Climate & Development Knowledge Network

FUTURE CLIMATE FOR AFRICA

POLICY BRIEF

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Key messages

- A pilot study on the use of medium to long-term climate information in the cities of Accra in Ghana and Maputo in Mozambique found that future climate information does not appear to be directly used in either city.
- Acknowledging the non-climate issues facing both cities was critical to identifying suitable climate change adaptation strategies and interventions.
- Future planning responses should not be determined solely by climate stressors, but by acknowledging the natural interrelationship of non-climatic and climatic factors.
- Decision-makers in these cities have expressed the need for improved observational data to support both current and future decision-making.
- Projects such as this provide a useful mechanism for investigating vulnerabilities and testing potential ways to address them. A more sustained co-exploration approach is required to investigate and implement on-the-ground action.

About FCFA

Future Climate for Africa (FCFA), is a new five-year international research programme jointly funded by the UK's Department for International Development (DFID) and the Natural Environment Research Council (NERC). The Programme will support research to better understand climate variability and change across sub-Saharan Africa. More information is available at http://www.nerc.ac.uk/research/funded/programmes/fcfa/ The programme will focus on advancing scientific knowledge, understanding and prediction of African climate variability and change on 5 to 40 year timescales, together with support for better integration of science into longer-term decision making. CDKN is responsible for coordinating the FCFA scoping phase – an 18 month exercise uses six case studies in sub-Saharan Africa to evaluate the needs of science users in the context of the capabilities and limitations of current science. This brief is the first in the series.

Using climate information to achieve long-term development objectives in coastal Ghana and Mozambique

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The cities of Accra in Ghana and Maputo in Mozambique currently face many development challenges, such as poor transport and drainage infrastructure, as a result of inadequate planning regulation and law enforcement. These weaknesses in governance and service provision already have profound implications for people's livelihoods. Climate change is likely to lead to flooding and coastal erosion in these cities, which will compound these development challenges.

As part of the Future Climate for Africa (FCFA) scoping phase, the authors assessed whether and how future climate information is being used to guide the planning and delivery of development programmes in the two cities. Methods included a desktop study, a preliminary survey and a participatory workshop in each city. In the process, a recently developed 'co-exploration' workshop methodology was further refined.

The workshop, held in Accra in June 2014, explored how multiple risks and stressors create vulnerability for city residents, using Dansoman in Accra and Costa do Sol in Maputo as test cases. In each of these cities, participants were a mix of academics, government officials, disaster risk reduction practitioners and climate impact modellers. Rather than beginning with the climate science and adopting a sector focus, the co-exploration approach began with a place-based, multi-stressor vulnerability analysis onto which layers of climate data were integrated to inform decision-making.

The cities' context

Accra and Maputo face similar development challenges. From a non-climate perspective, both cities have significant governance issues, which exacerbate the vulnerability of communities that are exposed to weather and climate hazards. These include perceived corruption in government processes, lack of law enforcement (particularly in the informal settlements), lack of communication across government departments and lack of concern or

government coordination with respect to building codes. These governance issues are seen as major impediments to progressing development plans in both cities, and they make planning for climate change even more difficult. Both cities also face significant vulnerabilities resulting from poor drainage and transport infrastructure. These have ramifications for livelihoods and services, with an amplified impact in the informal settlement areas.

As both cities are coastal, they are exposed to similar risks from climate change. They are vulnerable to the impacts of sea level rise, and population growth is putting increasing pressure on the coastal areas. Possible increases in rainfall would likely lead to more flooding and, if nothing is done to improve drainage infrastructure, this would have severe impacts on both cities.

Climate change decision-making on short- to medium-term timescales

In both cities, decision-making is predominately undertaken using historical climate information and seasonal forecasts. Climate projections for the next 5–40-years are not routinely used, but some decisions are informed by climate projections, which are usually provided through consultancy reports.

The workshop used a theoretical case study approach in which the common challenges from both cities were used to inform a multi-stressor decision-making process. During the workshop, adaptation options were identified for the case study areas in both cities. For Maputo, these included improving urban planning, incorporating new building codes that take into account climate change, designing and implementing communication strategies among stakeholders, and upgrading the drainage system. Participants from Accra identified similar adaptation options. These included redesigning and reconstructing the drainage and infrastructure systems, desilting the drains throughout the year, and promoting waste management through education, stronger leadership and law enforcement. In practice, each of these adaptation options would be implemented on varying timescales. Communication and education strategies, for instance, could be implemented within a fairly short time period (1–5 years), whereas upgrading the drainage system would require a longer-term project (5–40 years) entailing significant financial investment.

In the context of this workshop, no actual decisions were being made. Rather, the workshop provided a learning opportunity on the process of incorporating climate information into decision-making so that the approach could be repeated on the participants' return to their respective work places.

Barriers to climate science uptake

Both cities reported sparse data coverage and several temporal gaps in observed climate data. This lack of a complete historical record was cited as a key obstacle to climate-related risk management in both cities. Addressing these issues may improve the uptake of climate information by decision-makers across departments. In addition, much of the observed data is not verified, and the resulting data inconsistency presents an obstacle to robust modelling of future climate projections by scientists.

The vulnerabilities that were identified in the desktop study indicate that there is a strong need for more decision-relevant climate information on the 5–40-year timeframe. The climate information required includes: projections of changing rainfall intensity, frequency of tropical cyclones, frequency of large-scale heavy rainfall in upstream catchments and sea level rise. But beyond climate and ocean variables, there is a need for modelling impacts, such as hydrology modelling, disease modelling and coastal dynamics modelling.

Climate information in the context of decision-making

The overriding observation during the workshop concerned the extent to which climate risks and impacts in both case study areas were so strongly shaped by underlying socioeconomic vulnerabilities. This myriad of concerns outweighs those of climate change in the current context. Looking at multiple stressors helped to demonstrate the contemporary (as opposed to future-focused) context of climate change considerations in decision-making processes, and also indicated the limited possibility for climate projections data to effectively inform short- to medium-term planning. Traditional decision-making processes take a climate data-led approach: decisions pivot around the climate information that is introduced. This, arguably, ascribes too high an importance to the climate

sensitivity of decisions. Allowing the participants to contextualise the vulnerabilities using their place-based knowledge highlighted more pressing socioeconomic issues such as weak law enforcement for building codes, inefficient or non-existent waste disposal, land pressures from lateral development and, in the case of Dansoman in Accra, tensions between the local communities and a nearby salt production company. It became immediately apparent that only by acknowledging these issues upfront can suitable climate change adaptation strategies and interventions be identified.

Guiding principles for integrating climate information into decision-making

This project questioned traditional climate change decision-making processes that ascribe a high weighting to climate risks within a multi-stressor decision-making context, and presented an alternative decision-making process that sets the climate risk in context. The steps below outline the essence of the approach taken within the workshop of this project:

1. Identify exposure units within broad categories of livelihoods, infrastructure and services (elements of a system that may be exposed to stresses, e.g. roads, businesses)

2. Identify non-climate stressors acting on these exposure units

3. Rank the influence of the non-climate stressor on the exposure unit

4. Determine whether climate stressors increase the overall stress on the exposure unit

5. Based on the analysis of steps 1–4, prioritise specific exposure units for further analysis and explore adaptation options, when provided with increasingly complex layers of climate information.

By waiting until step 4 to introduce climate information, this approach ensures that climate data do not drive the analysis. Instead, the multi-stressor context is acknowledged first, and climate risk is more appropriately integrated into the decision-making process.

Taking this research forward

A frequent reflection on any process like this is how to sustain engagement with the participants after the workshop. The concern is that this kind of intermittent relationship with knowledge users will generate apathy over time and create a negative working relationship. However, the organisers recognise that the pilot nature of this project only allowed for one workshop, and this was communicated to participants to explain the inevitable constraints to the exploration of city vulnerabilities and adaptation options. The overall FCFA programme has the potential to, at least partly, address the continuity issue, enabling participants to achieve real changes.

The co-exploration approach is complementary to FCFA's design in that it prioritises close engagement of the climate community and the various decision-making constituencies who rely on climate information, and it examines the limits of climate model data in a place-based context that recognises the chaotic nature of real-life decision-making related to risk management and future planning. Moreover, this approach values multi-focal learning across the decision-making space that goes beyond the simplistic dichotomy of 'climate services' and 'end users'.

A co-exploration approach, therefore, seems to be a valuable way of beginning the dialogue among climate

What are climate services?[1]

Climate services involve the production, translation, transfer and use of climate knowledge and information in policies and planning. Climate services ensure that the best available climate science is effectively communicated with agriculture, water, health and other sectors, to develop and evaluate mitigation and adaptation strategies. Easily accessible, timely and decision-relevant scientific information can help society to cope with current climate variability and limit the economic and social damage caused by climate-related disaster. Climate services also allow society to build resilience to future change and take advantage of opportunities provided by favourable conditions. Effective climate services require established technical capacities and active communication and exchange between information producers, translators and user communities.

scientists, climate service providers and relevant experts from different disciplines and arenas that have a stake in policy outcomes. This approach also provides a means to strengthen the climate data literacy of those who currently depend on climate information for decision-making but who lack the skills to critically evaluate the potential and the limitations of this information. Such strengthened capacity and understanding is critical for promoting effective real-world adaptation planning. It also helps to avoid 'maladaptation', where climate adaptation decisions taken today inadvertently undermine future climate resilience.

Endnotes

1 From the Climate Services Partnership, http://www.climate-services.org/content/what-are-climate-services.

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