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 Rwanda found that the country's policies address adaptation needs based on current climate variability; however, there are significant opportunities for integrating longer-term climate projections into policies and programmes.
- Medium- to long-term climate information is important for some – but not all – decisions. There are many types of adaptation decisions, each has different climate information needs.
- Land use planning and green city plans would particularly benefit from the use of medium- to long-term climate information.
- Communicating and considering uncertainty in climate projects requires additional interpretation and new information products. There is a need to move away from a focus on 'what we don't know' to better communicate 'what we do know'.

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 for long-term decision making in Rwanda

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Introduction

Current climate variability and extreme events have already lead to major impacts in Rwanda. These include floods and landslides, but also the effects of rainfall variability on agriculture, e.g. soil erosion and droughts. Future climate change has the potential to exacerbate these impacts and to introduce new risks.

These impacts have been recognised and are being integrated into national policy. In 2011, Rwanda launched a National Strategy for Climate Change and Low Carbon Development, and the country now has an operational climate and environment fund (FONERWA). It is also mainstreaming climate change into national and sector development plans. The focus of early adaptation in these policies has been on addressing current climate variability and the existing adaptation deficit. However, there is an increasing interest in future climate challenges over the medium to long term. This will require improved information and its effective use in decision-making, and this aligns with the objectives of FCFA.

Against this background, the FCFA pilot study investigated the current and potential future use of climate information for adaptation in Rwanda. The study was undertaken by the Global Climate Adaptation Partnership (GCAP), working with the UK Met Office and Atkins.

Pilot study method

The pilot first undertook a literature review to frame the study. This identified the need to focus on adaptation decisions (a policy-first approach). It also identified the priority areas for medium- and long-term climate information, notably current decisions with long lifetimes (e.g. infrastructure, planning), and iterative adaptation pathways for addressing major long-term climate challenges.

The study then identified key policy-makers (users) who might be interested in medium- and long-term climate information. Alongside this it identified key adaptation entry points in current policies, where such information could be included. As an example, entry points were identified in the national and sectoral development planning process (the 5-year plans), and during the appraisal/climate risk screening of projects, especially for infrastructure.

What are Climate Services?[2]

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.

The pilot study then held a large number of interviews with stakeholders, including government, development partners and civil society, supported by primary and secondary research. This provided a comprehensive overview of existing adaptation decisions and the current use of climate information, and also identified current gaps and end-user needs.

Finally, the study focused on a number of real (existing) adaptation case studies, which were particularly relevant for medium to long-term climate risks, and investigated these in detail. This involved interviews with the relevant policy-makers/stakeholders and desk research and analysis on the potential for using information in adaptation decisions.

Initial interview findings

The initial interviews and analysis identified a number of findings:

- Currently, most policy-makers are not using quantitative future climate projections for adaptation decisions, and instead they rely on qualitative narratives of future change. They also use a variety of different sources (existing reports, external portals) for qualitative and quantitative information, which leads to inconsistency.

- With one exception, there was no consideration of future climate model uncertainty. Indeed in most cases, end-users omit uncertainty even when this is included in the primary studies/portals they cite. They also highlighted that focusing on uncertainty was detrimental to the communication of climate risks and the justification for adaptation.

- End-users are interested in information on climate extremes and agro-meteorological/hydro-meteorological outputs, as well as average future trends. They are also much more interested in the next 5–15 years than in longer time periods.

- There is insufficient information on historic observational data and on current risks, especially covering the heterogeneous climate across the country. This makes it harder for end-users to understand and interpret future projections (i.e. to know what matters).

- End-users highlighted a lack of time/resources and capacity to include detailed climate information. They also identified important socio-institutional issues that enhance the use of information in decisions. For example, often the decision window for addressing adaptation is short; it is therefore important to provide timely information during these windows of opportunity.

Case studies

The pilot study then focused on five practical adaptation decisions, which are relevant for the medium to long term. These included: the mainstreaming of climate change into Rwanda's social protection programme; project appraisal of adaptation projects in the National Climate and Environment Fund (FONERWA, named after the French acronym); climate risk screening of hydro-electricity plants; resilience mainstreaming into agricultural development investment plans; and urban green growth/ resilience plans. These five mini case studies revealed a number of findings:

- In most cases, existing adaptation activities had not yet considered medium- or long-term climate information. During discussion, it was also apparent that climate risks were generally given a low priority when compared to other issues, i.e. socioeconomic drivers. Land-use planning (and green city plans) was identified as the most promising area for use of medium- to long–term climate information.

- Future climate projections had been used quantitatively in only one of the case study areas. This was in relation to large-scale hydroelectricity plants. Importantly,

the use of climate information had led to an adaptation response with some contingency in design. In other areas, consideration of long-term climate information and use had been limited by capacity (i.e. how to include quantitative information) as well as time/ resource constraints.

- A key finding – which explains the lower focus on longer-term adaptation – is the trade-off between costs (today) versus long-term future benefits. This was relevant in terms of the short payback period (for the private sector) and high discount rates (for the public sector). It was also clear that long-term climate change was associated with low perceptions of risk, and/or low potential for changing decisions (i.e. the availability of political capital).

- The importance of the correct entry point/windows of opportunity was also highlighted. In the case of hydropower, the consideration of climate change at the environmental impact assessment stage was too late. Early systematic risks need to be captured at the strategic environmental assessment phase and project level adaptation was most likely to be implemented if climate change was considered during the design-engineering phase.

- There was little or no consideration of future scenario or climate model uncertainty in the case studies. End-users also highlighted the challenge of communicating uncertainty to policy-makers, as well as the complexity of including it in existing analysis.

- One area of potential economic maladaptation was identified, i.e. where the benefits of action may not justify the costs. This was for the proposed future climate-proofing of roads, as there is little need to build long-term resilience into road surfaces that have a short lifetime, i.e. this is probably not an effective use of resources.

- The study also reviewed the wider information needs for adaptation, particularly on the links with hydrological information and analysis. For each case study area, the use of climate information in hydrological analysis was explored. A key finding is that better information is needed in these other areas, alongside the development of further climate modelling; otherwise, this will not feed through to an improved use and uptake in risk and adaptation assessment.

Findings and future needs

The overall conclusion of the Rwanda pilot study is that medium- to long-term climate information (and adaptation) is important for some – but not all – decisions. Looking forward, there was a very positive response for the development of climate information from end-users. The key findings are summarised below:

- There are many types of adaptation decisions (e.g. project appraisal, policy appraisal, risk screening) and varying entry points and scales, etc. Each of these will have different climate information needs. Understanding the organisational context and existing decision-making approach, as well as the intervention points (windows of opportunity), will be critical for the successful integration of medium- to long-term climate information.

- Decisions that already have longer planning frameworks, or that involve long investment cycles or long-lived infrastructure, make the most obvious use of medium- to long-term information. However, alongside these, there is the threat of major risks or critical threshold that could be exceeded, e.g. major or even irreversible loss of biodiversity and ecosystem services. Early iterative planning using associated climate information to start considering these issues is also important.

- There is a need for consistent and harmonised future climate projections (for Rwanda) that are country-specific, or for guidance on which external climate information sources to use and how to use them. This information needs to be accompanied by current information and local expertise to ground and interpret the future information in context. However, there is a question of who should provide and update this information.

- Climate information should be tailored to the adaptation needs of decision-makers. As an example, this will require more information on variability and extremes, and relevant hydro- and agro-meteorological variables of interest, particularly threshold levels. This information also needs to be developed in conjunction with hazard or biophysical analysis (e.g. hydrological modelling) to allow its use in decision analysis.

- Intermediary organisations (often called boundary organisations, because they cross the boundary between science and policy) are needed to bridge the science–practice interface, i.e. to help translate complex climate information into a form that is accessible to end-users, to support them in interpretation and in application, and to provide communities of practice, good practice case studies, and so on, to learn and share experience.

- Communicating and considering uncertainty requires additional interpretation, as well as new information products. There is a need to move away from a focus on 'what we don't know' to better communicate 'what we do know'. This will require additional interpretation of existing climate information sets. Guidance on how to address uncertainty in decisions is needed to support this process. Finally, new decision-support techniques for decision-making under uncertainty are emerging, but these will require different types of climate projection information.

Endnote

1 Based on the FCFA pilot by GCAP, UK Met Office and Atkins

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

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