TANZANIA URBAN RESILIENCE PROGRAM

FY 17

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TANZANIA URBAN RESILIENCE PROGRAM ANNUAL REPORT FY17

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ACRONYMS

AA:	Administration Agreement	M&E:	Monitoring and Evaluation
ASA:	Advisory Services and Analytics	MKUKUTA-II:	National Strategy for Growth and Poverty Reduction
BETF:	Bank-Executed Trust Fund		
CDRT:	Community Disaster Response Teams	MoU:	Memorandum of Understanding
CERC:	Contingency Emergency Response Component	NEMC: Council	National Envrionmental Management
CTTL:	Child Activity Task Team Leader	PA :	Programmatic Approach
COP:	Community of Practice	PO-RALG:	President's Office – Regional Administration and Local Government
DarMAERT:	Dar es Salaam Multi-Agency Emergency Response Team	PDNA:	Post-Disaster Needs Assessment
DfID:	United Kingdom's Department for International Development	RETF:	Recipient-Executed Trust Fund
		RMI:	Risk Management Index
DMD:	Disaster Management Department	SC:	Steering Committee
DRF:	Disaster Risk Framework	SOGDAT:	Support to Open Data and Accountability in Tanzania
GA:	Grant Agreements		
GFDRR:	Global Facility for Disaster Reduction and Recovery	TAHMO:	Trans-African Hydro-Meteorological Observatory
GFR:	Grant Financing Request	TF:	Trust Fund
GIS:	Geographic Information System	TTL:	Task Team Leader
GoT:	The Government of Tanzania	TURP:	Tanzania Urban Resilience Programme
GPSURR:	Social, Urban, Rural, and Resilience Global Practice	UAV:	Unmanned Aerial Vehicle
		UNA:	Urban Natural Assets
ICLEI:	Local Governments for Sustainability	USSD:	Unstructured Supplementary Service Data
IGAD:	Inter-Governmental Authority on Development		
		WBG:	Word Bank Group
IPF:	Investment Project Financing		
KPI:	Key Performance Indicator		

EXECUTIVE SUMMARY

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""Natural and human disasters are the most serious threats to social and economic development. We must improve resilience in cities and rural areas for the current inhabitants of Tanzania and for future generations to come."

– Brigadier General Msuya, Director, Disaster Management Department, Tanzania

Tanzania is the most flood-affected country in East Africa, and cities across the country are underprepared to manage their increasing exposure and vulnerability to climate hazards. Contributing to this heightened risk, Tanzanian towns and cities have undergone massive and largely unplanned spatial expansions. In Dar es Salaam, an estimated 75% of residents live in unplanned settlements and in Mwanza, approximately 81% of households are located in hazard-prone areas.

In response, the Tanzania Urban Resilience Program (TURP) was established as a partnership between the Government of Tanzania (GoT), the World Bank Group, and the UK Department for International Development (DFID) to support national and local governments in strengthening management of urban climate risk. This challenge calls for systematic mainstreaming of risk management principles across government and civil society stakeholders operating at community, municipal, and national levels.

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Launched on May 31, 2017, TURP is now driving renewed engagement and deeper dialogue between the Bank and GoT on climate resilience. Program objectives include support for tools, knowledge, and strengthened capacities for climate resilience across all urban areas, whilst also developing deep-dive engagements in Dar es Salaam, including the preparation of a flood risk management project in one of the cities most vulnerable river basins. Such targeted engagements aim to deliver exemplary risk-reduction plans and mitigation measures that will serve as a template for other cities.

TURP is already oversubscribed with requests for support from interested secondary cities, including Dodoma, Mwanza, Kigoma, and Zanzibar Town. In addition to these requests, the program design must strike a balance between supporting long-term planning processes and responding to short-term shocks and events.

One such shock was the earthquake of 5.9 magnitude that struck the region of Kagera in September 2017, resulting in 19 casualties and 253 injured. The damage was most devastating in the town of Bukoba, with 840 houses destroyed and a further 1,264 seriously damaged, leaving thousands homeless. This event highlighted the lack of seismic resistance of structures within fast-growing towns, the limited preparedness of local and regional emergency management systems, as well as the means of local governments to measure indirect losses.

A key objective of TURP is therefore to support the introduction of modern methods for quantifying disaster risk, and the spectrum of potential impacts in order to build greater resilience into the urbanization process.

During the past year, the Bank team has worked on revising the program structure accordingly, now addressing priority actions in risk identification to serve as key baselines. FY17 has also seen the establishment of the administration and staffing of TURP, consultation with stakeholders, and convening of government counterpart committees.

An 18-month work plan was presented to the first TURP steering committee (SC) meeting in November 2016 and progress on actions is currently on track. A total of over USD $4.6 million was allocated in the period between July 2016 and June 2017. These funds address three priority pillars, including (1) risk identification, (2) risk reduction, and (3) disaster preparedness and emergency management, as well as the development of a virtual Resilience Academy and provisions for overall program administration and technical design. TURP now has an extensive portfolio of child activities, ranging from community-led ground surveying, to supporting urban emergency coordination, and the installation of new instruments for stream monitoring. Notable achievements have included:

- The launch of a scaled-up and government-approved Open Map (Ramani Huria) campaign, focussed on identifying community infrastructure and flood hazards, to serve as a foundation for various processes critical to TURP success, including (i) baseline data in community and ward level risk-planning activities; (ii) partnerships for local government authorities; and (iii) skills building and course content.

- Engagement of the Trans-African Hydro-Meteorological Observatory (TAHMO) to instrument the Msimbazi River for flood model calibrations and, in parallel, demonstrate a flood alert pilot system and transfer skills to local schools and universities.

- Support for the Dar es Salaam Metropolitan Development Project to develop a Contingency Emergency Management Component (CERC). Emerging from this, and responding to a request from Dar es Salaam regional authorities, TURP funding has also served to develop an updated Emergency Response Plan for the Dar es Salaam Multi-Agency Emergency Response Team (DarMAERT), in conjunction with the delivery,

installation, and training of emergency radio equipment, which has expanded the coverage of the communications network across the metropolitan area.

- A Memorandum of Understanding (MoU) prepared for a Resilience Academy, to be jointly developed between Ardhi University and the World Bank. Existing methods and skills for resilient urban planning have been documented and developed into accredited course materials for a Bachelor's level curriculum. In support of this, a data model and suite of fit-for-purpose risk-assessment tools have been defined. With a view to ensuring sustainability of TURP outputs and lessons learned, all data, software, and training materials associated with these tools will be transferred to academic partners for reuse. TURP has therefore adopted criteria for "open access" and "locally replicable" by default for the assessments and tools to be developed.

A strategic objective of TURP has further been to develop an in-depth risk-reduction program for the lower Msimbazi River Basin to address urgent needs in the flood-prone area. Consultations and technical studies have begun, however, the total basin needs are expected to significantly exceed available resources and will require a longer timeframe for engagement than is envisaged under TURP. The approach developed therefore proposes to fund priority works in targeted communities whilst also formulating a basin-integrated risk management plan that aims to crowd-in additional investments and serve as a model for other flood-prone urban basins.

Key reforms to TURP undertaken in the first year related to membership of the Steering Committee and creation of a Technical Advisory Committee, adjustment of planned activities in response to budget reductions, improved cost estimations, incorporation of government feedback and requests, and the restructuring of the trust fund (TF) administration agreement to conform to new fund

transfer schedules.

Important risks to the success of TURP have been highlighted. These primarily relate to the effective engagement and strengthening of interconnected sets of institutional actors involved in risk management systems. It additionally remains important to maintain strong coordination mechanisms with the government and support risk-reduction champions in both policy making and technical roles. There is also a risk of over-extension of human and budgetary resources and lock-in to program concepts that may lack the flexibility to respond to new shocks as they arise. TURP work plans and priorities should therefore be carefully reviewed and adjusted periodically. In light of a USD $7.7 million cut announced in June 2017, as well as a depreciation of the UK pound against the US dollar, some revisions and a reduced scope of activities are projected for the latter part of 2017.

The next steps of TURP will focus on two major elements: developing the Dar es Salaam Flood Risk Management Project based in lower Msimbazi communities and strengthening the institutional system for risk identification and management. A major increase in disbursements is anticipated next year as the program moves from primarily analytical and consultative activities towards funding works and operational services.

The priorities for the Msimbazi Basin are now to transform the consultative process into a participatory design process, taking technical inputs from experts as well as local stakeholders to develop a series of investment plans. A grant agreement with the GoT is anticipated for 2018 to implement this plan.

HIGHLIGHTS

PUBLISHED

Ramani Huria Atlas of Flood Resilience

Print + digital format

3200+ online impressions to date

Informing project + government actions

LAUNCHED

URTZ: Building Urban Resilience in Tanzania

200+ government officials from TZ

16 honourable guests + **10** CSO representatives

75 journalists from **42** African countries
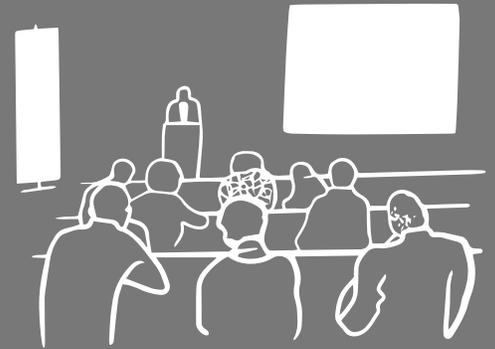
PROTOTYPED

Twaa Mtaro app for risk reduction

Locally developed consumer application

20+ community leaders trained on use

ESTABLISHED

Draft Emergency Response Plan

Emergency radios installed

Draft Plan produced for Dar es Salaam

Coverage increased from **50%** to **100%**
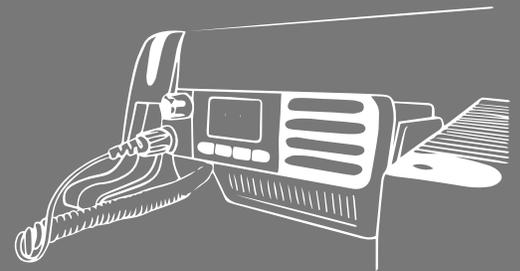
PREPARED

MoU with Ardhi University

300+ students trained in resilience planning

35 wards to be mapped for risk identification

Commitment to develop Bachelor's curriculum

ABOUT

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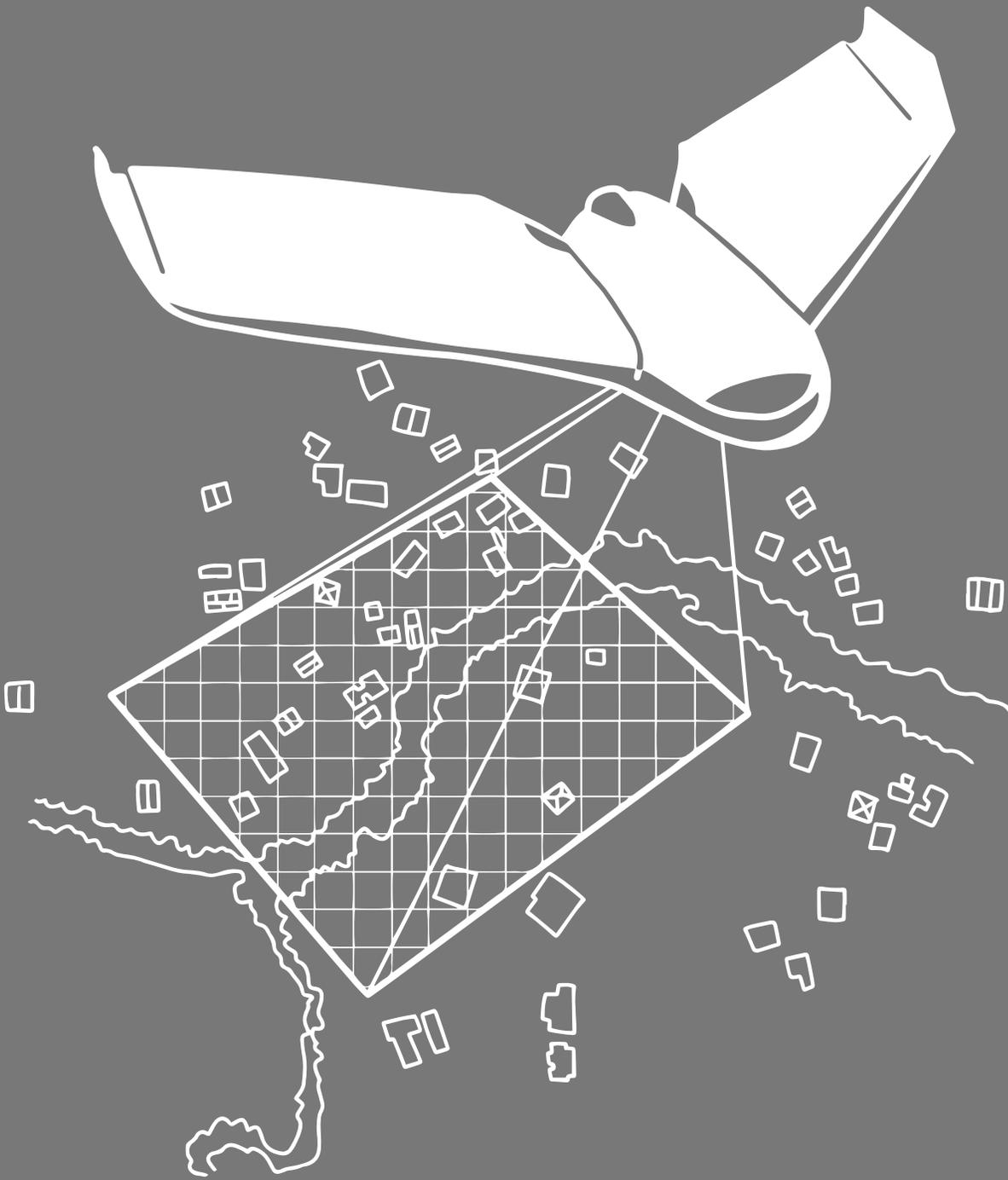
> "How can data be kept up to date so that the best decisions can be made? How do we reduce the risks in light of so many competing challenges? How can we cope with disasters when they occur? This program will create multi-stakeholder partnerships with a goal of taking the best approach to these questions

- Edward Anderson, TURP TTL, World Bank

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The objective of the TF is to support national and local governments in Tanzania to strengthen the management of climate risk in cities.

Higher-level objectives to which the program contributes include:

Increasing Resilience to Climate and Disaster Risk:
TURP supports the GoT in implementing a program that promotes climate and disaster risk management in the wider context of sustainable development. The proposed engagement is aligned with and directly addresses the GoT's priorities on growth, the environment, and climate adaptation outlined in the second National Strategy for Growth and Reduction of Poverty (known as MKUKUTA-II Mkakati wa Kukuza Uchumi na Kupunguza Umaskini Tanzania). Similarly, the activities directly support the strategic objectives and interventions in the National Climate Change Strategy, Zanzibar Climate Change Strategy, and Disaster Management Act 2014.

Promoting Shared Prosperity and Ending Extreme Poverty: Climate change and adverse natural events have the greatest impact on the poorest populations who generally live in higher-risk areas and have a diminished capacity to recover from disaster. In the case of Tanzania, even frequent, low-intensity events such as a heavy rainfall can have crippling and cumulative effects on livelihoods and communities of the bottom 40%. Impediments to development gains as a result of climate hazards that particularly impact the poorest communities can be minimized by reducing the exposure to hazard events and decreasing the vulnerability of the poor to climate disturbances.

Description of program activities

The activities financed by the TF are:

Bank-executed activities, for which the Bank has implementation responsibility:

(a) Pillar 1 – Risk Identification

This pillar strengthens the identification and understanding of climate risk and uncertainty in the local context, and enhances the linkages and coordination between risk management stakeholders. To make decisions that ultimately strengthen physical, social, and financial resilience, a thorough understanding of disaster and climate risks in the local context and their implications are vital. This informs decision makers about the risks they face and the drivers of those risks. As such, Pillar 1 increases access to comprehensive information about physical and societal exposure to climate risks, which inform implementation of structural and non-structural mitigation measures.

Pillar 1 builds upon complementary Bank-led work such as the Building Community Resilience in Tanzanian Cities project that has been supported by both the

Global Facility for Disaster Reduction and Recovery (GFDRR) and UK Aid from the Support to Open Data and Accountability in Tanzania (SOGDAT) program, known locally as Ramani Huria (the Open Map) and Zuia Mafuriko (Stop Flooding) campaigns. TURP funding has been allocated to validate and scale up many of these precursor programs in an operational role.

(b) Pillar 2 – Risk Reduction

Guided by data and management tools of Pillar 1, Pillar 2 strengthens cities' capacity to plan for and reduce climate risk through the use of both structural and non-structural measures addressing long-term systemic risk. In partnership with government entities, civil society, and the private sector, activities supported focus on the reduction of the vulnerability of people, households, and communities. This is be accomplished by providing analysis of non-structural measures, such as creating or improving policies and legislation, better land use planning, environmental protection and basin plans, hazard zoning and building codes—and the design of risk-reduction works, such as drainage upgrades, ponding schemes, slope stabilization, and retrofitting or reinforcement programs. The activities support communities, planning, and works authorities with the development of a pipeline of investments reducing urban risk. These investments support the resilience of critical infrastructure and specifically target measures aimed at protecting priority river basins and improving flood management infrastructure.

(c) Pillar 3 – Disaster Preparedness and Emergency Management

Pillar 3 helps stakeholders involved with short-term disaster events and preparedness for specific emergency scenarios. Also guided by Pillar 1 data, Pillar 3 scenarios of city risk can be used to establish good practices around identifying and preparing vulnerable groups, emergency response plans and design of early warning systems, requirements for equipment, tools and infrastructure, simulations, drills, and damage assessment capacities. Stakeholders in this workstream are concerned with civil protection, disaster management, community volunteers, coordination for response, and recovery actions.

(d) Resilience Academy

Thematic content of the Resilience Academy spans across risk identification, risk reduction, and emergency management, such that is it embedded as a knowledge-transfer function within the activities of Pillars 1 through 3. Nevertheless, consultations throughout the first year of implementation have shown a high level of interest assigned by local stakeholders, so the Bank proposes to report explicitly on this activity as a coherent workstream.

The concept of Resilience Academy is an evolving virtual program anchored in both universities and training institutes and delivering digital curricula, practical experience, training courses, and laboratory equipment to support surveying, maintenance, risk monitoring, and analysis activities. Its goal is to enable a legacy for skills and tools developed through TURP and enhance the sustainability of risk management practices and datsets in Tanzania.

Recipient-executed activities, for which one or more recipients have implementation responsibility:

These actions have not yet begun in the TURP program, but shall focus on the government implementation of activities designed to: (i) mainstream and scale up data, tools, equipment, skills for effective climate risk management, including community-driven works, projects, and small grants; and (ii) larger engineering structures for flood risk reduction, basin management, drainage enhancements, and early warning systems.

ALLOCATION OF TURP PROJECT PILLAR FUNDS IN FY17

- Pillar 1
- Pillar 2
- Pillar 3
- Resilience Academy

15% $570,000

12% $480,000

42% $1,630,000

31% $1,220,000
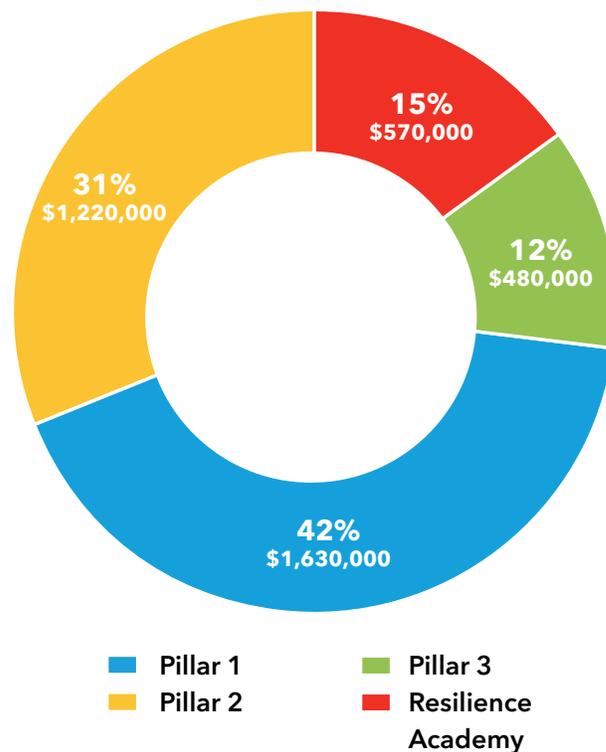
ACTIVITY SUMMARY

Pillar 1: Risk Identification

3

BANK EXECUTED GRANTS

PILLAR 1: Risk Identification

"Without maps you cannot understand the problems. Where are the issues? How big? What will be affected? Even after the disaster occurs, what was there before? So for us, maps are the history, maps are the future plans, maps are almost everything"

– Elizabeth Mrema, Assistant Director of Mapping, Ministry of Lands, Housing and Human Settlement Development, Tanzania

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Objective

To strengthen the identification and understanding of climate risk and uncertainty in the local context, and enhance the linkages and coordination between risk management stakeholders.

Overview of Progress

During the first half of FY 2017, the objective and structure of Pillar 1 were finalized and approved by both World Bank management and DfID. Activities to be implemented under this heading were discussed and solidified as part of the first SC meeting in November 2016. These activities were prioritized over FY17 as their outputs were expected to further inform initiatives of Pillars 2 and 3.

URBAN EXPOSURE MAPPING DATA SERVICES

The first step in risk identification is developing up-to-date hazard and exposure data and baselines. Exposure is the situation of people, infrastructure, housing, production capacities, and other tangible human assets located in hazard-prone areas .[1]

A key part of the risk management challenge in Tanzania is the pace of urbanization, with some wards growing over 20% per year and many secondary towns lacking any baseline data at all. The goal of this activity has therefore been to consolidate available building and population data within the Dar es Salaam region and pilot simple, cost-effective methods to acquire exposure data

[1] UNISDR, Terminology for Disaster Risk Reduction: https://www.unisdr.org/we/inform/terminology

at scale.

One primary focus for TURP has been to evaluate the Ramani Huria pilot project conducted in Dar es Salaam during 2015 – 2016. Ramani Huria was a community-driven mapping project that used OpenStreetMap as a new and low-cost alternative to traditional land surveys, aiming specifically to demonstrate the ability of students to collect very local infrastructure, drainage, and household data as well as the value of community inputs on inundation area and flood impacts. TURP convened an experts review group during November 2016 to serve as an advisory panel on what lessons could be drawn from Ramani Huria for community risk identification and broader baseline data collection.

TURP also supported the first Dar es Salaam Flood Inundation Atlas for 10 wards at the same time and sought feedback and reviews from ward officers as well

▌ **Ward Executive Officers share Ramani Huria challenges and use cases**

Credit: Darragh Coward - World Bank
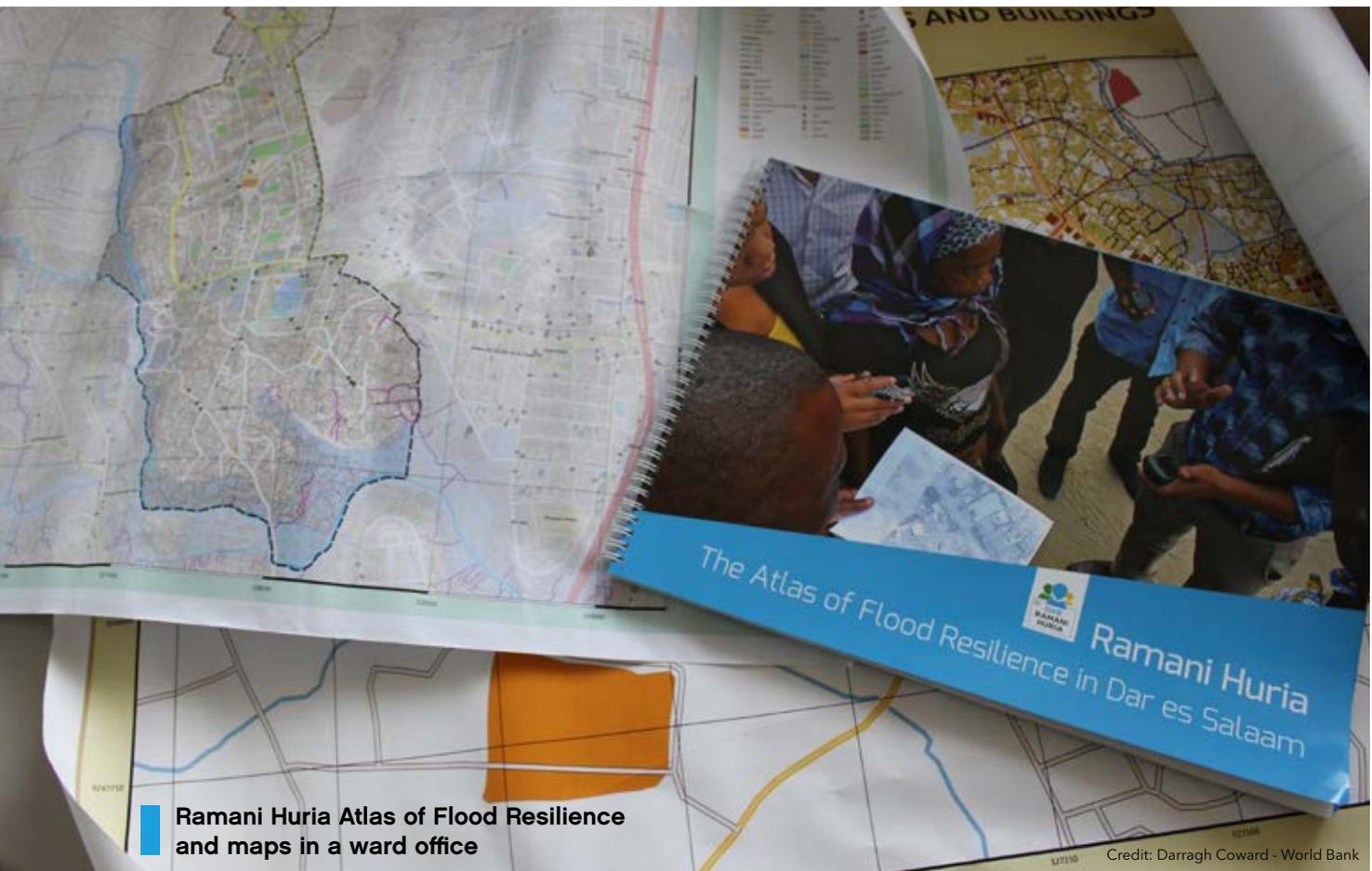
Ramani Huria Atlas of Flood Resilience
and maps in a ward office

Credit: Darragh Coward - World Bank

as community focus groups.

The insights derived from the Ramani Huria review process have led to the design and competitive tendering of a Ramani Huria 2.0 program for 2017 – 2019, which incorporates more rigorous hydraulic, socioeconomic, and urban planning data model requirements as well as improved quality assurance and local government partnership. This scale-up was requested by the Regional Administrative Secretary and presents a key success in establishing a value proposition for local communities and authorities together.

In parallel with the lessons learned and review process

of Ramani Huria for Dar es Salaam, a similar project was initiated under Urban Exposure Services following the September 10, 2016 earthquake that struck the town of Bukoba. As requested by the Disaster Management Department, a geospatial support team was deployed in December 2016 via TURP funding to assist in collecting and organizing urban exposure data and mapping regional facilities and town layouts. This was accomplished with the help of 10 Ardhi University students working remotely to digitise local area maps. The immediate objective was to compile a georeferenced and up-to-date baseline of urban assets (building footprints and critical facilities) from which

Geospatial team and community members surveying damage from Bukoba earthquake

Credit: Daud Fufuji - World Bank

Atlas of Reconstruction in Bukoba

Credit: Sensefly

the damage assessment could be developed and reconstruction planning based.

Under the Urban Exposure umbrella, FY17 additionally prioritized a survey of the lower Msimbazi Basin using an eBee Plus UAV, an activity conducted by Swiss surveyors. These data are intended to support inundation modelling, exposure mapping, and land use and land cover. Later in the year, the project acquired two of these drones and trained local surveyors and consultants in their use for urban watershed and exposure mapping work to complement other in-situ based mapping methods. The equipment is subject to an asset handover plan with the local Ardhi University when project mapping activities are completed.

A pilot project to map and monitor via satellite Dar es Salaam's urban density changes and level of informality across the entire 1600km^2 of the region was further commissioned in April 2017 to run for nine months.

■ **eBee drone used for aerial mapping**

Credit: Frederick Mbuya - World Bank

■ **Ramani Huria Atlas of Flood Resilience and Maps in a Ward Office**

The goal of this activity has been to test whether new satellite constellations capable of imaging on a daily basis can produce low cost, cloud-free mosaics of urban expansion with sufficient resolution to enable automated classification of urban densification. The service will show whether in the peri-urban wards of Dar es Salaam, where urban growth is between 10% – 25% per year, a simple metric of Floor Space Index [2] can be monitored in a standardized and reliable fashion on a periodic basis (quarterly). These satellite data are currently at 3 – 5 meters resolution, which is insufficient for detailed urban mapping and flood modelling, but can represent a means to monitor urban hotspots across all Tanzanian cities in a systematic manner and could act as triggers for more detailed in-situ surveys. The results of the pilot will be evaluated in year two and a decision whether to expand as an operational service for secondary cities

[2] https://en.wikipedia.org/wiki/Floor_area_ratio

will be made following expert review and stakeholder feedback.

ELEVATION MODEL

When designing TURP, it was envisaged that a detailed elevation model would be necessary to develop a quantitative evaluation of expected losses from flood in Dar es Salaam, complemented by an accurate stock
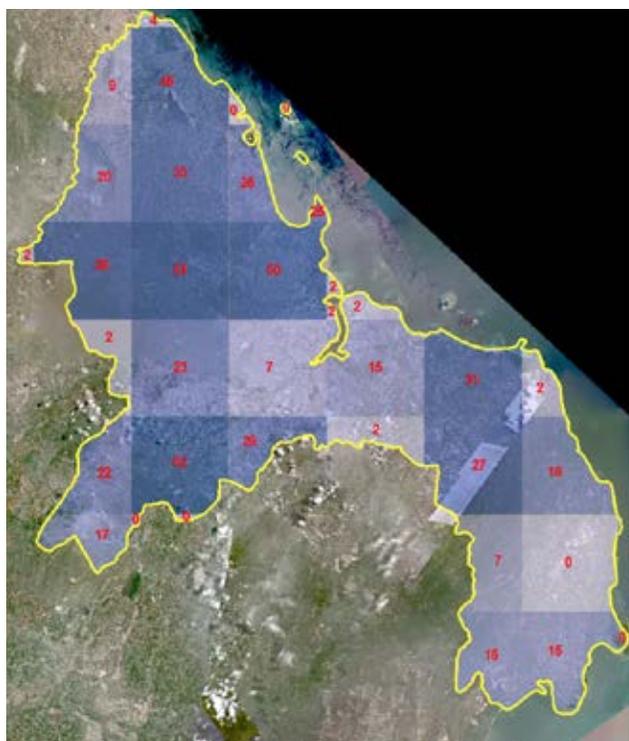
Number of new buildings detected in each planet mosaic from change detection analysis

of exposure buildings, facilities, and concentrations of people and businesses. Since both the available data layers as well as the actual demographics and urban dynamics of the city are subject to change over the lifetime of the program, these databases seek to be as open, low-cost, and reproducible as possible, thus maximizing scalability across Tanzania.

Over this reporting period, expert consultants reviewed existing elevation models and identified a high-value dataset within the Ministry of Lands, and a 25cm resolution dataset of orthophotos and elevation data for 4300km2 of Dar es Salaam. This dataset will provide for both digital surface model (including heights of buildings and structures) and digital terrain model (measuring the ground levels without vegetation and buildings). The digital terrain model is expected to be a foundational dataset for flood modelling and risk assessment across the city. Further UAV aerial mapping of transport corridors and other infrastructure in Dar es Salaam has been planned for October 2017.

INSTITUTIONAL ASSESSMENTS AND RISK MANAGEMENT INDEX

In FY17, it was determined that TURP would fund support services for the development of a Risk Management Index (RMI), to be used in setting a baseline and tracking progress in institutional improvement for risk identification. A draft institutional capacity assessment was completed in January 2017 for Dar es Salaam-based agencies in emergency management and response. This assessment found that despite the establishment of DarMAERT as a key step towards an improved emergency response in Dar es Salaam region[3], the primary regional agencies dealing with disaster management need further assistance to improve their performance and collaboration amongst each other. The top five challenges to be tackled are noted in the report to be: 1) low awareness; 2) insufficient training; 3) poor coordination; 4) limited equipment; and 5) lack of staff. Further assessments are expected to be undertaken as the program progresses over the next fiscal year.

[3] Interviewees highlighted the existence of the DarMAERT as the main strength Dar es Salaam Region has for emergency response.

INVENTORY OF DISASTER AND LOSSES

The structure of this pillar has taken into account the value of a robust inventory of historical events that records losses to people and property, and persons affected. The first year TURP faciliated an Inter-Governmental Authority on Development (IGAD) and Global Facility for Disaster Reduction and Recovery (GFDRR) training workshop, conducted in collaboration with the DMD, on different approaches to disaster loss inventories as well as Post-Disaster Needs Assessment (PDNA) methods. The training familiarised participants with the importance of establishing such inventories and has led to further requests for support from the Government in this area. The Bank is coordinating with GFDRR to ensure that this work is either delivered through their current engagement or through TURP.

HYDROLOGICAL DATA STRENGTHENING FOR CLIMATE RISK

Responding to a need for the strengthening of hydrological data, collaborative efforts are being taken to improve documentation, cataloging, and availability of hydromet data, and skills of weather station maintenance. An expert mission was therefore fielded in February 2017, resulting in the requirements definition for, and selection of, the TAHMO. TAHMO was contracted to develop pilot projects, in coordination with Tanzania Met Authority and the Ministry of Water, to plan for the procurement and placement of Msimbazi weather stations and stream flow instrumentation. Work began in August 2017.

As part of the TAHMO contract, Delft University will deliver training and technology transfer in late 2017 and 2018. Delft will additionally demonstrate an enhanced flood event forecasting system based on improved data and recommend early warning opportunities.

Credit: Chris Morgan - World Bank

Credit: Chris Morgan - World Bank

Community members participating in the installation of weather stations

PROBABILISTIC FLOOD RISK MODEL FOR DAR ES SALAAM

A metropolitan-wide flood loss evaluation has never been conducted for Dar es Salaam and is considered a critical foundation upon which risk-reduction planning and investment decisions can be made. In 2017, TURP presented the work carried out by Anchor Environmental Consultants during 2014 – 2016, which included a flood loss model in the Msimbazi catchment. The report estimated average annual losses of USD $47 million per year due to flooding. The authors also urged caution, however, and concluded:

> "Due to the limited availability of data, this study by necessity utilized simple models and assumptions. While the results strongly suggest that catchment rehabilitation interventions would yield a positive outcome in economic terms, the figures presented here are preliminary and warrant further investigation and refinement. The results do, however, provide a useful step towards informing policies and contributing to Dar es Salaam's green urban development path. It is recommended that investment is made in the development of better hydrological data, through establishment of flow and additional rainfall gauges, as well as development of detailed spatial datasets on soils, land cover, the built environment, and the city's drainage systems. Moving forward, these datasets can then be used to construct a more definitive analysis."[4]

The probabilistic flood risk model therefore aims to use these improved datasets and apply a loss evaluation across the entire metropolitan area. This will involve re-evaluating the Msimbazi catchment and surrounding

catchments with up-to-date data.

Whilst delivery of this model is anticipated for year two of the program, the design specification process has already begun. Deltares flood consultants were contracted to define the flood data model parameters for such a probabilistic model that could be collected using Ramani Huria methods. Typologies were created for waterways, tunnels, walls, buildings, and highways of varying values and characteristics. Work now remains on building typologies for other hazards relating to climate risk. Two key criteria stand out that characterize this modelling effort: i) a data model that is compatible with readily available or easily updatable local data; and ii) a design that allows for local visualization, scenario generation, and output analysis.

Activities in year one have therefore focused on developing an urban flood and hydrology data model, and specifications for a visualization dashboard.

GEOSPATIAL DATA PORTAL AND INFORMATION SYSTEMS

With the goal of filling the current gap of a data clearinghouse to host and serve climate risk information, TURP is supporting the review of climate data stakeholders in Tanzania and the development of a geospatial data portal for producers and users. Competitive selection in FY17 awarded responsibility of the review of the National Spatial Data Infrastructure to Ordnance Survey International with the recommendations report due by December 2017.

The prototyping of modern geospatial catalogues was additionally developed by the British Geological Survey and Deltares over FY17. This included a data model and a hybrid formal/informal data architecture for urban risk.

All available and open climate- and risk-related datasets

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[4] World Bank, (2017), Promoting Green Urban Development in Africa: Amelioration of Flood Risk in the Msimbazi River Catchment, Dar es Salaam, Tanzania.

created or supported by TURP were uploaded to the COSTECH-hosted geonode and the State University of Zanzibar, ZanSEA geonode. These platforms are serving as test and training platforms, with a new geonode expected to host official risk data on a dedicated government server with a PMO-DMD domain and a training node at Ardhi University.

POVERTY AND DISASTERS – A SOCIO-ECONOMIC STUDY

A ToR has been approved and consultants hired to conduct an analysis of the incentives and vulnerable conditions of communities in informal flood prone areas

■ **Layer of the ZANSEA Geonode**

of Dar es Salaam. For this activity, a household survey will be implemented continuously throughout the lifetime of the TURP program to monitor how household behavior and exposure to risk are associated, as well as monitor household awareness and impacts of TURP activities. By combining a rapid poverty assessment tool, SWIFT[5], and a DRM questionnaire, the team will capture data on household income, exposure, and socioeconomic

characteristics in a single data collection effort. With this data, TURP will support an improved understanding of how poverty and disasters are related in terms of level of exposure, short- and long-term impacts, capacity to recover, and adoption of behaviors associated with living with risk. This study is also expected to support an understanding of measuring outcomes in vulnerability reduction through providing insights into a target beneficiary group intended to guide risk-reduction policy.

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[5] Survey of Well-being via Instant and Frequent Tracking

TABLE 1: RISK IDENTIFICATION ACTIVITY SUMMARY

ACTIVITY	PROGRESS
Urban Exposure Data Mapping Services	**Exposure mapping pilots**
	Satellite monitoring of urban density changes
	Equipment provided to support geo-rectification
	Ramani Huria, community-mapping initiative, adopted into program
Elevation Model and Exposure Mapping	**Existing elevation models reviewed by experts and a high-value dataset identified**
	Lower Msimbazi surveyed and mapped by UAVs
	Aerial mapping of transport corridors and infrastructure planned
Institutional Assessments and Risk Management Index	**Draft assessment complete**
	Risk management index assessment advertised and shortlisted firms identified
	Vulnerability assessment recommendations report advertised and shortlisted firms identified
Inventory of Disasters and Losses	**Data model for urban flood exposure developed by Deltares**
	Training workshop on disaster loss inventories delivered with IGAD
	Historical review of Dar es Salaam disaster events, not yet started
	Establishment of event databases, not yet started
Hydrological Data Strengthening for Climate Risk	**Expert mission in February and March 2017 provided ToR for hydromet data review**
	TAHMO contracted to develop two pilots for Msimbazi weather stations
	Delft University contracted to deliver training and technology transfer
	Delft University contracted to demonstrate an enhanced flood event forecasting system
Probabilistic Flood Risk Model for Dar es Salaam	**Flood risk model pending finalization of exposure data model for detailed ToR**
Geospatial Data Portal and Information Systems	**Ordinance Survey International selected to conduct a review of the National Spatial Data Infrastructure**
	Assessment of climate risk information stakeholders, not yet started
	British Geological Survey and Deltares jointly developing a data model and a hybrid formal-informal data architecture for urban risk
	Climate and risk data hosted on a COSTECH geonode and the ZanSEA geonode
Poverty and Disasters – a socio-economic study	**ToR reviewed and approved, work commenced**

Early outputs are anticipated to be made available by the end of 2017.

Challenges and Lessons Learned

Pillar 1 is characterized primarily by a range of technological and scientific activities concerning data collection, curation, analysis and review, and tool development. A key challenge is that often cost and time estimates rely on assumptions about data availability, quality, and need. In some cases, certain activites described above have advanced more readily due to the timely provision of quality data, while in other instances there have been delays in identifying or securing access to such data. Incomplete and inaccurate data has at points necessitated the revision of risk model requirements.

It has been noted that the review and goals of Pillar 1 are ambitious in terms of developing strategies fit for a fast-changing and often informal data landscape. This is calls for innovative approaches that may differ for the business-as-usual case. Experts that can combine traditional disciplines of risk modelling with new areas such open data, drone imaging, and crowdsourcing are scarce.

Consultation and coordination with government counterparts is also non-trivial. Several agencies have internal procedures to review and approve data sharing, collaboration, and approvals for Bank work. The river instrumentation and hydrologic model calibration, for example, requires MoUs with Ministry of Water and Tanzania Meteorological Agency, as well as coordination with Basin authority, environment, and forestry departments and academia. Establishing the Technical Advisory Committee in May 2017 was a key step to support this coordination, as well as requesting support from the prime minister's office to establish government coordination of TURP activities.

Finally, a key challenge in Pillar 1 has been to maintain a focus on urban flooding, which was the identified priority at the start of TURP. The Bukoba earthquake, however, demanded that the government support seismic hazard assessments, building code, and construction standards reviews. Similarly, the Government's prioritization of Dodoma as the administrative center for Tanzania has pressured many agencies to focus on logistical moves to the capital, and raised demand for risk assessments concerning water availability and seismic risk in the city. These needs were not foreseen at the outset of TURP, which maintains a desire to be demand driven and build effective relationships with counterparts. As such, there is a need to trade off flexibility of the TURP program against its original work plan sequencing and flood focus.

Financials

Pillar 1 projects were allotted funding from two grants: TF0A4139, Risk Evaluation and Information Management, and TF0A3559, Urban Exposure Mapping Data Services. Funds disbursed by these grants amounted to USD $450,000, and a further $850,000 was committed in contracts.

Financial summaries are detailed in Section 9.

33%
$150,000

67%
$300,000
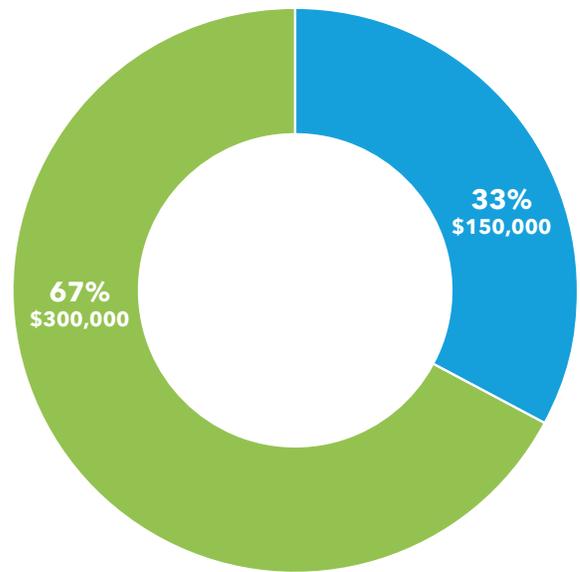
🟩 **Risk Evaluation and Info MGMT**
🟦 **Urban Exposure Mapping Data Services**

▮ **River blocked and flooding ensues in Dar es Salaam**

Credit: Mark Iliffe - World Bank

Pillar 2: Risk Reduction Measures and Planning

4

PILLAR 2: Risk Reduction Measures and Planning

" "Reducing risk can be achieved through fostering a culture of collaboration between ministries, the city council, municipalities, ward offices, and the community"

– Mussa Natty, Senior Advisor, Dar es Salaam Regional Commission

Objective

To strengthen cities' capacity to plan for and reduce climate risk through the use of both structural and non-structural measures addressing long-term systemic risk.

Overview of Progress

Pillar 2 was introduced into the TF at the beginning of FY17 and was structured to build upon the foundation set by Pillar 1. Activities were finalized and approved by GoT, World Bank, and DfID during the first SC meeting.

Most work under this Pillar is expected to scale as updated hazard and

risk maps are delivered, which will inform risk-reduction planning activities. Nevertheless, work has begun at the community level and in targeted areas of the Msimbazi Basin. Although limited outputs have been recorded, the final half of FY17 has seen the approval of ToRs and hiring of consultants, as well as early piloting, as detailed below.

PARTICIPATORY COMMUNITY CLIMATE RISK PLANS

Informed by the prior work of Zuia Mafuriko (Stop Flooding) conducted in 2016 by the Tanzania, Danish, and American Red Cross societies in collaboration with Ramani Huria, this project undertakes a revised process to develop community risk-reduction plans in 20 wards. To achieve this, expert advisory teams were brought together with Ward Executive Officers, the World Bank, and representatives from Humanitarian OpenStreetMap to identify successes, challenges, and lessons learned, and define the best way forward.

Key recommendations included:

Target level should be the subward (MTAA) level, whereby community leaders can be informed about ongoing projects to secure community mobilization;

- Assessments of best uses for project products should be identified early for effective promotion of such uses throughout project duration; and

- Projects should have components of advocacy to build political will within government so that authorities can start budgeting for these initiatives to enhance project sustainability.

TURP has since prepared a socioeconomic study as well as an impact evaluation of the participatory process in affecting vulnerability and resilience results. Community focus groups were called together in three wards

over FY17 as preliminary research actions. A team of urban sociologists were additionally hired to revise the community engagement and participatory decision-making process for 20 wards. These sociologists will also undertake a human-centred design study and a profiling of target communities and groups in the second year.

MSIMBAZI FLOOD MITIGATION STUDY AND IMPLEMENTATION PLAN

COWI Consultants has been contracted to conduct studies and identify risk-reduction priorities for critical infrastructure (e.g., bridges, bus depot, national hospital) in the Msimbazi Basin and develop a menu of flood-management measures for the lower basin. The flood risk-reduction plan is expected to assess and recommend options, including measures such as:

- Dredging of critical identified sections of the primary channel

- Raising of low-lying bridges

- Excavating the Jangwani Playing Fields to form a deeper retention basin

- Excavation of sediment in existing drains

- Rehabilitation of problematic culverts

- Tree planting/revegetation

- Demarcation of flood hazard areas

- Management/transformation of demolition areas

- Drain cleaning programs

- Solid waste management priorities sites

- Equipment/goods purchases

- Upstream retention basins

- Structural flood defenses for key infrastructure

This study will provide design options for both short-term actions (i.e., two- to three-year implementation through the Dar es Salaam Metropolitan Development Project) as well as medium- and long-term priorities for a lower Msimbazi Basin flood-management plan. The recommendations will also inform site-specific infrastructure plans (e.g., emergency operations plan and flood-defence upgrades for transport infrastructure).

TRAINING ON USING RISK DATA FOR COMMUNITY RESILIENCE DECISIONS

In conjunction with their flood data model work noted under Pillar 1, Deltares consultants delivered a training on using risk data for improving community resilience decisions. Community residents and leaders were
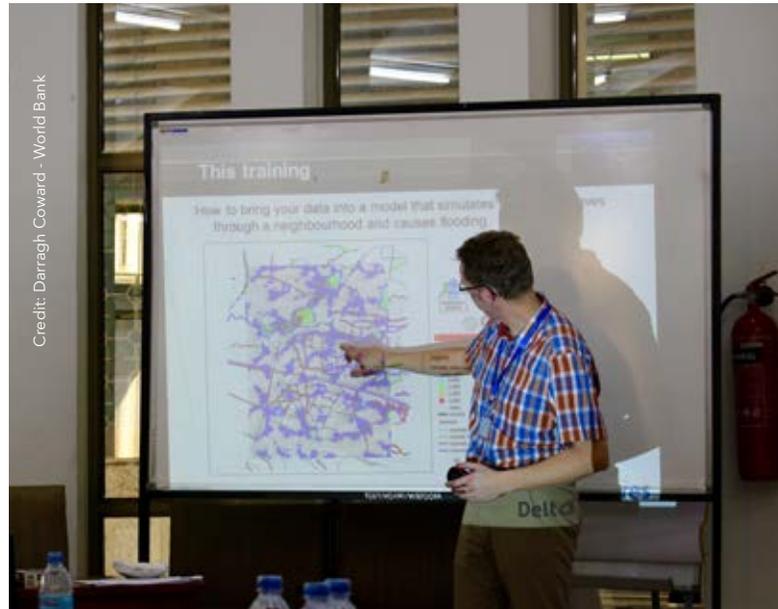
Credit: Darragh Coward - World Bank

Deltares training on risk data for improved resilience

Credit: Chris Morgan - World Bank

Community Initiative to mitigate deposition of sand atop a bridge before flood season

convened to understand factors behind building a resilient community. Participants identified the resources and challenges of their neighbourhood and worked through a series of scenarios to identify measures that they can take to mitigate the impact of flooding and reduce risk. Major tactics presented included the establishment of solid waste dumping sites and simple community actions such as drain cleaning.

ENVIRONMENTAL RESTORATION AND GREEN URBANIZATION

Key findings from the report, *Promoting Green Urban Development in African Cities*, have informed the structuring and prioritization TURP, and they are further expected to inform future work on urbanization and environmental impact in the region. A portion of these findings include:

- Informal settlement is inevitable and is currently the single biggest driver of ecosystem loss across the city of Dar es Salaam;

- Dar es Salaam's aquatic ecosystems have been the most burdened and degraded by the impacts of urbanization;

- Institutional fragmentation is particularly challenging in Dar es Salaam and inhibits effective urban environmental management;

- Urban development has not been guided by a strategic planning framework that

identifies the most critical natural assets and prioritizes their conservation; and

- There are broader metropolitan-scale environmental assets remaining within the city that will require strategic action to conserve and protect.

DRAINS MANAGEMENT SYSTEM – PROTOTYPE: TWAA MTARO

To reduce flood risk through the improved management of drainage infrastructure, TURP has initiated the development of a prototype of a Drains Management Dashboard. This system, currently being developed by a local team with input from universities, will facilitate reporting on solid waste blockages affecting the flood risk of local drainage systems and recommend actions for clean up. By the end of FY17, a prototype had been delivered in the form of a web app and USSD mobile short code that utilizes OpenStreetMap data and is
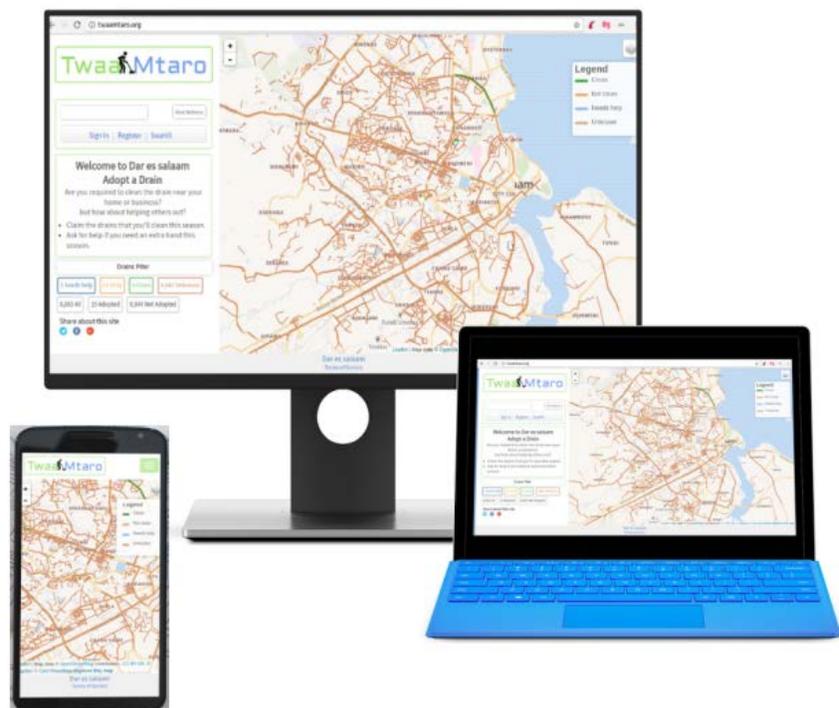
Twaa Mtaro - Adopt-a-drain application showcased upon different platforms

optimized for mobile viewing. The app is currently able to fetch drain data from the map, which is then processed to provide visual information on the status of cleanliness in any particular area. It is expected that a fully operational system would likely make use of government short codes for reporting or Facebook Messenger Bots; both options exist in Tanzania and would be free for the users.

An inaugural pilot, featuring a training session with citizens, ward officers, and street leaders, is underway in two wards of Dar es Salaam.

URBANIZATION REVIEW ON RESILIENCE

During FY17, a team worked to develop an urban resilience chapter and body of knowledge upon the existing narrative for African urbanization, highlighting linkages with climate change and disaster risk. A final report will be disclosed in the next fiscal year and serve as a flagship knowledge product to disseminate to government and policy makers at all levels.

MSIMBAZI CHARRETTE AND AREA PLAN

Terms of Reference have been developed and the procurement process initiated to facilitate a participatory, stakeholder-driven urban design charrette approach to develop the following:

1. A strategic framework for open space and environmental management in the wider Msimbazi River catchment (approximately 8km2) that provides a shared vision and overall strategic direction for action and investment in the catchment

2. A conceptual design for river revitalization, open space, and recreation for the lower Msimbazi flood plain (approximately 3km2) that provides more site-specific interventions for a first phase of investments in the most flood-vulnerable area of the catchment

Together with proposed engineering options prepared under the COWI assignment, this participatory approach will provide an overall vision and design concepts to

TABLE 2: FY17 ACTIVITY RESULTS

ACTIVITY	PROGRESS
Participatory community climate risk plans	Zuia Mafuriko lessons-learned workshop conducted
	Community focus groups conducted in three wards
	Team of urban sociologists hired to revise community engagement and participatory decision-making process
	Team of urban sociologists hired to conduct a Human-Centered Design study
	Dissemination and discussion of preliminary flood risk scenario and atlas results ongoing since November 2016
	Inputs and recommendations for revision of Municipal Planning Process commenced
Msimbazi Flood Risk Mitigation Study	COWI Consultants selected and work ongoing to develop risk-reduction priorities and implementation plan
Environmental restoration and green urbanization	Presented at TURP launch workshop

ACTIVITY	PROGRESS
Urbanization review	**Draft outputs finalized**
Drains management system – prototype: Twaa Mtaro	**System design and prototyping underway**
	Training, user feedback, and review pilot commenced
	Data integration and live pilot demonstration targeted for the short rains in December 2017
Msimbazi transport infrastructure risk review	**Combined with Msimbazi Flood Risk Mitigation Study and underway by COWI consultants**
Msimbazi charette and area plan	**ToR drafted**

guide preparation of an investment program around flood mitigation and environmental restoration in the Msimbazi catchment. Additional activities and next steps to support this goal include:

• Meetings are ongoing at the technical and director level with key stakeholder ministries (e.g., Ministry of Lands, NEMC, PORALG, Dar es Salaam Region) to gain inputs on the ToR.

• Consultants are expected to mobilize by October 2017 and complete the design charrette by January 2017.

Challenges and Lessons Learned

The importance of coordination and local stakeholder engagement has been evident in Pillar 2 work plans. A key challenge has been understanding how and when to convene and at which level. Pillar 2 focuses on planning and risk-mitigation activities, and as such expectations can be raised by bringing civil society and communities to the table to discuss priorities. Ideally, this process of engagement is sequenced to leverage new data and analysis to offer stakeholders whilst preceding the availability of resources and delivery of actions on the round. Timing of activities is key to maintain momentum and deepen engagement.

Whilst Pillar 1 has worked largely with technical counterparts, it also relies increasingly on the buy-in of policy makers and on developing relationships with political champions who have their own visions for the city growth, basin restoration, and manner in which the process should unfold.

Priorities are also split between preparing for the short term, i.e., the next flood season, and prioritizing the long-term planning. Short-term investment needs are compounded by the lack of data readiness in some cases. As such, TURP has followed a two-step planning process, with a focus on "quick wins" where possible, followed by more comprehensive planning based on reliable risk information for the medium to long term.

Given the imperative to move quickly in the face of

Credit: Studio 19 Tanzania

CSO and community leaders gather to discuss future plans for improving resilience of the Msimbazi

frequent flood shocks in the city and community needs, while also seeking to address long-term planning processes, the programmatic nature of TURP is critical for agility in response to results and events on the ground.

Financials

In FY17, Pillar 2 projects were allotted funding from three grants: TF0A4691, Risk Mitigation Planning; TF0A4571, Msimbazi River Revitalization; and TF0A475, Urbanization Review. Funds disbursed so far under these grants amounted to USD $188,000, with a further $426,000 committed in contracts.

Financial summaries are detailed in Section 9.

10%
$19,000

42%
$79,000

48%
$90,000

■ Risk Mitigation Planning
■ Msimbazi River Revitilization
■ Urbanization Review
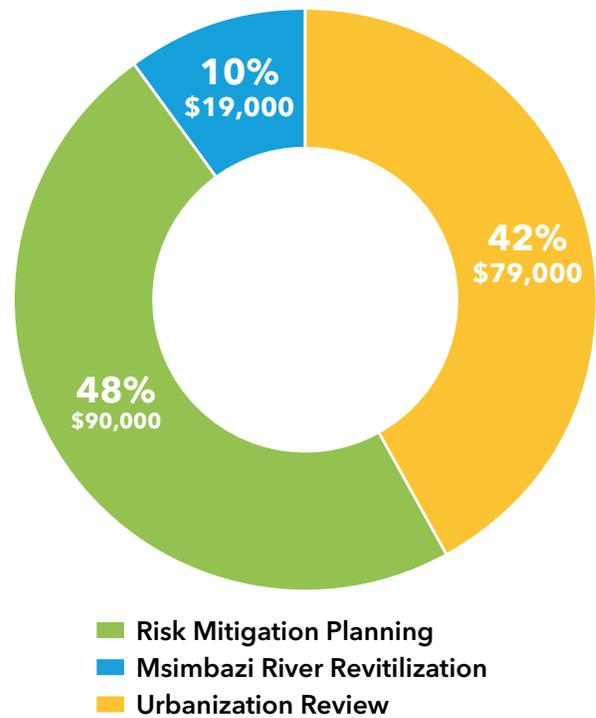
Pillar 3: Emergency Management and Response

5
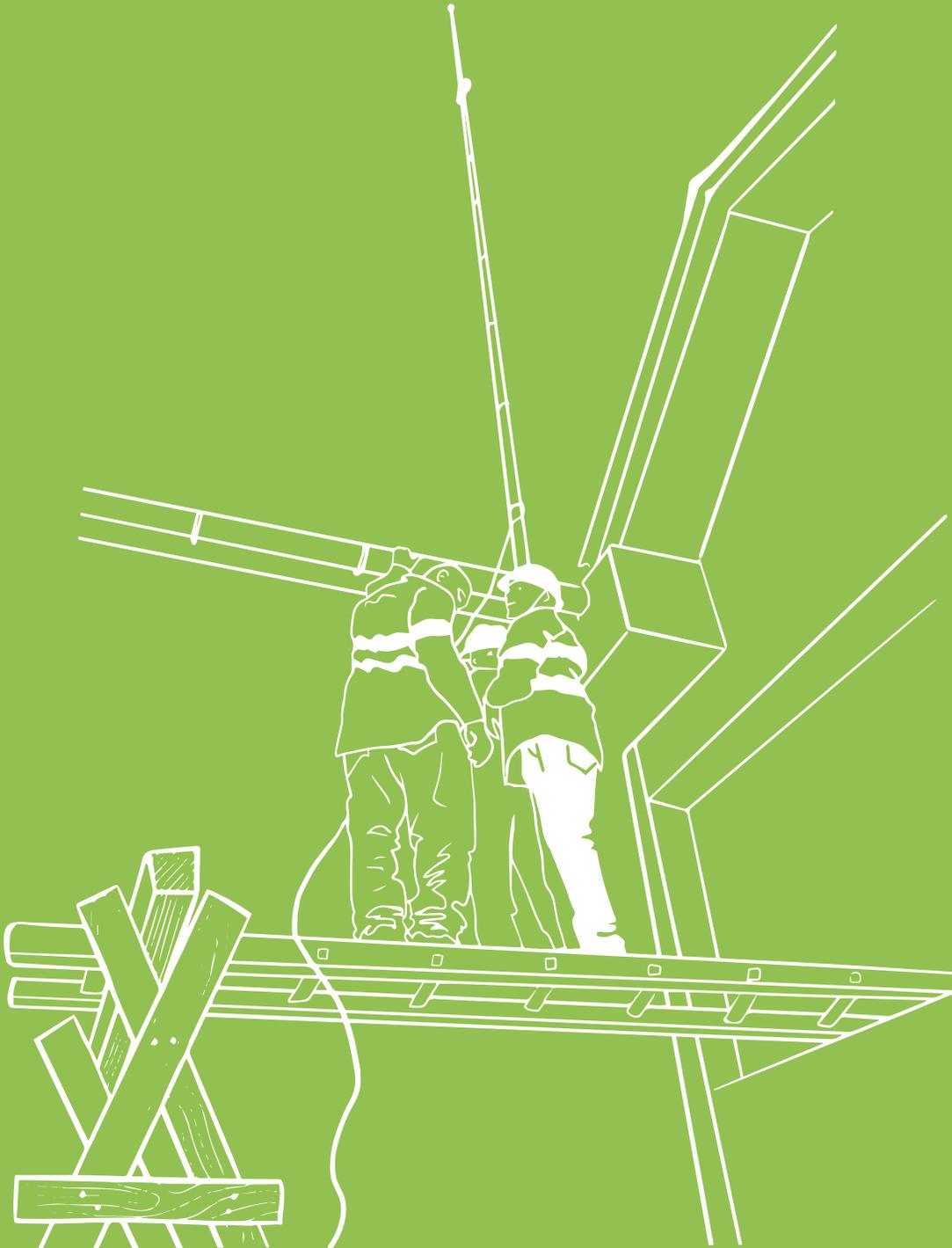
PILLAR 3: Emergency Preparedness and Response

❝

"We exhaust a lot of resources in the event of emergency. Better data, equipment, and coordination is needed to support our greatest asset: people."

– Christopher Mnzava, Coordinator, DarMAERT

Objective

To strengthen the capacity of stakeholders involved in short-term disaster events and preparedness to cope with specific emergency scenarios.

Overview of Progress

Pillar 3 was developed following review of the government's National Disaster Risk Management Act and in recognition that disaster risk cannot realistically be entirely eliminated. Shocks may, occur and a key aim of resilience is to develop coping capacities for such events if they arise. The Pillar 3 objective and strategy were approved by World Bank management and DfID during the first TURP SC meeting.

Many activities that fall under Pillar 3 are dependent upon outputs from the first two pillars; progress has been made within three key areas, however, as noted in the summary below.

STRENGTHENING OF EMERGENCY MANAGEMENT AND RESPONSE

During FY17, preliminary steps were taken to improve emergency planning in Tanzania's economic hub of Dar es Salaam. A CERC for the Dar es Salaam Metropolitan Development Project was developed and an operations manual prepared. This plan outlines how CERC funds will work to finance eligible expenditures for post-disaster emergency recovery in support of the Government's rapid response efforts resulting from natural or man-made disasters, including public health crises.

World Bank consultants have additionally been working

Credit: DarMAERT

■ **DarMAERT Emergency Rescue**
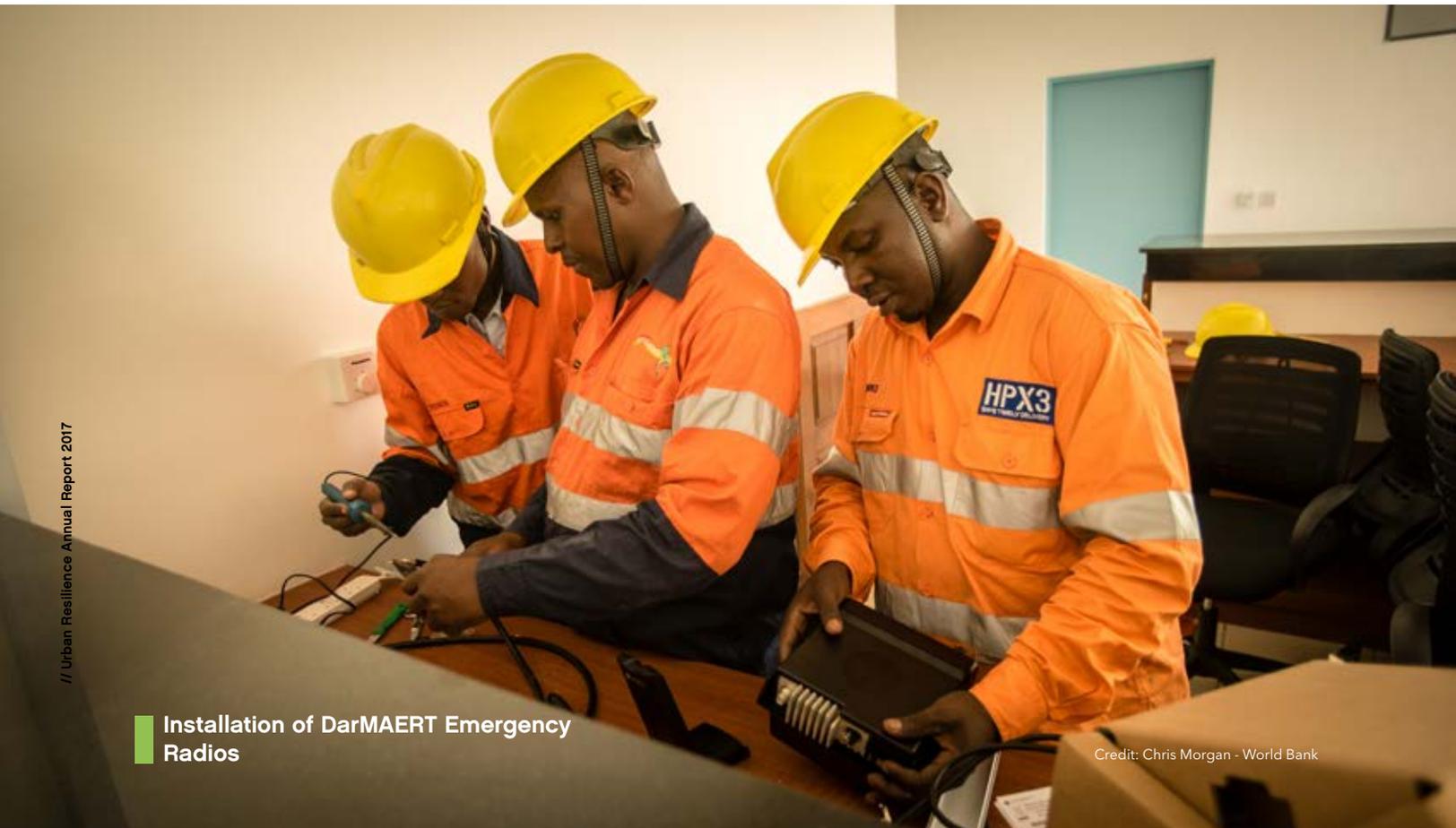
■ **Installation of DarMAERT Emergency Radios**

Credit: Chris Morgan - World Bank

with the DarMAERT to develop and implement a comprehensive emergency response plan, which includes:

- Background information on disaster risk in Dar es Salaam

- Outline of disaster management framework and response structure

- Purpose of the DarMAERT Emergency Response Plan

- Scope of the DarMAERT Emergency Response Plan

- Detailed overview of emergency response operations

- Plan for emergency response activation

- Steps for implementation and review

To further support the Emergency Response Plan, TURP funding was also used to procure high-grade emergency radio equipment and train DarMAERT in its use. Pre-existing communication coverage was stalled at 50%, with just two repeaters, six base stations, and a limited selection of radio handsets. When fully supplied with TURP-procured equipment, Dar es Salaam will be 100% covered, with an addition of three repeater stations, four radio base stations, six mobile stations, 31 radio handsets, and six table phones.

COMMUNITY RESPONSE PLANS

Community consultations conducted in coordination with risk mapping and profiling of Pillar 1 highlighted the experience of the Community Disaster Response Teams (CDRT) established as a part of the Zuia Mafuriko project. It was noted that despite the project's end, CDRTs continue to mobilize community clean-up exercises, and that these exercises are proving effective in reducing the

Credit: Chris Morgan - World Bank

Credit: Chris Morgan - World Bank

CDRTs mobilized and actively removing waste from drains before the flood season

TABLE 3: EMERGENCY MANAGEMENT AND RESPONSE ACTIVITY SUMMARY

ACTIVITY	OUTPUTS
Strengthening of Emergency Management and Response in Dar Es Salaam	**Operations manual developed for the DMDP CERC**
	DarMAERT Emergency Response drafted through consultative process
	Emergency radio equipment procured and currently being installed
Community Response Plans	**Initial plans made– expected to follow community level risk mapping and risk profiling**
Damage Assessment Capacity-Building	**Post-Disaster Needs Assessment training conducted – potential follow-up training under discussion.**

effects of flooding. CDRTs are additionally committed to providing first-aid services in the event of emergency.

Initial plans for broadening the reach of community response plans and CDRTs have been conceptualized and actions will be carried out in late 2017.

DAMAGE ASSESSMENT CAPACITY-BUILDING

The Bank team, working in partnership with the GFDRR, facilitated the IGAD to deliver a training workshop on post-disaster needs assessments (PDNA) and disaster risk frameworks (DRF) to 50 government officials from relevant ministries and institutions in May 2017. This training provided a comprehensive overview of how to conduct PDNAs and develop a sustainable DRF. The goal was to ensure standardized responses across government to disaster. The majority of attendees rated the training as excellent, though requests were made for

a follow-up training, and the potential for delivery of said training is now under discussion.

The training course itself was delivered by IGAD using separate funding; the local coordination and participation from Dodoma of Disaster focal point staff, however, was supported by TURP.

Challenges and Lessons Learned

Pillar 3 has faced challenges in sequencing and coordination. Ideally, community response plans are based on the timely delivery of inundation baseline data, but must also align with the pre-flood season preparedness. Delivery of the flood response plan after the rainy season should be avoided. This places a degree of pressure on the team and need for careful planning.

There is also a broad range of needs in this pillar that will exceed TURP's resources and present potentially complex trade-offs. The most significant risk is that of a major flood

event occurring during TURP implementation. This would likely result in restructuring of activities and scaling up of response, rehabilitation, and recovery actions. The PDNA training was in part aimed at preparing stakeholders and supporting a clear methodology and coordination mechanism should an emergency occur.

Finally, delays in customs clearance required an adjustment in the schedule for installation of the DarMAERT emergency radios and associated trainings.

Financials

The total grant amount available for TF0A3828 was USD $480,000, 81% of which was disbursed or committed. Total disbursement over FY17 was USD $300,000, with a further $89,000 committed in contracts.

Financial summaries are detailed in Section 9.

100%
$300,000

■ **Emergency Planning and Response**

■ **DarMAERT Emergency Radio Equipment installed for use**

Resilience Academy

6

Resilience Academy

TURP funding is being used in the development of a curriculum to address an identified gap in academic and professional knowledge on urban resilience. This is anticipated to be a multi-year partnership with the major Dar es Salaam universities, with potential to grow to other cities or online open course content, as well as training colleges.

During this financial year, a MoU focused on urban resilience skills, tools, and equipment was developed between the Bank's legal department and Ardhi University. The agreement aims to strengthen collaboration across a range of schools within the university, including geoinformatics, spatial planning and social science, geography, and economics. Engagement areas include:

• Continuous engagement on Urban Exposure mapping through Ramani Huria;

• Training in the analysis of resilience-related spatial data, including flood modeling, damage assessment, and disaster risk management; mapping of storm water drainage systems; transportation (public and non-motorized transport); and development of ICT applications;

• Establishing a risk-mapping laboratory capable of supporting spatial surveys, including topographic and infrastructure mapping, which will maintain specialized equipment;

Students use new skills to map the infrastructure of an informal settlement

34

Credit: Chris Morgan - World Bank

- Training of University staff and students on operation and maintenance of survey drones and related equipment and processing of the produced images;

- Training and participation in the set-up and maintenance of new hydro-meterological sensor networks, including through the TAHMO;

- Organizing joint demonstrations for students and staff to showcase the use of information, computer technology, and spatial data in urban resilience issues to promote citizen science and community engagement;

- Developing a joint curriculum for training and retraining of professionals on resilience mapping, online sharing, and accessing data; and

- Generating contents that will feed into University courses and pedagogical skills.

An Urban Flood Risk Mapping "Cookbook" is being developed to guide the risk identification, modelling, and mapping portion of curriculum content. An inception report was submitted in June 2017. Due to delays in the MoU signing, a pilot course at the Bachelor's level remains in early stages of discussion.

TABLE 4: RESILIENCE ACADEMY ACTIVITY SUMMARY

ACTIVITY	OUTPUTS
Resilience Academy	MoU signed between Ardhi University and the World Bank
	ITC-Twente University hired to develop an "Urban Flood Risk-Mapping Cookbook"
	Delivery of a pilot Bachelor's curriculum on urban flood-mapping under early discussions

Financials

The total grant amount available for TF0A4238 was USD $570,000, 71% of which was disbursed or committed.

100%
$5,000

■ **Urban Resilience Academy**
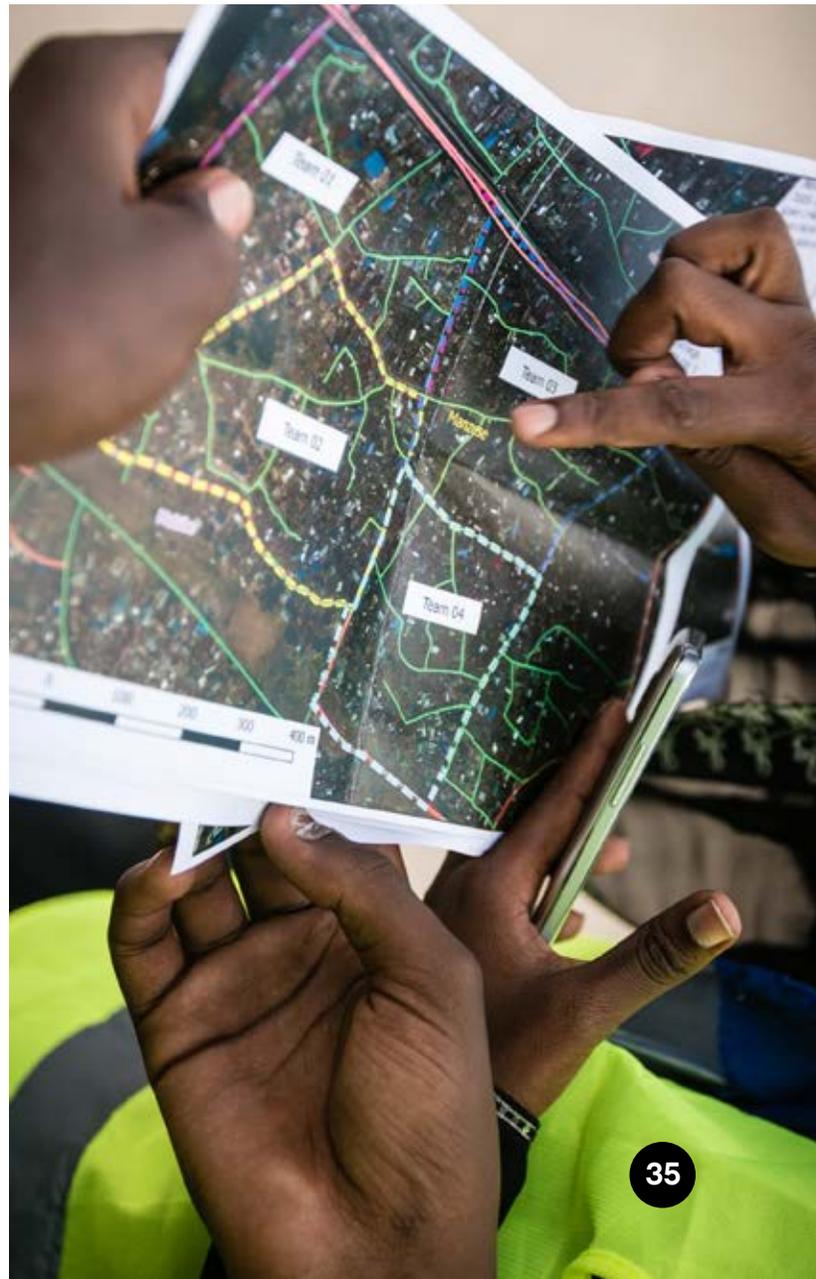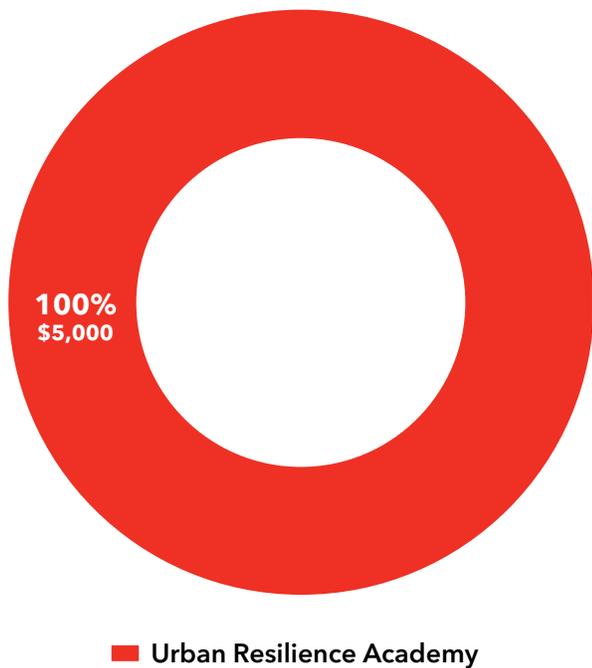
RECIPIENT EXECUTED GRANTS

Small Risk Reduction Actions Grant (Challenge Grant)

// Urban Resilience Annual Report 2017

Objective

The activity will engage civil society organizations to support Msimbazi River restoration, clean up, and community infrastructure management.

Execution Mode

This may be a bank-executed activity or a recipient-executed grant, depending on procurement recommendations and execution options. The amount of the grant is expected to be less than USD $2.5 million. A Bank team is developing a consultation process and concept note.

Government-Executed Risk-Reduction Grant

Objective

A technical scoping mission was conducted in February 2017, which recommended that TURP invest between USD $20 million and USD $30 million in an additional financing to the World Bank's ongoing Dar es Salaam Metropolitan Development Project. The project concept note package has been developed and was approved by the Bank management in July 2017. Given the financial cuts to the TURP budget and the persistently low exchange rate of the UK pound sterling against the US dollar, the envisaged amount is expected in range of USD $20 million to USD $25 million. The final resource allocation will depend on the results of technical reviews and available funds.

PROGRAM MANAGEMENT

Objective

Program management and administration activities for the trust fund include, but are not limited to, supporting program governance arrangements and trust fund-related meetings; planning and executing work plans and budgets; managing communications and conducting outreach; disseminating lessons learned; reporting on progress; and monitoring and evaluating the program.

Overview of Progress

A conference was held from May 31 through June 2 to serve as a technical launch for the program. The event brought donors, implementers, and experts together to discuss the program structure, plans, and early progress. Participants included:

- **200+** government officials from Tanzania

- **16** honourable guests from surrounding nations

- **75** journalists from **42** African countries

- **10** local CSO representatives

- Experts in the field of urban resilience

Technical workshops were conducted on the subjects of the Msimbazi River Basin Flood Study, Open Data for Resilience, Early Warning and Hydromet Improvements, and CSOs and Charrette Planning.

A post-conference survey found the event to be highly informative and productive, with **57% rating** it as **excellent** and **43%** as very good. A significant portion of attendees additionally noted that the conference endowed them with five or more valuable connections.

Urban Resilience Annual Report 2017

TABLE 5: PROGRAM MANAGEMENT AND ADMINISTRATION ACTIVITY SUMMARY

ACTIVITY	PROGRESS
Formation of a technical review committee	Complete
Formulation of ToR and child activity concept note documents	Complete
Evaluation of proposals and firm selections	9 grant applications reviewed and approved
	26 consultants (13 Tanzanian) hired
	9 firms selected
Knowledge capture and sharing	1 external website
	1 internal knowledge repository
	1 World Bank feature story
	2 online videos

TABLE 6: SECRETARIAT ACTIVITY SUMMARY

ACTIVITY	PROGRESS
Partnership review note	Complete
Administrative set-up of trust fund accounts	Complete
Staff hiring and relocation	Complete
Operations manual, 18-month workplan, and costing	Complete
Annual reviews	Complete
Communications, branding, and logos	Complete
International conference and launch event	Complete
SC meetings	One in November 2016
	One in July 2017

Challenges and Lessons Learned

TURP has been established as a programmatic trust fund. As such, program design is not fixed, but expected to evolve each year as new stakeholders, data, and priorities arise. The first year of implementation is particularly challenging as it has been characterized by tension between the desire to implement the existing work plan as fast as possible, and the need to revise and adjust both technical components and administration arrangements, based on new data and feedback from counterpart agencies. Key challenges have included:

COUNTERPART AND STAKEHOLDER ENGAGEMENT – TURP is an ambitious multi-stakeholder agenda cutting across the whole of government at local, municipal, and national levels. Convening stakeholders and establishing an appropriate structure for each level of engagement is time intensive, as it requires developing relationships, sensitizing counterparts, receiving feedback, and building ownership. For example, some stakeholders have a comparatively high degree of readiness to engage, while others have been keen to participate but obliged to follow internal decision-making processes. In a few cases, key counterparts have be assigned new positions and new focal points been onboarded. This process of government and stakeholder engagement is vital for the success of the program; the pace of activity, however, is not easily predicted nor influenced.

ACCELERATED IMPLEMENTATION – During the first DfID annual review (October 2016), TURP's implementation schedule was found to be significantly delayed. A major cause for this finding was due to a mismatch between the donor's result framework and implementation schedule, which followed an early business case timeline and the Bank's implementation plan, which was updated during a partnership review process in June 2016. Although the result frameworks have now been harmonized, TURP was subjected to a performance improvement plan by DfID with an emphasis on accelerating the implementation actions. This has left little time for evaluation of key assumptions and stakeholders and training of new staff.

FRONT-LOADING OF COMMITMENTS – TURP has also experienced pressure to revise its work plan and front-load commitment schedules where possible. This is due in part to DfID requests to minimize commitments in 2018/2019 and shift funds to 2017 where possible, or risk losing the funds altogether (see below). This request has been met where possible by extending the scope and duration of initial consultancy contracts and initiating a number of training events earlier than planned. It is challenging, however, to maintain quality control and flexibility to revise operations when a large portion of the program is committed up front. Front-loading can be done, but care and time need to be taken to avoid compromising quality.

BUDGETARY UNCERTAINTY AND CUT – While the Bank team was aware of the possibility of a budget cut to TURP since January 2017, there was a six-month period of uncertainty regarding the size, timing, and scope of cuts. Ultimately, a budget cut of USD $7.5 million was determined by the donor in June 2017.

When measured in combination with the decline in the GBP-to-USD exchange rate, this represents approximately one-third of the budget cut to the original program overall. This in turn has led to a challenging set of trade-offs in terms of which activities to scale up to meet front-loading requests, which to accelerate to advance the implementation schedule, and which to hold or cut entirely.

The budget reduction will impact all activities of TURP. It is recognized that this reduction in funds creates additional challenges for the program; an approach that can minimize the impact is being assessed and an

amendment to the signed Administration Agreement is being prepared.

RISK DATA UNCERTAINTY – Very little risk profiling existed for Dar es Salaam at the start of TURP, so pressure to move ahead with designing risk-reduction investments is countered by the desire to wait for risk-assessment results. Priority risk information activities on exposure and hydrology were therefore accelerated. In the case of Hydromet, however, the team is still beholden to the timing of the rainy seasons and will not expect sufficient flood data for detailed assessments until at least two flood seasons have elapsed. The strategy has therefore been to advance on two fronts: collecting the best risk information as fast as possible, while simultaneously designing risk plans that are fit for the available data. The team believes that in the cases of community inundation maps, community priorities can already be developed on the basis of Ramani Huria flood atlas results, which is a deterministic scenario set by communities themselves. Financial protection measures and larger city-wide investments will have to wait for more detailed loss evaluation modelling work to complete. Within targeted areas, such as lower Msimbazi, the flood mitigation study is designed such that a majority of flood mitigation actions can be identified early on under the "quick wins" report. These represent generally well-known measures for which the team has high confidence for a return on investment. As better risk data becomes available, assumptions can be updated and new analyses can be undertaken on complementary measures as well as more refined cost-benefit calculations.

Credit: Chris Morgan - World Bank

Ardhi students working together to address obstacles in mapping

RESULTS

7

Results Overview

The results framework includes three targets at impact level that intend to make urban areas in Tanzania more resilient to climate risk:

1. Increased number of wards benefitting from or implementing flood risk-mitigation measures identified in ward-level risk management plans;

2. Improved capacity of government agencies to identify, reduce, finance, and cope with disaster risks; and

3. Reduced modelled economic losses in the Msimbazi Valley as a result of the structural mitigation measures designed.

At outcome level, with the intent to ensure urban local governments in Tanzania utilize improved evidence base and urban planning to strengthen resilience to climate-related hazards, the results framework includes two targets:

1. Number of persons benefitting from improved flood resilience as a result of ICF support; and

2. Extent to which ICF intervention is likely to have a transformational impact.

Intermediate results indicators, segregated into the three pillars of priority for program implementation, are also included, as well as specific indicators related to program administration and recipient-executed works. These are detailed in Table 7 below.

Activities implemented during FY17 nearly achieved all goals set by the framework, with a few exceptions and changes detailed in the following paragraphs.

Indicator 1.2 has not been measured by the means originally envisaged due to delay in issuing the Risk Management Index evaluation. This delay occurred because of the need to thoroughly consult and engage government counterparts in the methodology and

objectives of such an annual exercise. The first year target value is for incipient.

An expert assessment of the emergency management and response authorities as well as the national disaster risk management plan concluded that the risk management capacity in 2017 is incipient to moderate. This is not the exact same methodology; it is proposed, however, that this assessment stand as an interim measure, whilst a more thorough excise is developed and applied retroactively in 2018.

Indicator 1.3 is proposed to be modified from the Probable Maximum Loss from a 1–100 flood event to the Expected Annual Loss from flooding across all modelled floods based on 2017 exposure. This event would better capture short return period losses as well as major events, and better represents the objective of the indicator. It also aligns with the metric published in the April 2017 report on Msimbazi flood losses by Anchor Environmental Consultants.

Indicator 3.1, "Catalogue of existing structured exposure and hazard data," is partly completed. This particular task for a catalogue of hazard and exposure data is in fact not as discreet as first described, with several distinct steps involved: data model, exposure mapping, and hazard baselines.

The data model for exposure data (i.e., people, buildings, and infrastructure and their associated vulnerabilities) has been developed as a collaborative and multidisciplinary process. This has exceeded the original expectations in terms of scope and stakeholders, but it is considered worthwhile for the long-term sustainability of the process. The team worked with disaster risk experts (i.e., Deltares, British Geological Survey, UCL), municipal councils, and GIS experts to develop a model that incorporates both vulnerability and disaster risk dimensions of exposure, as well as key municipal service drives such as address, meter numbers, property typologies, and age. This was

done to mainstream the risk considerations into the data collection processes of municipal service providers.

Exposure mapping has been implemented through building and drainage digitization and classification in Dar es Salaam, and hosted on a geonode at the Commission for Science and Technology. Additional geonodes for catalogue hosting are planned at PO-RALG, PMO-DMD, and Ardhi University and State University of Zanzibar.

Hazard layers are partially assembled but not yet catalogued onto the geonodes.

Aerial imagery of rural surrounding of Dar es Salaam

Results Framework

TABLE 7: FY17 RESULTS FRAMEWORK

INDICATOR	BASELINE	FY17	DATA COLLECTION AND REPORTING			COMMENT
			FREQUENCY	DATA SOURCE	RESPONSIBILITY	
Impact Indicators: Urban areas in Tanzania are more resilient to climate risk						
1.1 Number of wards benefiting from or implementing flood risk-mitigation measures identified in ward-level risk management plans	0	0 / 0	Annually	Regional Administrative Secretary	PO-RALG and ULGAs responding to expert-led survey	This indicator tracks the extent to which structural and non-structural risk-reduction measures are identified in local government plans and implemented
1.2 Improved capacity of government agencies to identify, reduce, finance, and cope with disaster risks	Low	Incipient / NA	Annually	Disaster risk management index	PO-RALG and ULGAs responding to expert-led survey	Weighted index of advances made in intermediate outcome indicators for Pillars 1, 2, and 3. Assessment based on Dar es Salaam and including measures for financial protection.
1.3 Modelled economic losses in the Msimbazi Basin reduced as a result of structural risk-mitigation measures designed	N/A	2017 baseline PML without works	Annually	Probabilistic Flood model	PO-RALG and ULGAs resposibile for expert-led survey	An expected reduction in the Probably Maximum Loss (PML) for the 1-100 return period flood in Msimbazi basin, based on 2017 exposure, when comparing 2017 interventions and TURP supported
Outcome Indicators: Urban local governments in Tanzania utilize improved evidence base and urban planning to strengthen resilience to climate-related hazards						
2.1 Number of persons benefiting from improved flood resilience as a result of ICF support	0	0 / 0	Annually	Flood risk and exposure model	World Bank	Population estimate based on census data, household data, associated with dwellings and businesses exposed to flood hazards, and modelled to expect reduced losses as a result of ICF interventions (e.g., new/improved drains, early warning systems, and/or flood shelters) (Dar es Salaam only)
2.2 Extent to which ICF intervention is likely to have a transformational impact	0	1 / TBD	Annually	Annual Review	DfID	Narrative report made during DfID annual review process. A score between 1 and 4 will be assigned.

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INDICATOR	BASELINE	FY17	DATA COLLECTION AND REPORTING			COMMENT
			FREQUENCY	DATA SOURCE	RESPONSIBILITY	
Intermediate Result Indicators						
Pillar 1: Risk Identification						
3.1 Improved access to climate risk information in Dar es Salaam	Not yet available	Catalogue of existing structured exposure and hazard data completed / data model and exposure complete, hazard partially complete	Annually	Based on indicators 3.1 - 3.4, 4.3, and 4.6		A geospatial data portal will serve as a repository for information at both national and subnational levels
3.2 Exposure and risk assessments applied in major cities (cumulative number)	0	Pilot satellite-based exposure monitoring service launched / Confirmed launched with Planet Labs and EastView Geospatial	Annually	Climate risk geonode repository	PO-RALG	Standardized exposure, hazard, and risk monitoring tools will be developed first as pilots and applied across urban centres. These services will serve as a monitoring tool for investment needs (build-up of vulnerable population in hazard areas), baselines for exposure populations, and a support tool for development and improved land use planning.
Pillar 2: Risk Reduction						
4.1 Cumulative number of people directly engaged in climate risk-reduction activities - number and percentage of females (WB core indicator)	0	0 / 50 (of which 25 female)	Annually	Participant lists and registrations from trainings and events	World Bank	This indicator is a targeted and High-Intensity ICF Indicator that tracks the training of individuals in understanding risk information, and analyzing and applying risk data
4.2 Community risk-reduction plans developed using improved risk information (cumulative number)	0	0 / 0	Annually	Ward Offices and LGAs	World Bank	This indicator directly tracks the progress of risk-reduction planning on a community level

INDICATOR	BASELINE	FY17	DATA COLLECTION AND REPORTING			COMMENT
			FREQUENCY	DATA SOURCE	RESPONSIBILITY	
4.3 Government risk-reduction activities	0	Concept note approved for large grant (<$20 million) / Concept Memo Approved	Annually	Secretariat	World Bank	This indicator tracks: Progress towards signing of grants (will have own results framework) agreements; Evaluation for government-executed works

Pillar 3: Emergency Preparedness and Management

INDICATOR	BASELINE	FY17	FREQUENCY	DATA SOURCE	RESPONSIBILITY	COMMENT
5.1 Approved emergency contingency plans for Tanzanian cities (cumulative number)	0	Preparation of at least one initiated / Dar es Salaam ERP Prepared	Annually	ULGA reports	ULGAs and World Bank	This indicator tracks: Municipalities adopting flood-response plans; Scenarios of events and affected areas and vulnerable groups

Program Administration and Recipient Executed Works

| INDICATOR	BASELINE	FY17	FREQUENCY	DATA SOURCE	RESPONSIBILITY	COMMENT
6.1 Program management, knowledge, and communications	0	Launch event held, program outputs review/ Launched May 30, 2017	Annually	Secretariat	World Bank	This indicator tracks: Milestones; Key reports; Events; Outputs expected

RISKS

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The risk assessment presented during the program concept review is updated in Annex II. The main change is an upgrade in the risk rating from moderate to substantial.

The key changes to the risk rating involve the following:

Stakeholder engagement and coordination
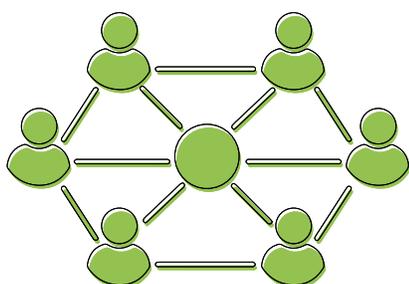
The Urban Resilience program is tending towards greater complexity with many stakeholders involved at local, municipal, and national levels. It will be increasingly difficult to manage expectations on timelines, priorities, and resource allocations across the spectrum. The strategy of the team is to engage and empower national champions; the prime minister's office Disaster Management Department, and the president's office Regional Administration and Local Government are key conveners and coordinators across the national system and with municipal governments. In addition, certain specialized agencies, such as Tanzania Meteorological Authority, Ministry of Lands, and National Environmental Council will be key in specific work areas. The challenge is to maintain clear coordination and consultation with stakeholders of divergent priorities or whose goals may change over time.

Budgetary cuts, uncertainty, and sequencing

The program has already experienced a cut of approximate USD $7.5 million. The deterioration in the GBP-to-USD exchange rate has also compounded the situation. When the TF agreement was signed, the budget envelop was estimated to be USD $55 million; this is now projected at USD $37 million. Whilst cuts to the planned activities have been made, these currently represent the minimum necessary cuts such that the overall program remains ambitious for the new resource envelop. Exchange rate risks remain, and should the GBP fall further against the USD, further activities will need to be scaled back and increase risk to development objectives.

Also at risk is the sequencing of funds flow. When originally designed, the TF program envisaged a slow build-up of commitments and increasing transfers from the donor to the Bank in line with projected expenditures. In practice, however, both the transfer schedule and the commitment schedule are

under pressure to front-load resources. Front-loading in the early stages of the program is possible, but carries a risk that commitment decisions are made under limited data and feedback. A further constraint that was not foreseen during design is the restriction on making commitments during January to March each year. This time period represent the pre-flood season, during which unforeseen needs relating to preparedness may arise. Overall the reduced budget, front-loading of commitments, and restrictions on January to March contracting, reduce the flexibility of the program to respond to shocks.

Environmental, social, and security

TURP tackles some of the greatest challenges in the Msimbazi Valley relating to flood risk and risk management. The first year has identified that risks related to working in the target areas may be significant. These relate to the social and livelihood complexities, environmental concerns, and possible adverse effects of a major flood or other similar emergency.

Social issues in the Msimbazi center on the demolitions of encroaching buildings or large scale resettlement activities, and unsuccessful historic resettlements in the area as well as the provision of alternative livelihoods for the various communities making a living from the river (e.g., sand mining, urban farming). This program does not envisage engaging directly in any demolition or resettlement activities; the issue is a sensitive one, however, that must be treated with care. There is a risk to the program if community grievances are not well managed and it is of paramount importance that safeguard policies be followed.

The environmental concerns center on the river basin and activities linked to dredging of the rivers and disposal of waste materials. Erosion and environmental specialists may be needed to review mangrove and other habitat concerns, and if needed an environmental impact assessment will be required from the government before proceeding with any work.

LOOKING AHEAD

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The second year of TURP anticipates a shift into investment operations, with the largest part of commitments being a government-executed grant. Preparation of the grant has begun and Bank management has approved a Dar es Salaam Flood Risk Management Project, which is the working title for the Msimbazi-focused flood mitigation work as well as city-wide capacity building and equipment needs. It should be noted that the entire grant amount (estimated GBP 19,200,000) is now reflected as a FY18 commitment. Although disbursements by the government are expected from 2018 to 2021, the Bank's schedule of transfers to the government has not been determined yet. For the Bank to process this grant, the TURP trustee account must either receive the projected commitment in full or the administration agreement must be amended to adopt a cost-plus structure. This issue should be addressed in the next SC meeting.

Another new workstream for FY18 will be the engagement of civil society as a complement to the large investment package. This activity is currently listed as a recipient-executed Civil Society Basin Restoration child activity; the team is assessing the option to proceed as Bank executed, however, which may afford more flexibility and efficiency. A recommendation will be presented at the next SC.

The remainder of the Bank-executed technical assistance is expected to continue at greater pace with significant scale-up of Pillar 2 activities, which are planned to make use of newly available data and methods. Testing and training on flood early warning systems will also begin in the next year.

Table 8 presents the projected workplan activities for the next year in GBP. Approximately GBP 24.2 million in commitments is the target, of which GBP 14.6 million should be disbursed within the year. These estimates will guide the program management and funds transfers, however the contracts will be signed in either USD or TZS and so actual amounts are subject to revisions. A major portion of these funds depends on the approval and timing of the Dar es Salaam Flood Risk Management Project.

TABLE 8: DISBURSEMENT PLAN FOR FY18 IN GBP

ACTIVITY	FY17 DISBURSEMENT	FY18 DISBURSEMENT	FY18 COMMITMENTS
Total	**£1,286,000**	**£14,611,000**	**£24,241,000**
PA Program Management	**£110,000**	**£60,000**	**£100,000**
TA Program Coordination & Quality Assurance	£60,000	£30,000	£50,000
Knowledge Sharing	£50,000	£30,000	£50,000
Pillar 1 - Risk Identification	**£435,000**	**£1,740,000**	**£1,335,000**
Risk Evaluation	**£375,000**	**£1,660,000**	**£1,255,000**
Historical Events Inventory	£0	£90,000	£90,000
Risk Management Index	£10,000	£145,000	£150,000
Vulnerability Index	£5,000	£70,000	£80,000
Elevation Model and Exposure Mapping	£50,000	£100,000	£80,000
Land Use and Structure (Community Mapping)	£50,000	£385,000	£35,000
Satellite Data Mapping Cities	£100,000	£100,000	£80,000
Hydrological Study	£100,000	£150,000	£10,000
Spatial Data Management & Hosting	£50,000	£120,000	£145,000
Dar es Salaam Probabilistic Flood Risk Evaluation	£10,000	£500,000	£585,000
Research Program on Poverty and Disaster	**£60,000**	**£80,000**	**£80,000**
Pillar 2 - Risk Reduction	**£343,000**	**£1,330,000**	**£1,535,000**
Risk Mitigation Planning	**£160,000**	**£500,000**	**£570,000**
Msibmazi Flood Risk Infrastructure Diagnostic	£80,000	£140,000	£10,000
Other just-in-time technical assistance	£50,000	£100,000	£150,000
Land use planning and building codes	£0	£60,000	£90,000
ICT Systems for Risk Management (Drains Maintenance)	£30,000	£200,000	£320,000
Msimbazi River Revitalization	**£60,000**	**£175,000**	**£340,000**
Msimbazi charrette and area plan	£35,000	£75,000	£190,000
Msimbazi River Basin Management Plan	£25,000	£100,000	£150,000
Community Risk Reduction	**£40,000**	**£245,000**	**£285,000**
Participatory climate risk plans, training, behavior change	£15,000	£200,000	£250,000
Socioeconomic study	£25,000	£45,000	£35,000
Urbanization Review - Resilience Planning	**£8,000**	**£75,000**	**£75,000**

ACTIVITY	FY17 DISBURSEMENT	FY18 DISBURSEMENT	FY18 COMMITMENTS
Pillar 3 - Emergency Preparedness and Response	**£225,000**	**£895,000**	**£1,100,000**
Emergency Planning and Response	**£225,000**	**£445,000**	**£700,000**
DARMAERT contingency plan and SOP	£55,000	£90,000	£65,000
equipment	£100,000	£10,000	£10,000
Municipal contingency plans	£0	£75,000	£150,000
Community response plans	£50,000	£150,000	£295,000
Training, exercises, and drills	£0	£70,000	£130,000
Damage assessment capacity building	£20,000	£50,000	£50,000
Early Warning Systems	**£0**	**£450,000**	**£400,000**
Local Early Warning and Early Action	£0	£250,000	£200,000
Forecast and Flood Advisories	£0	£200,000	£200,000
Resilience Academy	**£75,000**	**£335,000**	**£265,000**
Curriculum for Risk Mapping	£50,000	£100,000	£70,000
Resilience Academy Risk Awareness and Prevention	£10,000	£160,000	£110,000
Capacity building and training in risk data and systems	£15,000	£75,000	£85,000
Recipient Executed Works	**£0**	**£10,400,000**	**£19,900,000**
Dar es Salaam Flood Risk Management Project	**£0**	**£9,600,000**	**£19,200,000**
Equipment	£0	£400,000	£400,000
Feasibility study and designs	£0	£500,000	£900,000
Msimbazi Works	£0	£8,300,000	£17,000,000
Capacity Building	£0	£100,000	£400,000
Safeguards	£0	£300,000	£500,000
Civil Society Basin Restoration	**£0**	**£800,000**	**£700,000**
River restoration	£0	£400,000	£300,000
Cleanest MTAA program scale-up	£0	£400,000	£400,000
Secretariat	**£173,000**	**£186,000**	**£311,000**
MoU launch event	£0	£25,000	£25,000
International conference series	£60,000	£25,000	£150,000
Communications plan development	£4,000	£5,000	£5,000
Steering committee meetings	£1,000	£1,000	£1,000
Communications, websites, and media	£7,000	£5,000	£5,000
M&E baseline data collection	£1,000	£5,000	£5,000
Publications (update resilience report/editing/printing)	£10,000	£10,000	£10,000
Annual review	£10,000	£10,000	£10,000
Staffing	£60,000	£100,000	£100,000

FINANCIALS

10
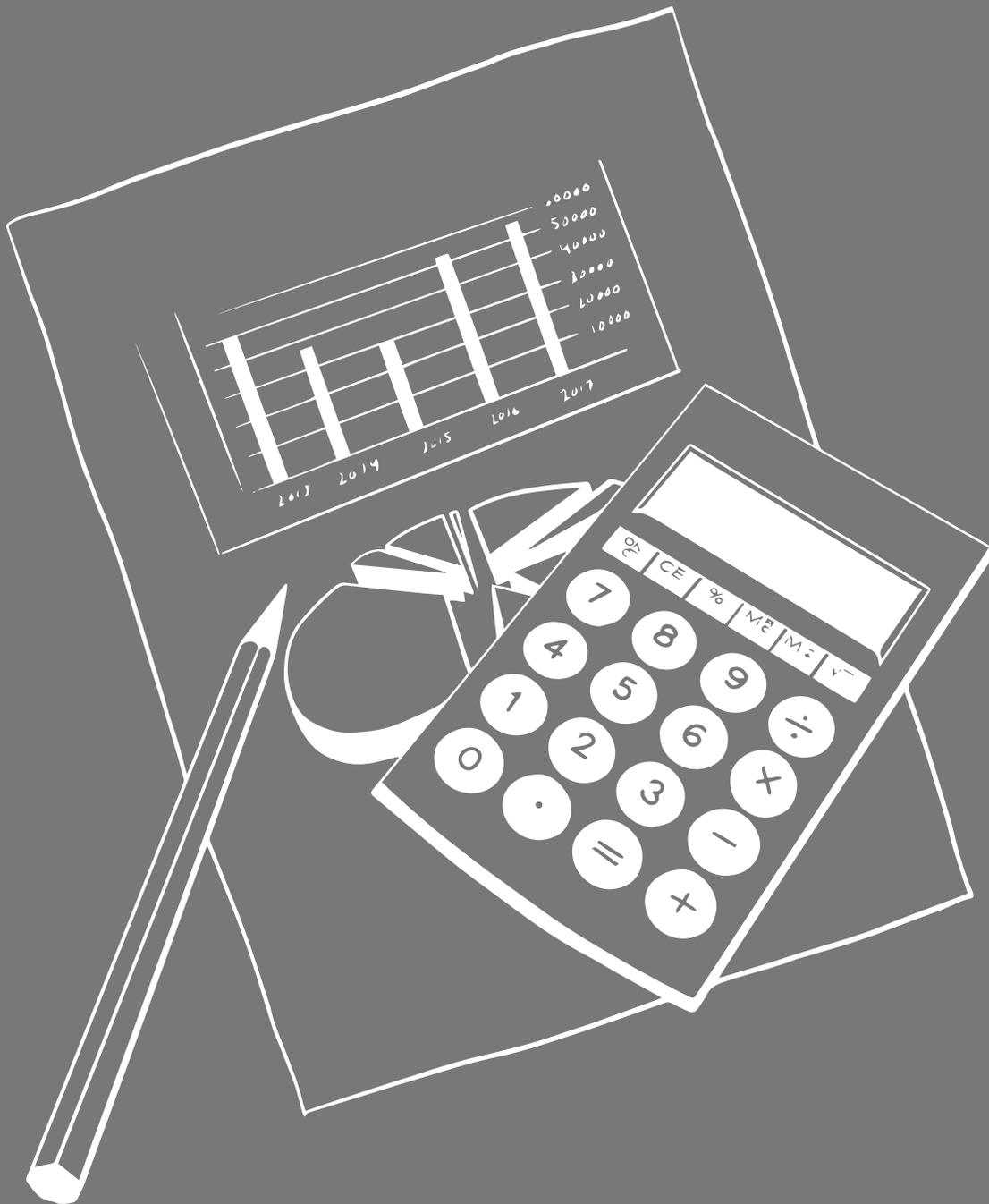
ALLOCATION OF TURP PROJECT PILLAR FUNDS IN FY17

Financial Overview

Total contribution from the TF in FY17 amounted to USD $4.7 million, with $439,000 paid in 2016 and $4.3 million paid in 2017. Total project disbursements reached USD $1.3 million and an additional commitment of $1.9 million. This left a balance of USD $1.4 million in contributions at the end of FY17. As this report comes at the end of the first full financial year since program inception, these contributions, disbursements, and commitments are also cumulative totals.

15%
$570,000

12%
$480,000

31%
$1,220,000

42%
$1,630,000

■ Pillar 1   ■ Pillar 3
■ Pillar 2   ■ Resilience Academy
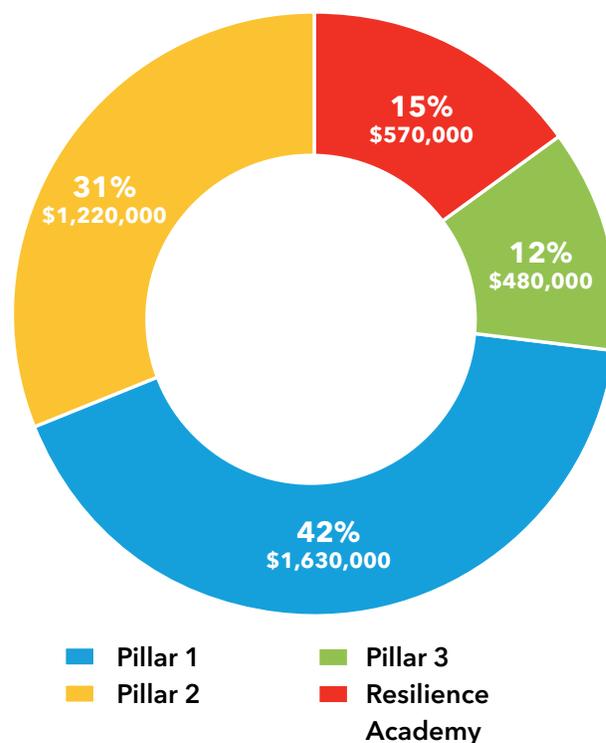
TABLE 8: DISBURSEMENT PLAN FOR FY18 IN GBP

*AMOUNT AS INDICATED IN CLIENT CONNECTION, NOT YET AMENDED TO REFLECT JUNE 12, 2017 DFID BUDGET CUT

	REPORTING PERIOD ENDED JUNE 30, 2017 (USD)
Funds Committed by DfID	$44,916,550*
Funds Received from DfID	$4,798,030
Total Funds Available	$3,246,335
Total Funds Committed or Allocated	$4,700,000
Total Disbursement	$1,333,655
Cash Balance at the End of FY17	$1,331,287
Funds Available for Commitment and/or Allocation	$517,440
Outstanding DFID Commitments at End of FY17	$40,118,520

Disbursements

TABLE 10: SUMMARY OF DISBURSEMENTS FOR BETF ACTIVITIES

	BETF ACTIVITY	TOTAL BUDGET ALLOCATED (USD)	FY17 DISBURSED	COMMITTED	AVAILABLE	% DISBURSED + COMMITTED
Pillar 1						
TF0A3559	Risk Evaluation and Information Management	1,480,000	300,000	850,000	330,000	78%
TF0A4139	Urban Exposure Mapping Data Services	150,000	150,000	0	0	100%
Total Pillar 1		**1,630,000**	**450,000**	**850,000**	**330,000**	**94%**
Pillar 2						
TF0A4691	Risk Mitigation Planning	850,000	90,000	410,000	350,000	59%
TF0A3571	Msimbazi River Revitalization	265,000	19,000	16,000	230,000	13%
TF0A4575	Urbanization Review - Resilience Planning	105,000	79,000	0	26,000	75%
Total Pillar 2		**1,220,000**	**188,000**	**426,000**	**606,000**	**50%**
Pillar 3						
TF0A3828	Emergency Planning and Response	480,000	300,000	89,000	90,000	81%
Total Pillar 3		**480,000**	**300,000**	**89,000**	**90,000**	**81%**
Resilience Academy						
TF0A4238	Urban Resilience Academy	570,000	5,000	400,000	164,000	71%
Total Resilience Academy		**570,000**	**5,000**	**400,000**	**164,000**	**71%**
Program Administration						
TF0A3742	Program Technical Support, Quality Assurance	230,000	154,000	24,000	2000	77%
TF0A2973	Secretariat & Conferences	500,000	225,000	84,000	191,000	62%
Total Administration		**730,000**	**379,000**	**108,000**	**193,000**	**67%**
OVERALL TOTAL Child Activities		**4,630,000**	**1,322,000**	**1,873,000**	**1,383,000**	**69%**

ANNEXES

11

ANNEX I - COMMUNICATIONS

Communication products

Preliminary efforts to establish and improve communications of TURP activities have been centered around the development of an outward-facing website and an internal platform for collaboration. Beyond those initiatives, a select few communication products have secured valuable exposure for the program:

- The Ramani Huria Atlas for Flood Resilience was published in October 2016 and launched at the Ramani Huria Closing Workshop the following month. The Atlas received praise from all workshop attendees, but particularly from its target audience, Dar es Salaam ward executive officers. It has been reported that these community officials are making great use of the data contained within the products, including general maps, drainage maps, and flood inundation maps for 21 city wards. The publication has now been made available online via the digital publishing platform, issuu, where it has received 3,277 impressions to date.

- The TURP-funded Zanzibar Mapping Initiative was featured in a World Bank video titled, "Mapping Zanzibar using Low-Cost Drones".This video went viral on Facebook, receiving over 370,000 views, 1,800 likes, and 870 shares.

A summary of key World Bank communications products related to TURP FY17 can be found in Table 11.

TABLE 11: KEY COMMUNICATION PRODUCTS

OUTPUT	CATEGORY	LOCATION
Programme Collaboration for Development	Website	https://collaboration.worldbank.org/groups/tanzania-urban-resilience-online-community
Programme Website	Website	http://www.worldbank.org/en/programs/tanzania-urban-resilience-program
Ramani Huria Atlas for Flood Resilience	Report	https://issuu.com/ramanihuria/docs/ramani_huria_atlas_final
Problems of Population Growth and Climate Change Converge in Dar es Salaam	Feature Story	http://www.worldbank.org/en/news/feature/2017/05/31/problems-of-population-growth-and-climate-change-converge-in-dar-es-salaam
Ramani Huria Project Website	Website	http://ramanihuria.org/
Urban Resilience for Tanzania	Video	https://www.youtube.com/watch?v=cmHwiOhd5_0&feature=youtu.be
How Tanzanians are Mapping their Own City to Solve Flooding	Video	http://www.worldbank.org/en/news/video/2016/11/01/how-tanzanians-are-mapping-their-own-city-to-solve-flooding

Events

The programme team organized and hosted a number of events over FY17 to engage implementation partners, facilitate knowledge transfer, encourage collaboration, and showcase progress.

RAMANI HURIA CLOSING WORKSHOP

The Ramani Huria Closing Workshop took place on November 7 and 8 at the National Museum in Dar es Salaam. This workshop provided community mappers, government officials, and experts in the field with an opportunity to showcase the innovative pilot project's outputs, reflect on methods used, and elicit opinion on the future of mapping for development in Tanzania

URTZ: BUILDING URBAN RESILIENCE IN TANZANIA

From May 31 through June 2, 2017, the TURP technical launch conference brought 350+ government officials, donors, and experts together to imagine a future of resilient urbanization in Tanzania and surrounding nations. An interactive agenda of technical sessions on day two were particularly useful in laying groundwork for collaborative implementation of programme activities.

The launch was attended by 75 journalists from across the continent who learned how to better report on issues of urbanization. The journalists' articles were featured by news agencies spanning an extensive geographic and linguistic territory. Some of these articles included:

- worldbank.org/en/news/feature/2017/05/31/problems-of-population-growth-and- climate-change-converge-in-dar-es-salaam

- http://groupelavenir.org/en-tanzanie-dart-met-en-place-un-mode-de-transport-qui- prend-en-compte-laspect-environnemental/

- http://www.herald.ng/world-bank-calls-improved-infrastructure-african-cities/

ANNEX II - UPDATED RISK ASSESSMENT

TABLE 1: RISK IDENTIFICATION ACTIVITY SUMMARY

RISK AREA	RISK RATING (L, M, S, H)	RISK DESCRIPTION	UPDATE AND REMARKS
Strategic			
Alignment with strategic objectives TF outcomes	L	TF may not align with the country strategies nor meet client's demand. The outcomes of the TFs may not contribute to the outcomes of the CPF Result Framework on urban services and environment and natural resources.	Prime minister's office Disaster Management Dept and president's office Regional Administration have been invited to SC. A Technical Advisory Committee including 10 agencies also created. The new Country Partnership Framework (CPF) is being reviewed for climate resilience considerations. The recipient-executed components of TF shall be appraised by management in view of CPF priorities.
Stakeholder			
Coordination Approval Delays	S	There is a lack of coordination and communication amongst the TTLs of TF-financed activities, and between the TTLs and the TF manager. The donor's approval of the annual work program may be delayed.	A SC is established with representation from the GoT, World Bank, and DFID. Annual work program will be discussed and agreed for the following year. Reports will be submitted from TTL to TF manager before the annual SC meeting. Most themes and activities are identified in advance and donor agreements obtained during the TF preparation. Any change will be discussed early with the donor to facilitate in time approval of changes.
Financial			
Donor commitment Fiduciary	S	The donor may fail to contribute the funds as committed due to unexpected shortfall of funds. Misuse of funds in RETF activities.	Funds approved by DFID ministers on 17 September 2015. Cut of GBP 5,767,556 communicated by donor June 13, 2017. Further cuts possible. All RETF activities will follow the Bank's procurement procedures. Ongoing DfID and World Bank oversight, e.g., through supervision missions and procurement reviews, will monitor risk.
Operational			
Staffing levels	M	Technical staff and management changeover in the field could impact priority of the TF activities.	A TF operational manual has been drafted to clarify and obtain consensus on more detailed roles and responsibilities.

RISK AREA	RISK RATING (L, M, S, H)	RISK DESCRIPTION	UPDATE AND REMARKS
Relationship*			
Change in government priorities	L	The government is developing a national DRM framework, which may present demand for TF resources outside of urban flood focus area.	The program believes that the main thread to sustainable growth in Tanzania is urban resilience and will communicate this based on data. Nevertheless, TURP may face pressure to adjust to additional priorities of government.
Security*			
Emergency	L	An emergency declaration either in Dar es salaam or nationally, due to natural hazard (flood, earthquake) or other, could result in major restructuring of the program and risk to the sustainability of investments prioritised so far.	The program aims to develop as much preparedness as possible in the short term and to communicate the value of investing in long term risk reduction.
Social and Environmental*			
Social Safeguards Environmental Risk	M	Continued GoT-led demolitions of structures in Msimbazi Valley and reputational risk to the World Bank/DfID. A number of flood mitigation activities considered under the program, such as dredging, removal of dredged material, vegetation removal, and construction of retention basins, may have environmental impacts on local flora and fauna. Additionally, additional studies and surveys may contribute to program delays in achieving objectives.	World Bank country director and CMU team have met with the ministers from MLHHSD and NEMC to inform them of the potential risks to the Bank's portfolio from the ongoing demolitions. WB social safeguards policies will apply to any TURP activities. The program will identify if environmental impact assessments are necessary as early as possible and design flood mitigation measures in the context of local environment and ecosystem services. In all cases, WB environmental safeguard policies will be followed.
Overall Rating	**S**		

*=NEWLY ADDED RISK OR RISK TAKING

// Urban Resilience Annual Report 2017

ANNEX III-DELIVERY CHAIN

PLEDGED >

DFID
USD 35M

TURP
TRUSTEE
ACCOUNT

ALLOCATED >

COMMITTED >

Small Risk
Reduction
Actions Grant

Government
Executed Risk
Reduction Grant

PILLAR 1
Risk Information
and Data
Management

- Risk Evaluation +
Info MGMT
USD 1,480,000
  - International
  Consultants
  USD 43,200
  - Tanzanian
  Consultants
  USD 43,300
  - Humanitarian
  Open Street Map
  Team, USA
  USD 524,900
  - DELFT University
  of Technology,
  Netherlands
  USD 199,700
  - Ordinance
  Survey
  International, UK
  USD 35,000
  - STITCHING
  DELTARES,
  Netherlands
  USD 45,000

- Urban Exposure
Mapping Pilots
USD 150,000
  - International
  Consultants
  USD 12,100
  - Tanzanian
  Consultants
  USD 22,200
  - Planet Labs, USA
  USD 60,000
  - DARES
  Technology, Spain
  USD 15,800

PILLAR 2
Risk Reduction
Measures

- Urbanization
Review
USD 105,000
  - International
  Consultants
  USD 21,400

- Msimbazi River
Revitalization
USD 265,000
  - International
  Consultants
  USD 16,400

- Risk Mitigation
USD 850,000
  - International
  Consultants
  USD 112,100
  - Tanzanian
  Consultants
  USD 44,800
  - COWI TANZANIA
  USD 524,900

PILLAR 3
Preparedness
and Emergency
Management

- Emergency
Planning +
Response
USD 480,000
  - International
  Consultants
  USD 16,000
  - Tanzanian
  Consultants
  USD 63,400
  - AGLEX
  TANZANIA
  USD 128,500

RESILIENCE
ACADEMY

- Resilience
Academy
USD 570,000
  - International
  Consultants
  USD 53,700
  - Tanzanian
  Consultants
  USD 18,900
  - Humanitarian
  Open Street Map
  Team, USA
  USD 225,000
  - ITC, Netherlands
  USD 205,600

SECRETARIAT

- Secretariat +
Conferences
USD 500,000
  - International
  Consultants
  USD 88,850
  - ULTRA DESIGNS,
  USA
  USD 3,300

- Technical
Reviewers +
Design
USD 230,000
  - International
  Consultants
  USD 45,700