

Ensuring climate information guides long-term development

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Many sub-Saharan countries are failing to include climate information in long-term development planning. Ensuring climate-resilient development requires a step change in how medium- to long-term climate information is produced, communicated and utilized in sub-Saharan Africa and elsewhere.

Adapting to climate change is a challenge that spans timescales. Although communities are feeling the effects of climate change now, the most severe impacts will be felt in the decades to come¹. This presents significant obstacles to long-term development objectives. Nowhere is this more apparent than in sub-Saharan Africa, a region currently confronting a large adaptation deficit and undergoing rapid social, economic and demographic transitions². Factoring medium- to long-term climate information (associated with interannual, decadal and multi-decadal timescales) into investments and planning decisions can therefore play an important role in guiding climate-resilient development and helping to safeguard economic development across the region.

The importance of promoting the uptake of medium- to long-term climate information into development planning often centres around two arguments. First, it can support anticipatory adaptation and help to guide long-lived investment and planning decisions in the face of changing external stressors⁴. Second, it can assist decision-makers to identify and manage the risk of current actions leading to increased levels of vulnerability in the future⁵. In particular, long-term interventions with long-lived implications — such as national or sector development plans, strategies for economic growth and large infrastructure investments — offer clear entry points owing to the scale of investments and operational time frames involved⁶.

However, findings from case study research conducted under the Future Climate for Africa (FCFA) programme suggest that many sub-Saharan countries are failing to incorporate medium- to long-term climate information into core

national development processes⁷. This is despite recent gains made in promoting the uptake of short-term climate information (associated with weather, sub-seasonal and seasonal timescales) in decision-making across Africa⁸.

Here, we argue for a step change in how medium- to long-term climate information is produced, communicated and utilized to achieve meaningful impact on decision-making in sub-Saharan Africa and elsewhere. In particular, we highlight the need for concerted support to address the communication mismatch between producers and users of climate information, tailor climate information to the needs of relevant decision-makers, encourage greater recognition of the political economies of sub-Saharan African decision-making, and adopt a more nuanced appreciation of the ethics of promoting a long-term climate agenda in a world dominated by short-term political time frames and immediate development priorities.

Importantly, although their respective roles and capacities may differ, the involvement of all stakeholders engaged along the science–policy interface is required in order to address the needs identified above — from practitioners and organizations focused on engagement with local communities, such as the Red Cross Red Crescent Climate Centre, to academic institutions, boundary organizations and organizations focused on national and international policy influence, such as the Africa Climate Policy Centre.

A shortfall in knowledge and data

The reasons for low uptake of medium- to long-term climate information in sub-Saharan Africa are manifold. To begin with, our scientific knowledge of past and

current African climate is poor relative to other regions, and large gaps exist in the observational record. Opportunities therefore exist to enhance the quality and quantity of observation networks and infrastructure, as well as recover large swathes of historical data yet to be digitized.

There is also a pressing need to build the technical capacities and ensure adequate resourcing of African scientific institutions and climate scientists to support the extension of observation networks, take ownership of quality assurance and data assessment, and, together with appropriate boundary agents and knowledge brokers (those acting as intermediaries between science and policy, and responsible for translating information into knowledge and practical support to decision-makers), lead efforts to promote better dissemination, understanding and use of medium- to long-term climate information among all relevant stakeholders.

However, scientific and technical factors account for only a fraction of the barriers to information uptake. In assessing the use of medium- to long-term climate information in national and local decision-making in Malawi, Zambia, Mozambique, Ghana and Rwanda, the FCFA case studies highlight how social, economic and political factors also act as significant impediments⁹. In particular, the immediacy of development challenges inevitably focuses the attention of decision-makers on shorter timescales. For instance, the combined pressures of rapid urbanization and high vulnerability to existing climate variability in large African cities such as Maputo in Mozambique and Accra in Ghana present significant challenges to drainage, transport and other critical infrastructure contributing negatively towards health and economic

outcomes¹⁰. Moreover, the Rwandan study finds that although future climate projections for the 2050s or 2080s are readily available, it is better access to information about historical trends and current climate variability that national decision-makers desire and require first and foremost — information with particular relevance to the significant development challenges of the here and now¹¹. As many local and national decision-makers struggle to contend with current challenges, it is little surprise that long-term perspectives and considerations of future risk are often side-lined.

High discount rates and large uncertainties over future climate change further reduce the incentives, and political will, to account for long-term climate change in many investments¹². Insights from Malawi highlight how, even in contexts where long-term national development strategies do exist, most government budgeting, resource allocation and target-setting decisions are dictated by shorter-term national development plans (those operating on three- to five-year planning cycles)¹³.

Promoting the uptake and use of climate information is, therefore, not just about improving our understanding of the African climate, but responding to social, political and economic realities.

Production and dissemination

One clear priority is to address an apparent communication mismatch: information delivered to African decision-makers is often overly technical, prone to misunderstanding of associated uncertainties and ill-suited to their needs¹⁴. Care needs to be taken to ensure that climate information speaks directly to the practical questions to which decision-makers seek answers¹⁵. In the Zambia and Malawi case studies, for example, decision-makers highlight how the current practice of disseminating information pertaining to changes in annual average temperature or precipitation is of little practical use. Rather, information on decision-relevant events such as changes to the onset of the rainy season, frequency and duration of dry spells early in the growing season, or water availability for irrigation has far greater significance to local and national decision-makers¹⁶. This is particularly evident for countries and regions where rainfed agriculture accounts for a large proportion of livelihood and economic incomes¹⁷.

Communication of climate information also requires active involvement of a number of stakeholders at different levels, from scientific institutions to government departments and local communities. There is considerable scope to enhance the

roles played by boundary organizations in sub-Saharan Africa, promoting more effective dialogue between producers and users of scientific information¹⁷. In assessing the capacities of boundary agents across the case study countries, FCFA finds few organizations that have the skills and mandate to convene, collaborate, translate and mediate between different stakeholders. Unfortunately, this situation is mirrored across much of sub-Saharan Africa¹⁴. Improving the uptake of climate information into policy requires expanding the remit of those organizations that have the influence and capacity to act — such as the Regional/National Climate Outlook Forums or multi-stakeholder groups such as the Africa Climate Change Resilience Alliance — as well as supporting new boundary organizations that can promote greater dialogue between producers and users of climate information at various levels of governance.

Communicating the merits and limitations of climate information to decision-makers, as well as supporting the use of more pragmatic and evidence-based approaches to decision-making under uncertainty, will be key. The Rwanda case study finds that policymakers are using a range of different sources for their projections of future climate change, including secondary sources and general web portals. This includes information that is ill-suited for adaptation decisions. For example, where individual climate models are used to determine future climate rather than drawing on an ensemble of different models that would better characterize the range of possible outcomes as is desirable for a more comprehensive assessment of risk¹³. Authoritative national projections of climate change across sub-Saharan African countries are one option that may help to manage the risk of inappropriate data use. These would build on local understandings of the current climate and be altered as new research emerges. Consistent projections are vital to underpin guidance on interpretation of climate information (and uncertainty) across a range of stakeholders — government, civil society and the private sector.

Power and politics

Alongside knowledge and communication gaps, many barriers to uptake relate to issues of political economy and governance. Overlapping organizational mandates, hierarchical structures of governance and weak incentives to include medium- to long-term climate information in decision-making are each significant obstacles. For example, adaptation often falls under the mandate of weaker government ministries,

such as those responsible for environment and natural resource management. More influential ministries, such as those responsible for finance, development and planning, need greater incentives and the mandate to act on long-term climate information if adaptation is to happen at scale and be mainstreamed into policies that make a difference to people's lives¹¹.

With this in mind, more effective understanding and communication of the economic benefits of acting on medium- to long-term climate information are key to enhancing its uptake among more influential stakeholders. Greater interministerial cooperation and coordination is also required, coupled with institutional capacity building. Few sub-Saharan countries have instigated such transitions. Where efforts have been made, it is often by capitalizing on political windows of opportunity and leveraging high-level 'champions' who drive the climate agenda forward. In Rwanda, for example, President Paul Kagame's backing for national action on climate change, alongside the involvement of relevant government ministries, is a crucial driver of the mainstreaming of climate change into Rwanda's national economic development strategy¹⁸.

It is also important to note that many of the scientific, political and institutional challenges highlighted here relate not just to sub-Saharan Africa, but are common across all regions and continents¹⁹.

Climate ethics in a short-term world

Promoting the use of climate information in long-term decision-making raises important ethical questions, too. For example, given the current low demand for inclusion of long-term climate information in core development processes across sub-Saharan Africa, should funders, governments and knowledge brokers be supporting work in this area? As the principal proponents of the uptake of long-term climate information in decision-making come from outside the continent, it is easy to see how concerns over external influence may arise — similar to accusations of Northern agenda-setting in domestic development research and policy priorities in developing countries²⁰. Thus, in contexts where a lack of demand among African decision-makers arises from a misalignment with underlying value systems, or where immediate development needs are strongly prioritized, promotion of a long-term climate agenda needs to be approached with considerable care.

If long-term climate information highlights the need for deeper transformational changes (as the scale of

many adaptation challenges implies), then additional ethical concerns are likely to be raised with regard to what role external actors should play, if any, in influencing the outcomes of large-scale development and adaptation strategies in domestic policy — particularly in contexts where principles of accountability, transparency and legitimacy differ. Clearly, more can and should be done to address these critical questions and recognize the ethics of promoting long-term climate information in investment and planning decisions. However, the concerns highlighted here do not mean that the generation and uptake of long-term climate information should be discouraged. Far from it: we argue that it is imperative to act on relevant knowledge that can reduce future risks, save lives, and safeguard health and livelihoods.

For a start, it is paramount that any intervention aimed at promoting the uptake of medium- to long-term climate information adheres to principles of honesty, precision, transparency and relevance²¹. This is particularly important in instances where use of long-term climate information may call into question the effectiveness of short-term investments and planning decisions, or where it points to a high risk of maladaptation if current actions do not account for future change.

Importantly, resolving ethical considerations requires far more than greater openness: it demands a fundamental shift in how climate information is generated, communicated and taken up. Doing so means promoting meaningful processes of dialogue between producers and users of long-term climate information, including those people most vulnerable to climate change. Such dialogue cannot be a one-way flow of information and should recognize the different interests and agendas promoted — whether local communities, local and national governments or donors. For example, ‘co-production’ and ‘co-exploration’ models of engagement encourage interaction between producers and users of climate information at all stages of information generation¹⁰. Both groups are encouraged to share their respective knowledge, have their traditional ways of thinking challenged and are allowed to shape the research agenda.

Two-way dialogue is likely to promote greater local ownership of climate information and help to ensure that it is better suited to users’ needs¹⁵. This can help to address ethical concerns about externally imposed agendas and is cited as a key reason behind the low priority given to its integration in local and national decision-making across sub-Saharan Africa¹². Improved dialogue processes also allow for more open and frank discussions around difficult issues that require compromises and trade-offs.

Above all, we argue that resolving production, communication and ethical challenges in Sub-Saharan Africa is both technical and political, requiring nuanced appreciation of how climate information fits into a complex decision space. Researchers, funders and development practitioners can gain considerably from a greater understanding of local decision contexts and value systems, as well as developing more meaningful local and national partnerships. Enabling these changes also requires a move towards longer-term funding and planning cycles, greater flexibility in the delivery of adaptation and development activities to account for uncertainty and non-linear change, and more user-driven research agendas. □

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References

- Oppenheimer, M. et al. in *Climate Change 2014: Impacts, Adaptation, and Vulnerability* (eds Field, C. B. et al.) Ch. 19 (IPCC, Cambridge Univ. Press, 2014).
- Ford, J. D. et al. *Reg. Environ. Change* **5**, 801–814 (2014).
- Dessai, S., Hulme, M., Lempert, R. & Pielke, R. Jr in *Adapting to Climate Change: Thresholds, Values, Governance* (eds Adger, N. et al.) 64–78 (Cambridge Univ. Press, 2009).
- Wilby, R. L. et al. *Int. J. Climatol.* **29**, 1193–1215 (2009).
- Agrawala, S. et al. *Climate Dev.* **4**, 26–39 (2012).
- Giordano, T. *Util. Policy* **23**, 80–89 (2012).
- Future Climate For Africa; <http://cdkn.org/future-climate-africa>
- Hansen, J. W., Mason, S. J., Sun, L. & Tall, A. *Exp. Agr.* **47**, 205–240 (2011).
- Eisenack, K. et al. *Nature Clim. Change* **4**, 867–872 (2014).
- Steynor, A. et al. *Report from the Future Climate for Africa Pilot Country Case Study Project* (Univ. Cape Town, 2014).
- Watkiss, P. *Future Climate for Africa Final Report: Rwanda Pilot* (Global Climate Adaptation Partnership, 2014).
- Jones, L. et al. *Promoting the Use of Climate Information to Achieve Long-Term Development Objectives in Sub-Saharan Africa: Lessons from the Future Climate for Africa Scoping Phase* (Climate and Development Knowledge Network, 2014).
- Vincent, K. et al. *Actual and Potential Weather and Climate Information Needs for Development Planning in Malawi: Results of a Future Climate for Africa Pilot Case Study* (Kulima IDS, 2014).
- Shackleton, S., Ziervogel, G., Sallu, S., Gill, T. & Tschakert, P. *WIREs Clim. Change* **6**, 321–344 (2015).
- Vaughan, C. & Dessai, S. *WIREs Clim. Change* **5**, 587–603 (2014).
- Koelle, B. et al. *Future Climate for Africa Pilot Phase: Zambia* (Red Cross Red Crescent Climate Centre, 2014).
- Shaw, J., Danese, C. & Stocker, L. *Ocean Coast. Manage.* **86**, 80–87 (2013).
- Green Growth and Climate Resilience National Strategy for Climate Change and Low Carbon Development* (Republic of Rwanda, 2011).
- Bruno Soares, M. & Dessai, S. *On the Use of Seasonal to Decadal Climate Predictions for Decision-Making in Europe* (Sustainability Research Institute, 2014).
- Bradley, M. *Dev. Practice* **18**, 673–685 (2008).
- Keohane, R. O., Lane, M. & Oppenheimer, M. *Polit. Philos. Econ.* **13**, 343–368 (2013).

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