



BUILDING CLIMATE RESILIENCE IN AFRICA THROUGH RESEARCH AND DEVELOPMENT

An evaluation of the Future Climate
for Africa programme



FUTURE
CLIMATE
FOR
AFRICA



FCFA AT A GLANCE



£25 MILLION
between 2015 and 2022



16 PILOT STUDIES
across 13 COUNTRIES



**13 POLICIES, PLANS AND
INVESTMENTS** influenced



14 TOOLS developed to
support decision-making



**198 ACADEMIC
ARTICLES** published



**99 EARLY CAREER
RESEARCHERS** supported



187 INSTITUTIONS
directly engaged



106 590+ PEOPLE
reached through
communication activities

KEY MESSAGES

- Future Climate For Africa (FCFA) made significant progress in terms of both delivering a step-change in African climate science and in piloting approaches to integrate climate information into decision-making.
- FCFA's achievements were largely enabled by a strong focus on linking research and development funding to realise impacts through evidence-based pilot studies across Africa.
- The programme's emphasis on co-production – and interdisciplinary and transdisciplinary approaches – as well as its novel methods for engaging with decision makers, led to tailored climate information that was fit-for-purpose.
- FCFA's work to improve knowledge and strengthen networks has laid the foundation for future work to further enhance resilience within the continent. Future programmes should take the opportunity to capitalise on FCFA's progress and build on these developments.
- Lessons emerging from the FCFA programme indicate there are still several barriers which limit the ability for programmes to influence change across the continent. To overcome both programmatic and delivery challenges, lessons and recommendations from the FCFA programme should be taken up by donors, researchers and practitioners.



Glossary

Coproduction: The process of bringing together different knowledge sources and experiences to jointly develop new and combined knowledge which is better able to support specific decision-making contexts¹.

Interdisciplinary approach: Researchers inform each other's perspectives and compare results through a transfer of knowledge across disciplines. This process may lead to the creation of an entirely new discipline or area of scientific inquiry.

Transdisciplinary approach: Research that integrates knowledge from different disciplines, expertise, and stakeholders to jointly create new knowledge to address complex problems².

ABOUT FCFA

Future Climate For Africa (FCFA) is a £25 million programme funded by the UK Foreign, Commonwealth and Development Office (FCDO) – previously the Department for International Development (DFID) – and the Natural Environment Research Council (NERC). It generated fundamentally new climate science focused on Africa and piloted the use of improved medium- to long-term (5–40 year) climate change information in development projects. The goal of FCFA was to reduce disruption and damage from climate change and to safeguard economic development and poverty eradication efforts over the long term.

FCFA is made up of five international research teams and a **Coordination, Capacity Development and Knowledge Exchange (CCKE)** unit. The five research teams are:

AMMA-2050

(African Monsoon Multidisciplinary Analysis 2050)

FRACTAL

(Future Resilience for African Cities and Lands)

IMPALA

(Improving Model Processes for African Climate)

HyCRISTAL

(Integrating Hydro-Climate Science into Policy Decisions for Climate-Resilient Infrastructure and Livelihoods in East Africa)

UMFULA

(Uncertainty Reduction in Models for Understanding Development Applications)

ABOUT THE FCFA EVALUATION




This brief synthesizes the findings from an evaluation of the FCFA programme over the past six years of implementation. The evaluation aimed to assess the impacts, outcomes and achievements of the programme in relation to the programme Theory of Change (ToC), with a particular focus on *‘Improved medium-term (5–40 year) decision-making, policies, planning and investments by African stakeholders and donors’*.

Rather than focusing on progress at the output level, the evaluation considered the intended, expected, and unexpected, outcomes or changes that led to progress towards the planned impacts of the programme. An iterative approach was employed to identify the progress made in three key impact pathways. (See Table 1.) This brief highlights the progress in relation to these impact pathways; outlines the enablers and, subsequently, the barriers and challenges to achieving this progress; and concludes with recommendations for future programmes.



FCFA'S PROGRESS IN SUPPORTING CLIMATE RESILIENCE IN AFRICA

TABLE 1 Future Climate For Africa's progress

 PATHWAY	 PROGRESS	 IMPACTS/CHANGES
Pathway 1		
<p>Targeted engagement through case studies, focusing on specific adaptation problems and groups of stakeholders</p> <p>The staging of pilot case studies that demonstrate the application, value and role of climate information in specific decision-making contexts relevant to long-term (5–40 year) investments, policies and plans</p>	<p>FCFA contributed to an increased awareness, understanding and appreciation of climate information by decision makers</p>	<ul style="list-style-type: none"> • The integration of climate information into 13 policies, plans and investments in 6 different countries • A commitment to establish two new institutional structures focused on addressing issues of climate change in two additional countries • A further 18 instances where input has been provided into policies and/or processes but where these changes did not, or have yet to, occur • 14 tools tailored towards the needs of the users to support the uptake and use of climate information
PATHWAY 2		
<p>Securing long-term legacy through improvements in technical knowledge base, models, data and capacity</p>	<p>Significant contributions were made to addressing fundamental research gaps in African climate science. Substantial achievements have been made in furthering the quality and type of climate information available across East, West, Southern and Central Africa</p>	<ul style="list-style-type: none"> • New model developments (including CP4-Africa and METUM GA7) • Improved understanding of past and future climate and climate extremes over Africa • Improved understanding of the processes that influence Africa's climate • Improved understanding of model errors and projection uncertainty over Africa • 198+ published academic articles on climate science across Africa • Improved scientific capacity of 99 early career researchers
PATHWAY 3		
<p>Engagement with users and key decision makers at regional and pan-African level, utilising FCFA generic products and tools</p>	<p>Research impacts were amplified through engaging with, and strengthening, networks of decision makers at sub-regional, pan-African and global scales</p>	<ul style="list-style-type: none"> • 187 institutions directly involved in the FCFA programme • 106,590 people engaged through communications activities and media • 7 current and future research and/or development programmes (5 with a regional or continental focus) informed by the findings and experiences of FCFA • 16 partnerships with external entities/projects leveraged to bolster and extend the reach and success of FCFA • At least 6 substantial examples of national and regional engagements to bring climate change considerations, informed by FCFA research, into policy and planning at these levels

THE ENABLERS OF FCFA'S PROGRESS IN SUPPORTING CLIMATE RESILIENCE IN AFRICA

1 Integrating climate research and development impact

A key innovation – fundamental to the success of FCFA – was the much stronger focus on delivering development impact than had been the case in many previous climate science research programmes. Maximising real world impact is a clear goal of both NERC and FCDO, and was demonstrated by the partnership between these two organisations under FCFA. This strategic partnership demonstrated the value of investing in both fundamental climate science and its application within the same programme. This allowed for improvements in the understanding and prediction of Africa's climate to feed into the decision-making space to inform adaptation and climate resilience on the ground.



'Having ring-fenced activities for the model development for IMPALA meant that we were able to not just see that pull-through from the more established climate science into impact, but from the very start, right from the model development to actually delivering models and seeing impact on the ground in Africa in the four-year time frame, which is almost unprecedented.'

(Pillar 1 Learning Session participant)



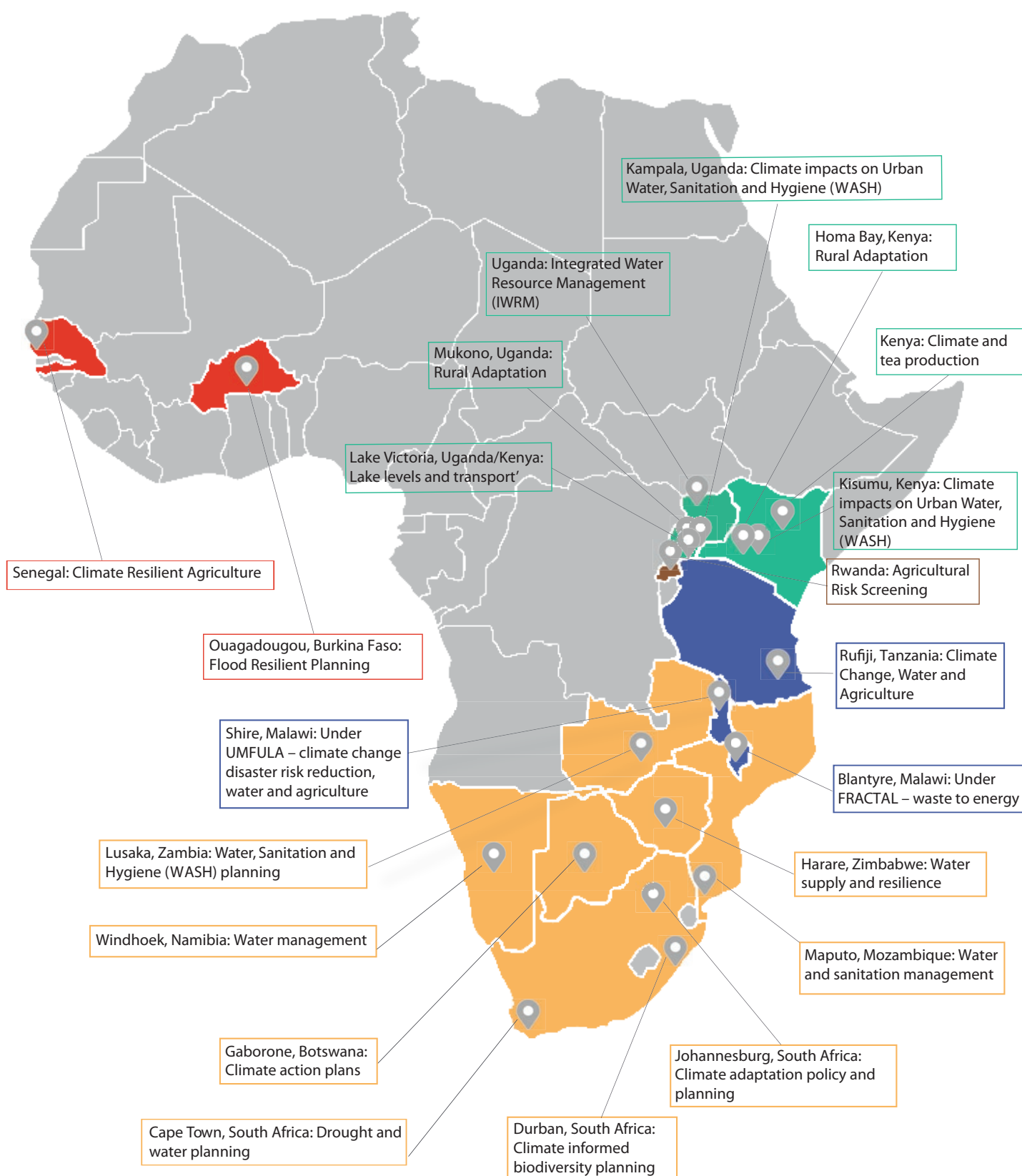
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2 The inclusion of pilot projects

The inclusion of pilot projects within the programme design allowed for the trialling of different approaches to integrating climate information into decision-making processes. (See Figure 1 for a map of FCFA projects.) This was a crucial component to the outcomes of the programme, but also provided valuable learning for future interventions to support the uptake and use of climate information. Through the process of co-production and engagement, pilot projects brought together a diversity of stakeholders, leading to the development and strengthening of networks. The learning developed from pilot projects and relationships as a result of these projects laid the foundation for activities to be replicated and scaled across the continent.



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IMPALA FRONTAL UMFULA HyCRISTAL AMMA-2050 SSN

Africa: IMPALA feeds into the FCFA regional pilot projects through its pan-African scale work on improving knowledge and modelling of African climate.

FIGURE 1 Map of FCFA pilot studies

3 Delivering context-specific interventions

Analysis of the social, economic and political contexts was important in shaping FCFA's pilot projects. This allowed projects to gain an understanding of decision-making processes and drivers, local development priorities and the needs of different sectors. In addition to the context analysis, stakeholder mapping helped identify key entities and groups to be included in the process of co-producing climate information within each context. Understanding the context, as well as the motivations of decision makers and stakeholders, and applying a climate change lens to the context allowed projects to shape interventions to be locally relevant. This ensured that projects could deliver meaningful and valuable interventions for intended users, fostering interest and buy-in. This promoted the uptake of climate information and the sustainability of the programme. There needs to be more emphasis on the inception period in programmes to ensure that there is a strong grasp of the contextual landscape, opportunities and barriers.



CASE STUDY

Co-producing climate information for the water–energy–food nexus

In order to address an issue with the usability of climate information, the UMFULA project co-produced climate information to support development planning and adaptation in the water–energy–food nexus of Malawi and Tanzania. An expressed need for actionable climate information, and the limited capacity for national meteorological agencies to deliver the required information, led the project to co-design interventions to capitalise on identified climate information needs. Working closely with local organisations and stakeholders, UMFULA co-produced climate projections and briefs, as well as online tools to inform decision-making within the water–energy–food nexus of each country.

4 Interdisciplinarity and co-production

Co-production and interdisciplinarity, and in some cases transdisciplinarity, were pivotal to the programme's success. These approaches were especially beneficial in establishing relationships, and finding common ground, between different groups. This fostered co-ownership of the policy change process, improved decision makers' understanding of, and capacity to use, climate information, and improved researchers' capacity for engagement and collaborative research. In a final survey done in 2021, all decision makers reported an improved appreciation of climate risks, with the vast majority noting the programme had supported the integration of climate information into decision making.

Interdisciplinarity was an innovation built into the design of FCFA, driven and exemplified by the partnership between FCDO and NERC. It is uncommon for interdisciplinary arrangements to happen naturally. Therefore, taking an impact research approach through the pilots that drew on the primary science, and applying it through a process – co-production being one of them – that required everyone to work together, was key. This collaboration fostered greater understanding between these different fields and enabled researchers to see the complementarity, and the value, of working together. Co-developing solutions to co-identified risks served to unify stakeholders under a common cause and helped to foster ownership of the plan of action. In some cases, creating a common ground through careful power navigation of power dynamics and systems of hierarchy was important in ensuring all contributions were respected, valid and had equal weighting, allowing for input and learning by all involved. (See Case study: Theatre Forum.)

The co-production process also contributed to a change in the practices of researchers, especially the order in which they did things. Instead of conducting top-down research, there was a shift towards identifying a need in the real world first and then shaping the research to meet this need. There was also a change in presenting information to different audiences, adapting it to be accessible and relevant to specific target groups.



'The project has completely changed me ... I directly see the difficulties of communicating; to simplify some messages without losing the complexities ... My perspectives are completely different through engaging with AMMA-2050.'

(AMMA-2050 Key Informant Interview participant, 2019)



CASE STUDY

Theatre Forum

In Senegal, AMMA-2050 used **Theatre Forum** to inform decision-making in agriculture. Theatre Forum was a participatory form of theatre: a local theatre troupe performed a play based on real-life scenarios; then a moderator opened the floor for the audience to replace actors and share their views. This provided an open space for discussion where different groups (i.e. decision makers, farmers, scientists) could share their views and explore each others' priorities on a level playing field. This was not only important for balancing power dynamics but also improved scientists' understanding of what climate information is needed for farmers and decision makers in the agriculture sector.

It was acknowledged that while co-production is very effective, it is particularly time consuming and resource intensive. Effective co-production requires obtaining an understanding of the local context and power dynamics, developing an iterative approach based on this understanding, as well as a lot of careful planning and creativity. Also important was the use of a range of different tools and methods to engage stakeholders and facilitate effective communication, as well as use of skilled facilitators and regular and consistent engagement, both in groups and on an individual basis. Similarly, interdisciplinary and transdisciplinary approaches required a significant amount of time managing relationships, dynamics and competing research priorities and agendas.



5 Making explicit links between climate change and development goals

A key strategy used during FCFA's co-production process involved first identifying development goals and challenges, and then applying a climate change lens. This provided strategic opportunities for aligning how climate risks and climate information was produced and communicated with the priorities of decision makers. Linking the risks and impacts of climate change to local development demonstrated how climate risks may impede development goals or exacerbate development issues. However, this link was also beneficial in demonstrating how to integrate climate risks into current plans to ensure climate resilient development. (See Case study: Climate risk narratives.) Another beneficial approach was linking climate change to current climate risks. Recent experiences of extreme events and climate changes (e.g. the Ouagadougou floods of 2009 and record lake levels in Lake Victoria) were a useful leverage point from which decision makers could consider how climate change impacts development, and what needs to be done to build resilience against climate risks.



CASE STUDY

Climate risk narratives

Climate risk narratives were produced for **Southern African cities by FRACTAL** and **rural and urban East Africa by HYCRISTAL** to communicate a range of possible future scenarios. These narratives combined high-level climate information with social, economic and environmental contexts to show what climate change might look like in two to three possible futures. This painted a picture of the range of different impacts that might be felt in multiple scenarios where temperatures increased and rainfall patterns changed. These narratives demonstrated how climate change may impact development, and thus the narratives could help initiate conversations on what adaptation options are needed for climate resilient development.

Linking management of climate risks to the priorities of decision makers also proved necessary for overcoming financial constraints faced by government departments across all the pilot studies. Limited resources posed a challenge in terms of integrating climate information into policies, plans and investments, particularly those changes that might require additional budget.



6

Promoting southern leadership and enhanced South–North collaboration

FCFA's intensive South–North and South–South collaborations facilitated the development of adaptive and research capacities of the different research partners. Shared learning through the programme supported the development of a collective capacity by allowing stakeholders to learn from each other and work together to find solutions. This collective learning exposed researchers and academics to different and new ways of conducting research and innovative approaches to carrying out engagements. The emphasis on collaborative learning through doing (practice and meaning-making), becoming (identity), and belonging (community), was a key contributing factor that led to the research partners wanting to sustain this partnership. (See Case study: Promoting model evaluation with an African lens.)



CASE STUDY

Promoting model evaluation with an African lens

Building on the work of IMPALA, the **Model Evaluation Hub LaunchPad** project aimed to develop tools and techniques for model evaluation with an African lens. The project connected model developers from the UK with regional climate experts and research fellows from Africa to assess how accurately global models represent key climate processes in Africa. The approach was vital for bridging the gap between model producers and users, and for supporting knowledge sharing and the capacity development of both groups. This has been pivotal in supporting the next generation of African climate experts, while generating momentum for model evaluation and development from an African perspective.



The achievements of FCFA were made possible by pilot projects tailored to local contexts, with southern partners as the linchpin for working contextually in-country and leveraging partnerships for impact in the programme. However, in order to build the intended capacity of African institutions and individuals, power dynamics need to be addressed at the programme design level. Southern leadership was constrained by institutional capacities and inflexible design that limited southern partners' ability to take on leadership roles from the outset. Leadership also requires partners with the ability to see the wider system and exert change within that system. The current design does not enable southern partners to be in positions of leadership from the outset. There is a need for multi-stakeholder programmes to understand the diverse needs of partners, and to work towards tailoring approaches to support teams with financial, research and administrative

issues, ensuring that there is equal opportunity to lead.

7 Employing a collaborative and flexible research approach

The collaborative nature of FCFA allowed for a large contingent of researchers to work on the same, or similar, issues across Africa. This allowed climate scientists to work in a coordinated way to build on each others' knowledge and research. This resulted in much quicker advances in climate science than what would ordinarily happen in isolated research projects. In addition to this, the flexible programmatic approach allowed for different groups of researchers from different fields to pick up on, and explore, aspects that emerged as important and interesting and, in so doing, meet the climate information needs of decision makers.



'If you left science to its natural progression, then it would be two years before you might see the results published in a journal. Another year might go by before an individual picked the theme up ... so the progress would only be picked up in five years. Whereas hunting in packs like this gave us the opportunity to seize on things quickly, and to move them along in groups of effort. That is what is distinctive about the climate science in FCFA. Had you left this process alone ... this sort of progress takes 15 or 20 years to happen, and we do not have that opportunity. Climate change will get us quicker.'

(Pillar 1 Learning Session participant)

THE CHALLENGES AND BARRIERS EXPERIENCED BY FCFA

The implementation gap

The experience of FCFA indicates the enormous level of effort and resources required to facilitate the improved integration of climate information into medium- and long-term policies, plans and decisions. While FCFA has made advances to achieving its intended outcomes, (*Improved medium-term (5–40 year) decision-making, policies, planning and investments by African stakeholders and donors*) there is a crucial missing step to achieving the intended long-term impact (*Increased resilience of African people and societies to weather and climate change*). A significant missing step relates to the translation of decision-making processes, such as policies, plans and investments, into action. There is a need for activities and capacity to be sustained so as to ensure interventions do not stop at the policy, planning and investment stage, but are maintained through to implementation. This requires considering the capacity constraints (systematic, economic, political, etc.) which inhibit decision makers from carrying policy and plans through to implementation and understanding how to overcome these constraints.

‘Better climate information will lead to better decision-making’

A key assumption made in the FCFA Theory of Change was that improving the scientific knowledge and prediction of Africa’s climate would translate into improved decision-making. However, this assumption did not hold true in FCFA. The pilot sites have demonstrated the variety of influencing factors and drivers, unrelated to climate change, that shape decision-making processes, including development objectives, availability of finance, investment priorities, political processes, power structures, and so forth. In some pilot studies, it was evident that a wide range of climate information already existed, but was not getting any traction within decision-making spaces. The FCFA pilot projects highlighted the need to complement

advances in climate science with the use of co-production approaches in order to build receptivity and political interest to improve uptake of climate information. This should include considerations for how to strategically build the capacity of decision makers in terms of understanding, interpreting, and being able to use and integrate, climate information.



‘With the pilots, what we’ve probably found is it’s far less straightforward than that kind of linear model of information provision. It’s very complex. There are many things that come into play in that process. You’ve got to build relationships; you may not have demand for the information, or willingness, or time to engage with the information. All sorts of things like that, that will come into play within this. And that may be reflected in some of the difficulties that we have in terms of defining cause and effect and these, sort of, concrete examples of where information has been used.’

Pillar 2 Learning session participant

Retaining capacity in the long term

Identifying and recruiting champions in government was a standard approach applied across all pilot projects, and this allowed for projects to gain traction and insight into governmental processes. However, high staff turnover in government presented a challenge in this regard. The regular changing of personnel often resulted in projects having to start the whole process again, including reintroducing concepts, as well as securing stakeholder buy-in and support. The high turnover also resulted in the loss of champions, which was particularly challenging given the time it took to identify and foster appropriate champions, and build relationships in this regard.

In addition to staff turnover in government, the limited opportunities for African early career researchers to pursue careers in research and academia created a challenge to sustaining impact gain during the project. Capacity building was a valuable component of the programme, but challenges in securing relevant professional and academic positions after the programme was a concern. There is a need to consider more systematic approaches to building the capacity of African early career researchers, to ensure capacity improvements are not reliant on programme time frames and funding and can be sustained in the long term.



‘...change in leadership, and the oft-concurrent cabinet reshuffles, changes in ministerial mandates and rotation of high-level civil servants, leads to a focus on short-term planning that links with electoral cycles, rather than the required focus on long-term building of resilience strategies and climate adaptation investments.’

(UMFULA, 2019:15)³

Programme time frame

As previously noted, co-producing climate information can be a time-consuming process. Within FCFA it took a considerable amount of time to establish partnerships, build understanding of the local context, identify, establish and maintain relationships with key stakeholders and manage power dynamics. While the collaborative nature of FCFA aided in the programme making rapid advances, the ambition of influencing medium- to long-term decision-making within a five- to seven-year programme was extremely difficult to achieve. As the long-term impacts are only expected to come to fruition by mid-century, it is difficult to determine currently how effective FCFA's interventions were. Additionally, there is a need for much of FCFA's work to be sustained, scaled and replicated, which requires a continuation of efforts beyond the time frame of a single programme.



KEY RECOMMENDATIONS FOR FUTURE PROGRAMMES AIMING TO BUILD CLIMATE RESILIENCE

1

CREATE TAILORED APPROACHES TO LINKING CLIMATE RESEARCH AND DEVELOPMENT

Programmes should be guided by an **evidence-based design** process, which includes context analysis and stakeholder mapping, to ensure programmes are addressing local needs. **Interdisciplinary and**, if possible, **transdisciplinary approaches** should be adopted to ensure a range of knowledge is being utilised to support the integration of climate information in decision-making. These approaches should be guided by **co-production** to co-explore and co-develop information and promote local ownership of programme activities and outcomes. Allowing project and programme **flexibility** in budget and activities can further ensure that programmes are addressing local needs and responding to emerging needs and opportunities.

2

SUPPORT COLLABORATIVE AND CROSS-INSTITUTIONAL CLIMATE RESEARCH

Encouraging and supporting greater **collaborative efforts in climate science research** is vital in order to make rapid advances in filling gaps in the scientific knowledge of Africa's climate. Incentivising cross-institutional research, particularly through South-North and South-South partnerships, can support the advancement of climate science through pooling global expertise, technical capabilities and available data.

3

MAKE PROVISION TO BRIDGE THE IMPLEMENTATION GAP

Once climate change policies have been put in place, or policies have adapted to include a focus on managing issues of climate change, the **process of implementation needs to be considered**. To ensure such policies contribute to the objective of FCFA – increasing the resilience of African people and societies – it is imperative that they be implemented. Therefore, it is necessary to plan and make provision for this in the programme design, and to take an active approach to bridging the implementation gap and integrating this as an explicit goal in future programmes, particularly given the significant resource constraints and competing budget requirements of decision makers.

APPLY A STRATEGIC APPROACH TO CAPACITY DEVELOPMENT

4

A similar approach to that applied to the capacity development of the early career researchers should be used across the programme; in particular, effectively supporting and developing the **capacity of decision makers** to understand, interpret and apply climate information. Building the **capacity of intermediaries** (e.g. knowledge brokers, facilitators and trainers) is particularly important to ensure capacity can be maintained and further developed beyond project closure.

DEVELOP A CLEAR MONITORING, EVALUATION AND LEARNING (MEL) STRATEGY

5

A **well-resourced, coordinated MEL approach** across FCFA would have been valuable, in particular for measuring programme-level progress towards outcome and impacts. Having dedicated MEL focal points at the project and programme level is particularly important in ensuring that MEL strategies are relevant at both project and programme levels; that there is more buy-in to the programme ToC, and that the strategy is capturing the range of impacts.

CREATE GREATER FOCUS ON THE SOUTHERN PARTNERS

6

Increase the **opportunity and potential for southern researchers and institutions to take leadership roles** when implementing this type of project, including providing programmes of support at an institutional level to make this possible. Ensuring that increasing responsibility is being transferred as the capacity of southern partners is developed during programmes helps create a legacy of skills and knowledge to promote the continuation and sustainability of programme activities. Furthermore, programmes should consider building institutional capacity to ensure that southern researchers are able to be retained past the end of the programme.

LENGTHEN THE PROGRAMME TIME FRAME AND MAKE PROVISION FOR CONTINUITY

7

The process of setting up partnerships, conducting context analysis, co-producing tailored climate information tools and products, and ongoing capacity building is resource-intensive and time-consuming. In order for programmes to bridge the implementation gap, it would be prudent to **extend the time frame of programmes**. Furthermore, to avoid backsliding and losing momentum gain in programmes, steps need to be in place to **ensure programme continuation**. It is important that donors capitalise on the investment and advances are made by ensuring that new programmes start as the old ones end, or by making concrete linkages to embed the progress in other programmes.

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KEY RESOURCES

REPORT

Learning from the FCFA Programme

MANUAL

A Manual for Co-production in African Weather and Climate Services

MICROSITE

Impact and Relevance of the FCFA Programme

BOOK

Climate Risk in Africa – Adaptation and Resilience

SUMMARY

Collection of FCFA Research Consortium and Country Summaries

BRIEF

Building Research Capacity in Early Career Researchers – Insights from an International Climate Research Programme



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