Impact Statement

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Challenge	Malawi urgently needs to abate the impacts of climate change and natural hazards. Floods alone account for 75% of natural disaster losses and cost the country on average $68m/year. Resilience, however, depends on precise water and weather observation data. Yet, digitization of observations in Malawi remains low, mainly due to few technology options, limited human and institutional capacity, and hesitancy to support untested innovations. ~~Malawi's resilience to climate change depends on accurate water and weather observations and insights. Floods are the most reoccurring hazard facing Malawians and contribute 75% to all losses from natural disasters, costing the country US$68m/year. Despite efforts by its Department of Climate Change & Meteorological Services (DCCMS) and Department of Water Resources (DWR) to scale monitoring - for forecasts, warnings, and impact modelling - the digitization and integration of observation data is low.~~
CTCN assistance	• Mobile tech testing by DCCMS and DWR to explore how Gauge Readers from local communities can use their phones to digitize in-situ observations of water and weather. • IT system design for integration and application of water and weather data into modelling, supported by a long-term financing model. • "Learn by doing" workshops to ensure user efficiency, fostering technology adoption, and sustainability beyond project end.
Anticipated impact	• Mobile tech uncovers scalable digital collection and management of observation data for water and disaster risk management. • Upskilling of citizens and government staff in digitization and impact modeling through pragmatic technology approach.
Anticipated co-benefits from the TA	Co-benefits are expected in five key areas. First, in capacity building and training. Second, communication and awareness among users and administrators. Third, expedited decision-making for innovation adoption by financiers, informed by sustainable business model. Fourth, improved governance and planning for adaptation, water management, and disaster risk reduction. And fifth, advanced insights on the role and potential of innovation and RDD in climate information services. Associated key deliverables include: • Deliverable 3.3. Preliminary analysis on the use of simple mobile phones • Deliverable 4.10. Report on updated equipment and digital system • Deliverable 5.4.b. Final business model
Gender aspects of the TA	Direct gender benefits are especially anticipated in the capacity building activities, and in the involvement of women as community members in the piloting of the technology. Assessment of in-field collection of observations show an approximate 10-15% involvement of women as gauge readers enlisted by DCCMS and DWR. Addressing gender disparities, the design of improved climate services considers female beneficiaries, acknowledging mobile ownership differences and equal opportunities for financial remuneration.

	Piloting will put efforts into actively including women. In all training events, the project will register key details with consent, facilitating gender, age, and location evaluation. Expected indirect benefits from the technical assistance include production of climate information that is tailored to both women and men and is equally accessible. ~~The technical assistance does not include a gender analysis. However, a~~ The team's Gender Expert will perform a gender assessment with action plan to ~~on the team will~~ help monitor and evaluate the gendered dimensions of engagement and workshops with communities, piloting, and the development of technologies, and training. Associated key deliverables include: • Deliverable 4.5.a. Minutes of local workshop • Deliverable 4.7. Report on demonstrating start of testing • Minutes from workshops and training events
Anticipated contribution to NDC	NDC Adaptation Actions: • **Climate Services**: Effective & Efficient Early Warning System o NDC action/anticipated contribution: establishing community based early warning systems and flood water monitoring systems nationwide. • **Water**: Flood Management o NDC action/anticipated contribution: delineation of flood prone areas with flood zoning maps. • **Water**: Integrated Watershed Management o NDC action/anticipated contribution: strengthening of water policies and plans in priority watersheds. Source: Republic of Malawi - Updated Nationally Determined Contributions (July 2021) • ~~Improve capacity for data and information management and sharing, and access to technology and financing for adaptation through development and implementation of research programme on climate change impacts and climate change adaptation actions.~~ • ~~Implementation of a capacity-building plan and integration of climate change adaptation into government staff curricula.~~
The narrative story	Malawi, like many developing countries, confronts a significant deficit in water and weather observations. With 70% of people not reached by Early Warning Systems (EWS) on average in LDCs, the costs of floods and droughts are substantial. Malawi also grapples with increasing water stress due to rising demand and seasonal fluctuations. Essential data on water availability is thus crucial for infrastructure development for water supply, irrigation, and hydropower. Efforts to bridge the data gap mostly focus on automated sensors. Despite offering advanced technologies, they require high CAPEX and maintenance costs. Cyclone Freddy in March 2023 alone destroyed half of surface and groundwater sensors, emphasizing the technology's vulnerability. A hybrid

	strategy, combining diverse technologies and capacities, becomes imperative. In Malawi, a pioneering use of mobile tech will trial digitization of in-situ water and weather observations. Gauge Readers collect manual data and use phones for real-time transfer, coupled with quality control and integration into analysis such as impact modelling. The innovation is cost-effective, closes the data gap, and improves forecasts.
Contribution to SDGs	**SDG 2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.** Indirect benefits in the promotion of climate smart agriculture with smallholder farmers as a result of the technical assistance's contribution to services, such as digital advisory services explored by the Ministry of Agriculture's Department of Agricultural Extension Services. **SDG 6. Ensure availability and sustainable management of water and sanitation for all.** Water and weather data deficiencies, and lack innovations therein, hinder progress when and is identified as one of five top obstacles to achieving SDG6. (UN Blueprint for Acceleration: SDG6 Synthesis Report 2023) For Target 6.5, Malawi also commits to achieving national water resources management and information system that meets the following criteria: (a) national coordination and integration of water resources management; (b) comprehensive and up-to-date data and information; (c) participation of relevant stakeholders; and (d) periodic reporting to the public and relevant stakeholders). An indirect benefit from the technology is improved flood management. With better understanding of hazard risks, DCCMS and DWR can strengthen their contributions to early warning and disaster management services. **SDG 13. Take urgent action to combat climate change and its impacts.** The use of simple mobile technologies to scale up digital collection and processing of climate observations for adaptation actions in Malawi is a direct response to combat the impacts of climate change by adapting accordingly.