



UMFULA: Co-producing Climate Information for Medium-term Planning in the Water-Energy-Food Nexus



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Aim of the project

Uncertainty Reduction in Models for Understanding Development Applications

(UMFULA) aims to improve the availability and use of climate information for medium-term (5–40 year time frame) decision-making in the water-energy-food nexus.



Dates

2015–2019



Countries

Malawi and Tanzania
(This case study focuses
on Malawi)



Meteorologist Yobu Kachiwanda, of Malawi's Department of Climate Change and Meteorological Services, displays the co-produced climate briefs to members of the public and school children on World Meteorological Day 2018. (Source: DCCMS, 2018)

Aim of co-production:

Many African countries have recognised climate change in their national development plans and adopted climate change policies. How to incorporate climate information in decision-making is still a barrier. This disconnect stems from a 'usability gap' between climate science producers and users, which acts as a major barrier to the effective use of climate information to inform planning and adaptive decision-making. Our ethos was that, by working across the boundary with users, we would be able to provide more useful and usable information that more closely meets demands to inform medium-term planning processes relating to water, energy and agriculture.

Context:

The motivation for co-production came from consultation within country (Vincent et al., 2014). Government technical staff lamented the fact that they are often presented with reports from complex models, which they do not know how to use. They also cannot access the source material. Department of Climate Change and Meteorological Services (DCCMS) staff also highlighted the challenges they face in being able to meet increasing demands for information from government departments with a very slim organisational structure and significant pressure on staff resources. Co-production took place at national level.

Who was involved and what were their roles?

The Department of Climate Change and Meteorological Services (DCCMS) was involved in the design of the content and presentation of future climate scenarios. The Ministry of Agriculture, Irrigation and Water Development (MoAIWD), the Department of National Parks and Wildlife, and related programmes and organisations such as the Shire River Basin Management Programme and the Electricity Supply Corporation of Malawi Limited (ESCOM) played a role in conceptualising and co-developing the open access **Water Evaluation and Planning (WEAP) system model** through regular engagement, feedback and iteration.

How was co-production done?

Identify key actors and build partnerships; build common ground; co-explore need

DCCMS were involved in a pilot case study for the Future Climate For Africa programme that took place in Malawi in 2014. The interest generated by this pilot case study was critical to UMFULA including Malawi in its proposal. We were able to design the project so as to capitalise on the needs identified in earlier initiatives, so we knew that our aims had been user-informed (Vincent et al., 2014). Through initial scoping, we cemented an emerging relationship with the Department of Climate Change and Meteorological Services, and were allocated an official desk officer to coordinate liaison.

In addition to the partnership with DCCMS, we identified three groups of key actors with whom to build partnerships:

1. A contact group comprised of representatives of other projects investigating complementary issues (for example: the FCFA FRACTAL project, WFP/WMO who implement the Global Framework for Climate Services in Malawi, the World Bank, which is responsible for the Shire River Basin Management Programme and the Pilot Programme for Climate Resilience). This association enabled us to cross-check information needs and ensure that we were contributing to addressing those needs, thereby also reducing demands on government partners.

What was co-produced?



- **Future climate projections for Malawi:** The climate brief outlines recent trends, future projections of temperature and rainfall, and changes in extremes in Malawi (Mittal et al., 2017)
- **A Water Evaluation and Planning (WEAP) system model:** The model projects future water availability under climate change.
- **Projecting future water availability in Lake Malawi and the Shire River basin:** The brief presents the outcomes of the WEAP model to project future water availability reflecting future climate projections (as presented in the climate brief), demand and the effects of water management strategies (Bhave et al., 2019).



Benefits of the co-production approach

- Regular contact and process-based updates encourage country ownership, enables us to keep abreast of emerging decision needs, and also helps to identify and address any emerging issues.
- Iteratively developing the WEAP model with stakeholders, through engagement and collaborative discussion forums, has meant that the model better incorporates evolving infrastructure in the region, and the corresponding changes in the needs of decision-makers. Greater ownership is the result.
- Maintaining multiple 'levels' of engagement has also been helpful. For example, in addition to the regular technical discussions, we also have senior researchers meeting with government directors to maintain high-level strategic links, which reinforces support for the technical links.

2. Our case study partners, including in the Ministry of Agriculture, Irrigation and Water Development, are our core co-production partners. Engagement is based on their stated preferences around frequency of contact and preferred communication medium.
3. Broader stakeholders are in-country partners who have an interest in the project but are not directly involved in it. They are kept in touch on our progress through six-monthly one-page stakeholder updates, as well as outputs when released. Updates and outputs are communicated to stakeholders through their preferred medium (email or face-to-face delivery).

Co-develop solutions

The climate brief was developed following a workshop with DCCMS in which they provided direction on the content and presentation of projections. The WEAP model was co-developed through regular engagement with our case study partners. We met with them individually in the early stages, and then, in later stages, held collaborative learning fora which enabled presentation and review-and-refinement of previous inputs, as well as discussion between partners with different priorities.

Co-deliver solutions

The government of Malawi has cited the climate brief in the drafts of the National Resilience Strategy and the Third National Communication to the United Nations Framework Convention of Climate Change (UNFCCC). The photo shows DCCMS meteorologist Yobu Kachiwanda presenting the brief on World Meteorological Day 2018.

Lessons to learn from:

- **Co-production is time-consuming and costly:** Financial support for routine office tasks on the part of African country government counterparts – such as being able to send emails with attachments (e.g. when we requested rain gauge data) – also need to be considered, since such 'standard' office facilities are not always in place.
- **Relationship management is important:** We would have failed to build a functional and productive relationship had we not proactively maintained communications and engagement.
- **Joint branding can be important:** Very clear and equitable joint branding of co-produced outputs may avoid situations of confusion. Whilst the climate brief clearly acknowledged DCCMS, it was branded as FCFA. This impedes DCCMS ownership

and can also impede legitimacy among other government departments, who look to DCCMS as their source of weather and climate information.

- **Building capacity ensures sustainability:** To be sustainable, co-production needs to involve an element of staff capacity building throughout the process. Involving technical staff from MoAIWD in the design and development of the WEAP model means that they will be able to continue to use and apply it to different circumstances after the end of the project. The project also produced a series of knowledge-based briefs (FCFA, 2016; Conway et al., 2017) aimed at creating discerning consumers of information.

REFERENCES

- Bhave, A.G., Vincent, K. and Mkwambisi, D. (2019) 'Projecting future water availability in Lake Malawi and the Shire River basin'. FCFA Country Brief. Cape Town: Future Climate For Africa. (<https://futureclimateafrica.org/wp-content/uploads/2019/07/3124-umfula-weap-v5.pdf>).
- Bremer, S. and Meisch, S. (2017) 'Co-production in climate change research: Reviewing different perspectives', *WIREs Climate Change*, e482. (<https://doi.org/10.1002/wcc.482>).
- Conway, D., Vincent, K., Grainger, S., Archer van Garderen, E. and Pardoe, J. (2017) 'How to understand and interpret global climate model results'. Cape Town: Future Climate For Africa. (http://kulima.com/wp-content/uploads/2017/10/FCFA_GCM-guide-web.pdf).
- Future Climate For Africa (2016) 'Climate models: What they show us and how they can be used in planning'. Cape Town: Future Climate For Africa. (http://kulima.com/wp-content/uploads/2017/10/FCFA_Climate_Models_WEB.pdf).
- Mittal, N., Vincent, K., Conway, D., Archer van Garderen, E., Pardoe, J., Todd, M., Washington, R., Siderius, C. and Mkwambisi, D. (2017) 'Future climate projections for Malawi'. Future Climate For Africa Country Climate Brief. (http://www.futureclimateafrica.org/wp-content/uploads/2017/10/2772_malawi_climatebrief_v6.pdf).
- Vincent, K., Dougill, A.J., Dixon, J., Stringer, L.C., Cull, T., Mkwambisi, D.D., and Chanika, D. (2014) *Actual and Potential Weather and Climate Information Needs for Development Planning in Malawi: Results of a Future Climate for Africa Pilot Case Study*. (<http://kulima.com/wp-content/uploads/2011/03/Actual-and-Potential-Weather-and-Climate-Information-Needs-for-Development-Planning-in-Malawi.-Results-of-a-Future-Climate-for-Africa-Pilot-Case-Study.pdf>).
- Water Evaluation and Planning System. (<http://www.weap21.org/>).



UMFULA team collaborates with DCCMS
(Source: K. Vincent, 2017)