outcome 4.2:</b> Increased resilience to floods and droughts using the scalable innovative climate adaptive solutions	<ul style="list-style-type: none"> <li>• No of demonstrations to stakeholders</li> <li>• No of houses protected</li> <li>• Hectares of agriculture protected</li> <li>• Public facilities protected</li> <li>• No of people whose health is protected from floods and drought</li> <li>• No of businesses protected</li> <li>• No of jobs protected from floods</li> <li>• No of days traffic (roads / ferry) protected from floods</li> <li>• No of ex-ante analysis for other districts in Uganda</li> </ul>	<b>Output 1.2:</b> Targeted population groups covered by adequate risk reduction systems <b>Output 8:</b> Viable innovations are rolled out, scaled up, encouraged and/or accelerated.	8.2 No. of innovative adaptation practices, tools and technologies accelerated, scaled-up and/or replicated	47,900
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## E. Detailed Project Budget

**TABLE 7: PROJECT BUDGET**

Activity	Unit	No Units	Unit Costs (USD)	Total USD
<b>Component 1 – Assessment of flood and drought risk profile and anticipated benefits from flood resilient solutions using innovative intelligence software.</b>				
Engage a consultant to collect data pertaining to flood and drought risks such as number of floods, agricultural production	Consultancy Man days and reimbursables	6	1200	7,200
Engage a consultant to facilitate the flood and drought risk assessment	Consultancy Man days and reimbursables	6	1200	7,200
Organize stakeholder consultative workshops to perform risk assessment	1 training sessions and 1 workshop	1	4500	4,500
Finalise and disseminate the risk assessment report	Consultancy Man days and reimbursables	4	1200	4,800
Engage a consultant analyse the anticipated benefits from the deployment of the SLAMDAM-technology in multiple possible scenarios	Consultancy Man and calculations using the flood intelligence tool and days and reimbursables	7,5	1200	9,000
Engage a consultant to collect data pertaining to existing flood and drought response strategy and framework (processes, governance structures)	Consultancy Man days and reimbursables	5	1200	6,000
Engage a consultant to facilitate the flood and drought response strategy development and framework revision	Consultancy Man days and reimbursables	5	1200	6,000
Organize stakeholder consultative workshops to develop and revise the strategy and framework	1 training sessions and 1 workshop	1	4500	4,500
Finalise and disseminate the risk response strategy and framework	Consultancy Man days and reimbursables	4	1200	4,800
<b>Total component 1</b>				<b>54,000</b>
<b>Component 2 – The development and implementation of the SLAMDAM-technology to manage the identified flood and drought risks effectively.</b>				
Engage manufacturer to design customized solution to use the SLAMDAM-technology to manage flood and drought risk at the Obongi District. Customization includes possibly a customization of the SLAMDAM-technology and/or a local specific report detailing how the technology will be applied at the District.	Man days and reimbursables	5	1200	6,000
Leasing costs to lease/rent the manufactured dams	Monthly lease amount	12	5000	60,000
Transport manufactured mobile flood barrier to Obongi District	Two-way door-to-door transportation	2	5000	10,000
<b>Total component 2</b>				<b>76,000</b>
<b>Component 3 - Developing and strengthening climate change adaptive capacities of institutions and communities.</b>				
Capacity building sessions for community members (50% women) to increase knowledge and awareness about climate change and the SLAMDAM-technology	Number of workshops	4	2500	10,000

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Activity	Unit	No Units	Unit Costs (USD)	Total USD
Engage consultant to customize SLAMDAM-training material such as manuals to meet the requirements of Uganda / Obongi District	Consultancy Man days and reimbursables	3	1200	3,600
Train selected individuals and groups involved in flood and drought response on the workings of the SLAMDAM-technology	Number of 2-day training sessions	3	2500	7,500
<b>Total component 3</b>				<b>24,100</b>
<b>Component 4 - Promoting the SLAMDAM-technology as an effective climate-resilient measure</b>				
Organize stakeholder consultative workshops to develop the adaptation benefits methodology	1 training sessions and 3 workshops	4	4500	18,000
Engage a consultant to develop and disseminate the adaptation benefits methodology	Consultancy Man days and reimbursables	5	1200	6,000
Hold dry-run demonstrations to showcase the workings of the technology	1-day demonstrations	4	2500	10,000
Video recording and editing of the deployment of the technology during a real-life flood event	Number of days of recording and editing	10	250	2,500
Engage consultant to perform ex-post analysis of the demonstration during a real-life flood event	Consultancy Man days and reimbursables	10	1200	12,000
Engage consultant to disseminate the ex-post benefit analysis	Consultancy Man days and reimbursables	3	1200	3,600
Engage consultant to perform ex-ante analyses, as part of the Uganda roadmap	Consultancy Man days and reimbursables	8	1200	9,600
Engage consultant to disseminate and promote the Uganda roadmap	Consultancy Man days and reimbursables	6	1200	7,200
<b>Total component 4</b>				<b>68,900</b>
<b>Project Execution cost</b>				<b>15,000</b>
<b>Total Project Cost</b>				<b>235,000</b>
<b>Project Cycle Management Fee charged by the Implementing Entity</b>				<b>15,000</b>
<b>Amount of financing requested</b>				<b>250,000</b>

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## F. Disbursement schedule with time-bound milestones

**TABLE 8: DISBURSEMENT SCHEDULE**

Schedule Disbursement	Upon Signing Agreement	3 Months after start	Mid-term (6 months after start	9 Months after start	Project Closing	Grand Total (USD)
Schedule date	15 February 2022	1 May 2022	1 August 2022	1 November 2022	1 February 2023	
Project funds (Components 1-4)	70,000	73,000	34,800	36,2400	6,000	220,000
Project Implementation Entity Fee	5,000	5,000	1,000	1,500	2,500	15,000
Project Execution Cost	5,000	5,000	1,000	1,500	2,500	15,000

## PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

**A. Record of endorsement on behalf of the government<sup>12</sup>** *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

<i>(Enter Name, Position, Ministry)</i>	<i>Date: (Month, day, year)</i>
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**B. Implementing Entity certification** *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (.....list here.....) and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
<i>Name &amp; Signature</i> Implementing Entity Coordinator	
<i>Date: (Month, Day, Year)</i>	<i>Tel. and email:</i>
<i>Project Contact Person:</i>	
<i>Tel. And Email:</i>	

<sup>6</sup> Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

Telephone : 256 41 4707 000  
: 256 41 4232 095  
Fax : 256 41 4230 163  
: 256 41 4343 023  
: 256 41 4341 286  
Email : [finance@finance.go.ug](mailto:finance@finance.go.ug)  
Website : [www.finance.go.ug](http://www.finance.go.ug)



THE REPUBLIC OF UGANDA

Ministry of Finance, Planning &  
Economic Development  
Plot 2-12, Apollo Kaggwa Road  
P.O. Box 8147  
Kampala  
Uganda

In any correspondence on  
this subject please quote No. ALD 79/251/02

**23<sup>rd</sup> August 2021**

The Adaptation Fund Board  
C/o Adaptation Fund Board Secretariat  
Email: [secretariat@Adaptation-Fund.org](mailto:secretariat@Adaptation-Fund.org)  
Fax: 202 522 3240/5

**ENDORSEMENT FOR PROJECT CONCEPT NOTE: ENHANCING RESILIENCE TO CLIMATE INDUCED FLOODING AND DROUGHT THROUGH THE DEPLOYMENT OF A WATER FILLED BARRIER IN OBONGI DISTRICT.**

I have the honor to refer to the above mentioned subject. The objective of the US\$ 250,000 project is to increase the resilience of communities to the risk of floods and droughts at the Obongi District through deployment of a scalable water filled barrier to prevent flooding and simultaneously store and harvest water.

In my capacity as the appointing Authority of the Designated Authority for the Adaptation Fund in Uganda, I confirm that the above project proposal is in accordance with the national climate Adaptation priorities of the Government of Uganda.

Accordingly, I am pleased to endorse the project proposal for grant support from the Adaptation Fund. If approved, the project will be implemented by the Ministry of Water and Environment.

  
Matia Kasaija (M.P)

**MINISTER OF FINANCE, PLANNING AND ECONOMIC DEVELOPMENT**

Attachment: The project document  
Copy to: The Permanent Secretary, Ministry of Water and Environment.

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**Mission**

*"To formulate sound economic policies, maximize revenue mobilization, ensure efficient allocation and accountability for public resources so as to achieve the most rapid and sustainable economic growth and development"*