Workshop output note
Climate risk: Data and modelling for Africa

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This note summarises the objective, activities and next steps from the workshop held at Santam in Cape Town, South Africa on 20 February 2020 – hosted by Cenfri, FSD Africa and InsuResilience.

The workshop was held in response to a need, identified by underwriters at the UNEP-PSI workshop in Lagos last year, to bring together a range of stakeholders to collaborate to mitigate risks and losses faced by communities, businesses and governments as result of climate-change driven disasters in Africa. Many of these disasters are driven by extreme weather events, including variability in rainfall patterns. Since 2000, floods have been responsible for 64% of disaster events in Africa and have affected 72 urban areas (ActionAid, 2016; CRED Crunch, 2019)[1]. Rising sea levels also pose a significant threat to coastal populations who will face severe financial losses. Butterfield et al. (2017) estimate that by 2100, seven countries[2] will face damages of more than USD1 billion per year under a mid-range sea-level rise scenario (Butterfield et al., 2017).

The rate of African urbanisation also exacerbates the effects of climate disasters. The World Bank estimates that 60% of all Africans will live in cities by 2050. However, governments are unlikely to implement sufficient measures, such as effective waste management or drainage systems, to accommodate the increase in urban populations and the change in weather patterns. The lack of these risk mitigation measures will further exacerbate the damage from floods (Salami et al., 2017). This is problematic, as African countries are not resilient enough and lack the resources to support post-catastrophe recovery initiatives.

Collaboration among multiple stakeholders is needed to strengthen African countries' resilience. Many stakeholders have a significant interest in solving climate risk. In 2018, climate-related disasters caused economic losses estimated at USD1.3 billion, of which only USD0.2 billion was insured. These losses are substantial. Preparing for future climate-change-driven disasters requires close coordination between different stakeholders. In particular, underwriters, governments, cities, development organisations, experts and academics need to coordinate in various ways. This collaboration is necessary to share data and to create new models to better understand, underwrite and manage a wide range of risks in an ever-changing environment.

Starting a dialogue: Multisector workshop to understand and build collaboration around climate risk transfer and adaptation

The workshop brought together stakeholder groups and brainstorm opportunities for collaboration:

- **Underwriters** can strengthen the resilience of countries in the face of climate change by transferring risk to recover from disasters, by building resilient assets, by underpinning

1 Almost half of the disasters (119 out of 257) that required humanitarian assistance in SSA (2000 – 2015) occurred in urban areas, according to the ReliefWeb website (ActionAid, 2016).

2 Algeria, Cameroon, Egypt, Libya, Morocco, South Africa and Tunisia

infrastructure through effective investment and underwriting approaches and by incentivising and capacitating risk management systems.

- **Government/city officials** are responsible for planning and maintaining cities and infrastructure, developing legislative and policy frameworks that incentivise adaptation, encouraging and coordinating action between various stakeholders at the regional/sub-regional level, catalysing funding for cross-sectoral initiatives and addressing market failures and barriers to adaptation efforts.
- **Academics and experts** provide scientific advice and analysis on climate change adaptation, increasing the understanding of effective responses to the complex socioeconomic and environmental impacts of climate change and helping other stakeholders to develop the strategies, tools and policy advice needed to respond effectively.
- **Development partners** can provide financial support, knowledge and other resources to facilitate adaptation efforts, and can initiate projects, programmes, or technical assistance efforts that support local or regional adaptation efforts.

The workshop aimed to (i) strengthen collaboration between these four stakeholder groups; (ii) identify the main challenges and opportunities in tackling climate-related disasters in Africa; and (iii) identify multi-sectoral and fundable projects that can be taken forward following the workshop. Table 1 outlines the number of organisations and attendees per stakeholder group.

Table 1: Climate risk workshop attendees

Stakeholder group	Number of organisations	Number of attendees
Underwriters	9	18
Government/city officials	4	4
Experts	7	8
Development partners	6	8
Total	*26*	*38*

Main challenges faced in addressing climate risk in Africa

The first half of the day centred on participants sharing the challenges they face in the preparation and management of climate-related disasters. The following three main challenges were identified across the different stakeholder groups that attended.

1. ***Data and model gaps hamper stakeholders' ability to manage disaster risk.*** It is difficult to calibrate risk models, especially for catastrophes, when there is insufficient data on vulnerability and exposure to risks. In addition, not all data is accessible across sectors or between different types of organisations, due to different data requirements and capabilities.

    - **Underwriters** highlighted that existing data and models that they use are increasingly ineffective at predicting losses from disasters and catastrophes, as the models that they use are historic as opposed to forward-looking. The uncertainty and inaccuracy prevent them from correctly estimating potential damages from weather-related perils, which in turn increases premiums or, even worse, makes the risk event uninsurable. Underwriters are therefore particularly interested in looking forward instead of backward. Additionally, insurers are particularly reliant on reinsurer and broker catastrophe models. However, there is often a lack of transparency in how these models are built or where the assumptions are.

- **Government and city officials** face difficulties in engaging with the various stakeholders, concepts and technical issues in climate science. In some instances, government and city officials may have too much data, but not the adequate skills to leverage the data for risk management purposes. Lack of understanding of climate science and the associated risks results in government and city officials not having a solid understanding of cascading and compounded risks, which further affects their ability to make informed decisions on how to manage disasters. In other instances, they may not have the resources to collect necessary data, which results in insufficient data and is further exacerbated by high rates of informality.
- **Climate experts** highlighted that data and models are often fragmented and require collaborative strategies to ensure sustainability and open access to data and models. In some cases, data gaps mean that certain use case are difficult to address, e.g. flash floods in cities. How to deal with compound risks and how to determine how all the different dimensions affect one another were highlighted as key challenges. Understanding the interplay between different risk factors and how they affect their models is key. For example, factors like urbanisation, land reform and immigration need to be factored into these models, yet this is not always done. Another challenge identified is that science is still evolving, which means that it cannot always speak to the use cases required.

2. ***There are few effective stories or narratives around climate-change-related disasters to help decision-makers to act.*** There are large uncertainties on how climate change will affect structures of societies and economies. One way to deal with this complexity or uncertainty is to create scenarios to evaluate how choices around adaptation will fare under uncertain future socioeconomic and climate conditions. These scenarios help stakeholders to make decisions in climate adaptation efforts. Effective stories or narratives that document the impact of adaptation efforts are equally important; storytelling is part of a response and can be used to learn how to adapt to future scenarios. However, stakeholders have different lenses through which they understand and assess climate risk and the consequences of climate-change-driven disasters. It will therefore be important to develop stories and narratives that speak to the incentives of the different stakeholders who have a role to play in climate change disasters.

   - **Government and city officials and underwriters** have limited incentive to write up stories about the effects of climate-change-driven disasters and the impact of their adaptation efforts. The Cape Town drought was an effective example of how these stories can be used as it is now being used to inform other initiatives within government.
   - **Climate experts** are technical experts and typically gather evidence to answer scientific questions. However, the incentive to turn their evidence into effective stories or narratives that speak to different stakeholder groups is often lacking.
   - **Development partners** want to use relevant climate-related data to develop a comprehensive and concise story that they can package and use in engagements with different audiences, including government and city officials. However, they are often the furthest removed from the data and adaptation efforts and so struggle to get the information required to develop stories.

3. ***There is a lack of collaboration and knowledge-sharing within the field of disaster risk management.*** Organisations tend to work in silos, with limited cross-sector and inter-sector sharing of knowledge and resources. This lack of collaboration prevents stakeholders from building collective resilience and developing risk mitigation measures and innovative solutions. In many instances, stakeholders are unsure about when, where and how they should involve different actors and at what level of the risk management process to do so.

- **Climate experts** find that there are issues around the knowledge value chain. Scientists gather and analyse evidence, but their findings fail to reach the relevant stakeholders, like government and city officials, and underwriters. The field of climate risk and disaster management lacks generalists who can pull the different threads together and link the scientists to the decision-makers and implementors. Additionally, climate experts lack information, such as how to value government assets, which is necessary to translate their scientific research findings into effective advice and policy support for governments. Where experts do provide support to governments, they can find it difficult to influence how governments manage risks. This may be because governments sometimes have conflicting incentives that limit their ability to effectively act on evidence.
- **Governments and cities** struggle at times to coordinate both between different departments and among different sectors. Some departments or ministries have relevant information, data and skills, but do not necessarily always share this information with other departments. This is partly due to governments and cities operating at very different levels in terms of skills, resources and leadership. This means that some government departments are in a better position to plan and act than others. Governments and cities also lack appropriate structures to collaborate with the private sector to exchange ideas and information and better manage risks. There is a need for platforms or structures that identify specific needs for collaboration between underwriters as risk management specialists and local governments responsible for planning and maintaining cities and infrastructure.
- **Development partners** struggle with knowing when and where to get involved in climate risk in Africa. It is too big of an issue for one institution to address on its own, so it will require collaboration between development partners. Understanding the needs of the different stakeholders involved and the key levers for change is key, but this requires consistent engagement and collaboration with key stakeholders. Importantly, structures and opportunities for this type of collaboration do not currently exist.
- **Underwriters** will benefit from collaborating with a range of stakeholders, including engineers, scientists and city government officials. Underwriters need engineers' inputs to calculate potential financial losses from damage to infrastructure due to climate-related disasters. They need input from scientists to estimate climate-related risks such as fire and flood risk. Furthermore, underwriters depend on their regulators to guide them, but currently the only guidance they receive is from the G20. Underwriters also struggle to effectively partner with governments and cities due to time delays, a lack of necessary data or a lack of general understanding of what financing options governments or cities can use.

Identifying opportunities to address climate risk in Africa

The second half of the day focused on identifying opportunities to collaborate to address climate risk in Africa. While several opportunities were identified, participants formed groups around two potential project ideas.

Group 1: African open risk models for priority hazards

This group discussed the potential of creating a proposal to develop data and open risk models for Africa for priority hazards. The idea would be to undertake country scoping to understand priority use cases, barriers, opportunities and key stakeholders for identifying priority or pilot countries or cities. The second step would be to undertake country pilots to build the locally relevant risk models

by using local inputs for the use cases identified, including capacity-building, gap assessment and the development of a data strategy. In the short term, developing flood risk maps for Lagos was identified as a key opportunity. Other countries of interest were Namibia, South Africa and Tanzania. The next step in this process is to develop a proposal and to identify funding opportunities. Cenfri has agreed to lead this approach in collaboration with group participants.

If you are interested in learning more about this idea or would like to get involved, please contact Mia Thom at **miathom@cenfri.org**.

Group 2: Developing the narrative around disaster risk management

The discussion centred on how to create the right stories around climate risk management for different partners. There is a need to link the climate change conversation to well-known concepts, such as the Sustainable Development Goals. People need tangible ideas that make climate change relevant for them and help them to make decisions. For example, discussions with a health minister should include metrics around the impact of climate risks on nutrition/disease outcomes. The group identified initiatives around which they can start to build a narrative:

- InsuResilience is in the process of setting up a data working group to drive climate conversations. They are going to present the scoping document to the group for feedback and input into how to address the topic.
- ARC is doing a cost-benefit analysis (open-source) for countries and suggested having a call to discuss their findings in Malawi and how it can enrich what we do going forward.
- There is potential to help build a narrative around the Lagos initiative.
- There is potential to assist local governments with developing a narrative.

Participants in this discussion committed to each focus on this aspect in their own work going forward.

Conclusion

Further climate-related risks are inevitable in Africa's future, and decision-makers need to do all they can to mitigate the risks faced by the population. For governments, underwriters, climate experts and the development sector, this means assessing the current portfolio of knowledge, resources, initiatives and opportunities to identify where they can be elaborated or improved. The workshop served to illustrate the strength of collaborative problem-solving and to kick-start the conversation on climate risk finance in Africa. The hosts hope that the attendees will carry that forward by encouraging, facilitating and partnering to share the knowledge, resources, skills and expertise needed to build a more resilient Africa.