



Seventh African Development Forum

*Acting on Climate Change for Sustainable
Development in Africa*

Climate Risk Management: Monitoring, Assessment, Early Warning and Response

Issues Paper #4

ADF VII • 10 - 15 October 2010 • United Nations Conference Centre • Addis Ababa, Ethiopia



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I. Overview

1. The recognition that people influence climate, and that *our future climate depends upon our choices on global development paths*, have resulted in a number of proposed global *mitigation strategies*. However, science also indicates that our climate will continue to change significantly despite the most optimistic mitigation scenarios. While global negotiations on mitigation continue, decision makers in Africa and elsewhere, must strive to develop a *broad range of adaptation strategies* to address current and future impacts of climate change.

2. Much adaptation to climate change involves *managing weather and climate risks* with known and proven development interventions. Protection from weather and climate risks is clearly a measure of development. Climate risk management (CRM) is the use of climate information to cope with possible impacts of climate change on development and resource management. It covers a broad range of potential actions including early response systems, risk spreading through diversification, dynamic resource-allocation rules, financial instruments, infrastructure design and capacity-building. CRM seeks to *minimize adverse outcomes and maximize opportunities* in climate-sensitive economic sectors through improved resource management. It addresses adaptation to climate change and disaster risk reduction in any climate sensitive development sector by focusing on actions that can be taken today to improve outcomes and preparedness, and by better understanding and then anticipating interactions of economic, environmental and social systems with possible future climates.

3. CRM is a new science for development and as such, much is needed for its effective implementation in Africa. Capacity-building and substantial improvements in data supply, climate services and sectoral management practices are all essential, although it is important that such developments incorporate traditional disaster coping strategies.

II. Main issues at stake

A. Managing uncertainty in a changing climate

4. In practice, the requirement for mitigating and adapting to climate change has become an extra burden for many decision makers, who are left struggling to understand what they should do, given the perceived enormity of the challenge and paucity of relevant and reliable information upon which to act. The uncertainty surrounding future climate may result in confusion, paralysis or the continuation of business as usual. However, managers routinely take into consideration uncertainty associated with relatively high impact socio-economic drivers of change. For example, economic planners factor into national plans assumptions about demographic changes such as population growth and urbanization, despite high levels of uncertainty. Climate uncertainty presents an additional challenge, but should not be a stumbling block if it can be demystified and treated as an additional factor impacting on many sectors and aspects of life.

5. Better understanding of climate variability, and improved management of its associated risks, presents a real promise to decision makers seeking to understand how to adapt to climate change. The patterns of registered past climate settings can tell us something about what future climate could be. Climate, by definition, is the mean and variation of weather measured over a period of time, ranging

from months to thousands of years in some cases. Changes in mean climate tend to be incremental, thus, small, on a year-to-year basis, compared with natural fluctuations. Because of this, strategies developed to manage and build resilience to year-to-year climate variability go a long way towards managing possible climate change to come.

6. **CRM in Africa.** CRM is little practiced in Africa, where national and subregional weather, water and climate institutions are often isolated from mainstream development work and relatively under resourced. Recognition that extreme events can significantly undermine poverty reduction investments, has led to increased interest in investing in climate related information, research and services. Climate for Development in Africa (ClimDevAfrica) Programme is one such initiative aimed at strengthening specialized institutional capacities in order to provide useful and reliable data-information-knowledge and services in support of more effective development policies, economic plans, socio-economic activities and climate proof investments across the African continent.

7. **Mainstreaming climate change in planning.** At longer time scales, ignoring climate change in planning will result in inefficient and suboptimal investments and decisions. Planners have historically managed climate risks with differing degrees of success, depending, in part, upon the quality and scope of the climate information available to them. For example, designing water reservoirs based on short records of river flows have resulted in inefficient constructions and inequitable operating rules when the “expected” river flows did not occur. In places with good climate records available, expectations about how climate is likely to change have been developed by creating simulations of future climate that are consistent with past variations. This information can be helpful to managers and policy makers when looking at longer-term investments and strategies.

8. Developing the capacity to manage climate uncertainty today and in the future is paramount. While one clear way to reduce climate uncertainty is to obtain better information, this may not always be possible *and there will always be a significant degree of irreducible uncertainty about our future climate*. A particular challenge in Africa is the scarcity of quality climate information. This hampers efforts to better characterize the current climate and climate change. Despite scientific advances in understanding and modelling our climate, the largest element of uncertainty is our future development and greenhouse gas emission path. As such, there is need for continuous climate and environmental monitoring, regular vulnerability assessment and reliable early warning climate information systems. There is also a great deal of uncertainty about feedback loops and interactions. For example, modelling the impacts of climate change on a single species is relatively easy; running the same model, considering interactions with other species and pressures is very complex and involves a high degree of uncertainty.

B. A practical approach to climate risk management

9. A practical, problem-centered approach to managing climate risk should be adopted now and in the future. Practical solutions for some climate-sensitive sectors have been experimented recently in Africa. There is a need to upscale them while implementing “no regrets” strategies and safety nets for the benefit of the most vulnerable.

10. **Quick wins with CRM.** An advantage of the climate risk management approach is that it provides immediate assistance to the public and private sectors, while helping stakeholders to confront possible future climate change scenarios. Climate risk management identifies immediate actions needed to manage the climate variability that is currently affecting societies. Furthermore, the impacts of pos-

sible interventions also become evident and verifiable in the short term, making them more attractive to policy and decision makers. African climate institutions like the African Centre for Meteorological Applications for Development (ACMAD), the IGAD Climate Prediction and Applications Centre (ICPAC), the SADC Drought Monitoring Centre (SADC-DMC) have worked on the CRM approach in conjunction with the International Research Institute for Climate and Society (IRI) and are building capacities for its smooth integration within sectoral decision-making processes, such as agricultural production, food security, water resource management, health protection and disaster risk management.

11. “No Regrets” Strategies and safety nets are designed to perform well in normal or good years as well as reduce vulnerabilities to climate variability and change. These are often technologies and practices geared towards improved efficiency; for example, developing markets, integrating climate monitoring and seasonal forecast products into resource allocation decisions or repairing infrastructure. They are also the types of tools that reduce exposure to climate vulnerabilities and enable the opportunistic exploitation of favourable climate conditions, such as improved early warning systems and risk-transfer instruments such as index insurance.

Managing climate risks: Multiple benefits through index insurance

Throughout the world, crop insurance has allowed national economies to develop the full potential of their agricultural sector by transferring weather-related risks away from the farmer. This enables agriculture and related industries to sustain economic growth, in spite of seasonal variability in production. In Africa, “index insurance” is a way to overcome obstacles to traditional agricultural insurance markets.

Index insurance is linked to an ‘index’, such as rainfall, rather than crop failure. The insurance company does not need to visit farmers’ fields to assess damages so costs are low. If the rainfall amount is below the threshold, then the insurance pays out, and the farmer always makes the best decisions for crop survival.

Index insurance for Africa: In Malawi, the Government uses index insurance to help subsistence maize farmers produce export-quality groundnuts by means of credits earned with insured repayments. In Ethiopia, index insurance is also being used to strengthen the livelihoods of drought-concerned vulnerable farmers. Furthermore, there is a successful scheme in force in Kenya to protect herders from droughts. Index insurance has also been successfully used to help manage water resources and irrigation schemes. It has the potential to spread the risk of climate impacts away from the most vulnerable.

Rapid payouts are a major advantage of index insurance as well. In Ethiopia and Malawi, food security index insurance has been experimented successfully nation-wide to expedite quick responses in times of crisis.

C. Institutional and systems strengthening

12. Empowering decision makers with practical skills in climate risk management to meet the challenges at hand, in all sectors and at all scales of development in Africa requires careful investment in policy, practice, services and data.

13. **Improved policy** requires supporting evidence from the field and understanding the possible impacts of climate variability and change of development-related outcomes in general, and the situation of the most vulnerable populations at different geographical scales from sub-national to regional levels. Evidence on possible impacts of climate variability and change will help make the case for accelerated mitigation and adaptation measures. Improved policy also requires close cross-sectoral collaboration to ensure that policies developed in one sector do not negatively impact the ability of other sectors to cope with further induced changes.

14. **Improved practice** on a large scale requires investments in capacity-building, training programmes and policy dialogues, knowledge management and generation, as well as dissemination of best practices, development of suitable tools and transfer of appropriate technologies. Development of CRM methods and tools is essential, as is their integration into relevant economic and financial analyses, which assess vulnerabilities while weighing the risks involved. Such tools could help improve the economic rationale of informed decision-making and debates under climatic uncertainty. Integrated advisory services and networks of early warning systems would also be of high benefit to all involved.

15. **Improved climate-related services** in pro-poor services requires capacity to tailor and communicate information to user needs. Improved communication is also required between climate service providers and key climate sensitive sectors. Technical advisory services on climate risk management provided by experts with a view to enabling translation of climate information products still appears to be the missing link. While ClimDevAfrica has started investing in upgrading of regional climate services by strengthening regional and subregional climate for development institutions, there is still room for scaling up the climate-related efforts at country level, in the context of the Global Framework for Climate Services.

16. **Improved climate data** is indispensable. Data includes observations for local use, national and regional planning purposes and for global monitoring of climate change, with participation of the user communities. While climate science has made substantial advances in recent years with more reliable climate information now becoming increasingly available, it is essential that this information be made locally accessible to the most needy, with full ownership by the relevant communities. Concerns still remain for CRM deliveries due to the data policies in force in countries which restrict access to data.

III. Conclusion

17. CRM must become an integral part of the management culture of “climate-sensitive” development sectors. Investment in the supply of climate information alone will not result in climate-smart development. Corresponding investment is also needed for (a) identification of sectoral needs; (b) development of targeted information; and (c) building active relationships between “suppliers” and “users”. In this way, sectoral decision-making can be systematically improved through the incorporation and management of climate risks.

18. The main issues to be addressed are:

- a) Climate monitoring, vulnerability assessment and institutional strengthening;
- b) Climate services and information provision to decision makers and partnerships;
- c) Deploying regionally-integrated and community-based early warning systems; and
- d) Instilling and sustaining a shared culture of sectoral climate risk management.

IV. Key questions

19. **Identifying increased risks:** Are risks to Africa's natural resource base adequately identified in their nature, magnitude and interactions at all relevant scales for decision-making? Are African countries well prepared to respond to possible significant increase in weather-related disasters, subsequent to much larger and more frequent extreme climate-related events?

20. **Improving climate services:** Can early warning, preparedness and response processes be improved in African countries? How can we ensure that everyone has access to timely integrated early warning information on extreme events? Why have climate services been so poorly mainstreamed into current African development agenda? Can climate-related services be adequately developed to meet Africa's adaptation and developmental needs? Is it just a question of adequate finance? If climatology (and hydrology) are underfunded under present climate management systems, could it be possible to devise more innovative and effective ways for delivering more development-oriented climate services?

21. **CRM:** Why is climate risk management not adequately practiced on the continent? What needs to be done to initiate and sustain a ***culture of risk management*** in every climate-sensitive sector? How can appropriate policies and practices be developed most effectively? Should global support promote national policies and practices?

22. **Environment monitoring:** How can we increase community participation in the production and use of weather, water, climate and environmental observations to improve lives and livelihoods? Do we need a different institutional setting - integrated environment and climate information services suitable for a green economy? Or could adequately-resourced climate innovation centres "networks" meet the diverse needs of African stakeholders?

23. **Data policy:** What is the most appropriate data policy for CRM-related information on improving access and use of data and knowledge in development?

