Climate & Development Knowledge Network

FUTURE CLIMATE FOR AFRICA

# POLICY BRIEF

December 2014

## Key messages

Governments, civil society, the private sector and individuals in Zambia can:

- Invest in climate science that directly supports decisions that are robust in a changing climate.
- Create incentives for climate service providers and development planners to interact frequently.
- Promote interactive approaches to learning and dialogue.
- Link climate information thresholds to decisions for resource allocation.
- Foster open data systems to accelerate adaptation under uncertainty.
- Create information pathways among vulnerable communities, decision-makers and researchers.

**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.

# Inclusive climate change and development planning in Zambia

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## Introduction

**Governments, civil society, the private sector and individuals in Africa are making critical investment decisions about the near-term development of their nations and localities. The impacts of climate change will be significant and far-reaching; they can determine whether development plans achieve the desired benefits for society. Mainstreaming climate risk management and adaptation into development planning is therefore essential if desired outcomes are to be realised and sustained.**

**This policy brief highlights key findings from the FCFA Zambia pilot case study regarding how current and future climate science can enable development and humanitarian policy, planning and implementation that is climate smart and robust to projected changes in the medium to long term. Specifically, the findings derive from a series of activities the Red Cross/Red Crescent Climate Centre conducted between February and October 2014, in close collaboration with the Met Office Hadley Centre and the Zambia Red Cross Society. These activities included a literature review, scientific research, two multi-sector multi-stakeholder workshops and a high-level breakfast with key representatives from government, civil society, the Met Office and the private sector.**

### 1. Invest in climate science that directly supports decisions that are robust in a changing climate

Much of today's research represents climate change in terms of changes to the annual or seasonal averages of temperature and rainfall, which are generally not useful parameters for most decision-makers. Stakeholders consulted in Zambia expressed interest in going beyond those variables and receiving information that is 'adaptation ready' – meaning, concretely related to the thresholds of real-world systems. Examples include better representation of extreme rainfall events and their probability distribution in the next 5–40 years, and temperatures exceeding critical levels for human health. Investments in climate science can add value, as new data may help determine the likelihood of future conditions affecting key decisions.

Despite the high demand, there is little appreciation that when the geographic scales of climate projections are made a fine enough for decision-

**What are Climate Services?**[1]

Climate services involve the production, translation, transfer and use of climate knowledge and information in climate-informed decision-making and climate-smart policy 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 favorable conditions. Effective climate services require established technical capacities and active communication and exchange between information producers, translators and user communities.

making, there are increased levels of uncertainty about these results. This issue highlights the need for a better understanding of, and tools for working with, climate uncertainty. Furthermore, translating primary climate data into 'adaptation-ready' information entails moving beyond mainstreaming the information into policy processes; it is equally, if not more, important to focus on ways in which this climate information can inform budgeting decisions, both nationally and locally. This will help ensure that climate-related financing is ultimately directed toward climate-smart development that truly meets the needs of the most vulnerable.

## 2. Create incentives for climate service providers and development planners to interact frequently

System-based approaches that promote incentives to collaborate and that propose long-term solutions can help strengthen relationships between climate service providers and development planners. At present, institutional arrangements place many science providers in almost complete isolation from potential users of their services. While a substantial level of autonomy is desirable to ensure the quality of evidence-based research, organisational structures should be designed with purposeful specifications of dynamic relationships (including collaboration and, where necessary, control structures) in order to ensure that the climate services offered are aligned with user needs, and that decision-makers actually use the information in a way that can substantially improve outcomes.

## 3. Promote interactive approaches to learning and dialogue

Creative, intensely interactive processes can break down communication barriers between producers and users of science, enabling climate-smart decision-making processes to emerge.

Currently, very few governments, organisations and individuals worldwide have experience in designing and deploying interactive approaches. Event organisers often revert to their comfort zone when communicating information (i.e. long PowerPoint presentations followed by insufficient time for questions and answers), while hoping that somehow the information provided will result in real-world action. Well-facilitated creative processes (such as serious games and experiential learning exercises) have helped to nurture learning and dialogue in Zambia and beyond; interactive sessions serve to equalise participants, encouraging peer-to-peer learning and providing a sound basis for communication about complex and/or sensitive issues.

## 4. Link climate information thresholds to decisions for resource allocation

In many African contexts, science can offer information about a range of possible future scenarios, particularly for extreme events that are considered most salient to decision-makers. Decisions can be made now to establish early warning systems in the near term. These systems can take advantage of short-term climate information to avoid disaster in any of the possible futures described by climate models. However, when most financial resources are assigned to either ongoing needs or disaster response contingency funds, decision-makers find themselves unable to finance the actions that could reduce avoidable losses. Forecast-based financing for programming that is triggered by forecasts can support improved climate risk management at various timescales.

Mechanisms are needed to trigger and incentivise consistent early action based on available early warning information, with responsible persons clearly designated. Based on the successes and failures of previous responses to climate-based early warning information, forecast-based financing calls for: i) selection of worthwhile actions, ii) available funding mechanisms, and iii) designed entities that are responsible for taking the pre-planned actions.

A systematic forecast-based financing system integrates these three

### Innovative approaches and synergies in the FCFA Zambia pilot study

The FCFA project team linked the research process in Zambia with two parallel but related projects in which the Climate Centre was involved. The first studied humanitarian policy and practice in a changing climate (funded by the Norwegian Research Council), while the second focused on research conducted on livelihoods and extreme events in the Kazungula district (funded by USAID). FCFA workshop participants appreciated the opportunity to make links between the distinct initiatives and to discover new opportunities in which climate science could inform decision-making processes. Importantly, connecting the dots between these activities enabled participants to clearly identify or reaffirm the incentives to committing their precious time and resources to engaging with these ongoing processes. A solid understanding of the key decision-makers and the current political context in which they operate is crucial.

Supporting complex decision-making requires long-term processes rooted in relationships of trust among decision-makers. Interactive approaches can breed respect and trust between individuals after they have bonded over these shared experiences and co-generated intelligence on a particular topic. In Zambia, participatory games helped promote longer term engagements between partners, and entry points for linking with related activities can help to deliver better results all around.

elements by triggering the action when the forecast is issued.[2] In the case of Zambia, this approach could prove useful for risk management measures to take across a range of timescales (e.g. weeks to days to hours) before flooding upstream of Victoria. Opportunities for loss-reducing action range from reducing vulnerability (such as distributing mosquito nets before heavy rainfall), to preparing specific disaster response measures, such as prepositioning relief items before roads become impassable.

## 5. Foster open data systems to accelerate adaptation action

Unlocking existing data and the latent talent of local stakeholders can support adaptive decision-making by enabling improved analysis of climate-related opportunities and risks; open data can help stakeholders in Zambia and other countries put knowledge into action. Much of the data needed by decision-makers – be it about hazards, exposure, vulnerabilities or the capacities to address them – actually exists somewhere in government, or in academic or international organisations. For example, several government departments (e.g. Meteorological Department, Department of Water Affairs, Department of Agriculture) are currently gathering environmental data, sometimes over long time periods. These data have the potential to inform decisions, especially those that would benefit from an understanding of historical trends of identified thresholds. However, the data do not appear to be accessible to officials of other departments and are thus seldom used to inform decision-making. In addition, the time and effort needed to secure access to existing data can be beyond what is manageable by any committed individual. Without a systemic approach to data management and capacity building to empower and engage people who can use the data, these obstacles may endure. To this end, joint fora to increase cross-sectoral approaches and improve networking opportunities become paramount in identifying opportunities and generating momentum by mutually interested parties to make this information legally and technically accessible

Digital technologies have allowed recent innovations that integrate the best analytical capabilities of both people and computers through 'hybrid' systems that harness the best attributes of human and computer brainpower, creating synergies that can help address real-world problems. The rapidly growing reach of technology may help nurture feedback loops that both enrich the science and improve decision-makers' access to it. Harnessing the potential synergies of human–computer systems can offer remarkable opportunities for innovative ways to link existing knowledge with improved decisions and generate new data for improved knowledge. New techniques such as participatory sensing (where digital technology enables members of the public to gather data en masse) and gamification (where a playable system creates incentives for participants to engage and pursue gameplay goals aligned with 'serious' objectives) are already being combined in Zambia. The prototype game 'UpRiver' crowdsources data collection on water levels along the Zambezi River with two objectives: helping calibrate hydrological models (with real-time data collected by Zambia Red Cross volunteers and members of vulnerable communities along the floodplain) and increasing trust in flood warnings (the game provides players with regular feedback on how their own predictions

compare to the forecasts based on hydrological models, which are more reliable when peak levels are expected. As a result, participants experience in real time the value of early warnings).

### From discussion to concrete action

In the context of the FCFA Zambia pilot, a high-level breakfast session that convened stakeholders from across several government departments, civil society and the Met Office featured a discussion about existing data needs and lack of access to relevant climate information. This resulted in an offer by the Deputy Director of the Zambia Meteorological Department to make historical climate data accessible.

### 6. Create information pathways among vulnerable communities, decision-makers and researchers.

It is important to open up the dialogue among different stakeholders and to consider all relevant types of knowledge for a successful adaptation process: communities bringing their local knowledge, researchers contributing scientific knowledge, and decision-makers linking this to possible implementation. If this inclusive endeavour manages to build trust among all partners, the synergy effects can greatly contribute towards greater ownership of the process by all stakeholders – and thus more effective and sustainable implementation of adaptation measures. A joint learning process can also enhance capacity on all levels, support a greater appreciation for the complexity of the problem, and empower vulnerable communities to participate in the interpretation of data and the design and implementation of possible interventions.

## Endnote

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

2 Coughlan de Perez, E., van den Hurk, B., van Aalst, M., Jongman, B., Klose, T., Suarez, P., 2014. Forecast-based financing: an approach for catalyzing humanitarian action based on extreme weather and climate forecasts. Natural Hazards and Earth System Sciences Discussions, 2:3193–3218. Available at: http://www.nat-hazards-earth-syst-sci-discuss.net/2/3193/2014/.

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