



ForPac: Co-producing Approaches to Forecast-based Early Action for Drought and Floods in Kenya



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Mapping the county drought contingency planning process with representatives from the Kitui County Steering Group, the Kenya Met Department and King's College London (Source: E. Mwangi, 2018)

Aim of co-production:

ForPac brought together partners with long-standing relationships to develop climate services that support humanitarian and development planning within existing risk management processes and systems. This experience highlighted the vital importance of working closely with decision-makers to develop climate information. The project's co-production processes had these main objectives:

- Develop tailored, relevant and usable products by bringing together climate information producers and decision-makers/users.
- Strengthen decision-makers' understanding of forecast characteristics and limitations in order to build confidence in decision-making under forecast uncertainty, for example: familiarising decision-makers with the probabilistic nature of climate forecasts.
- Co-explore forecast probability triggers and levels of skill required to activate preparedness activities with acceptable levels of confidence. With forecast-based action not yet well established in the Early Warning System (EWS), building trust by using probabilistic forecasts for decision-making is essential.

Context:

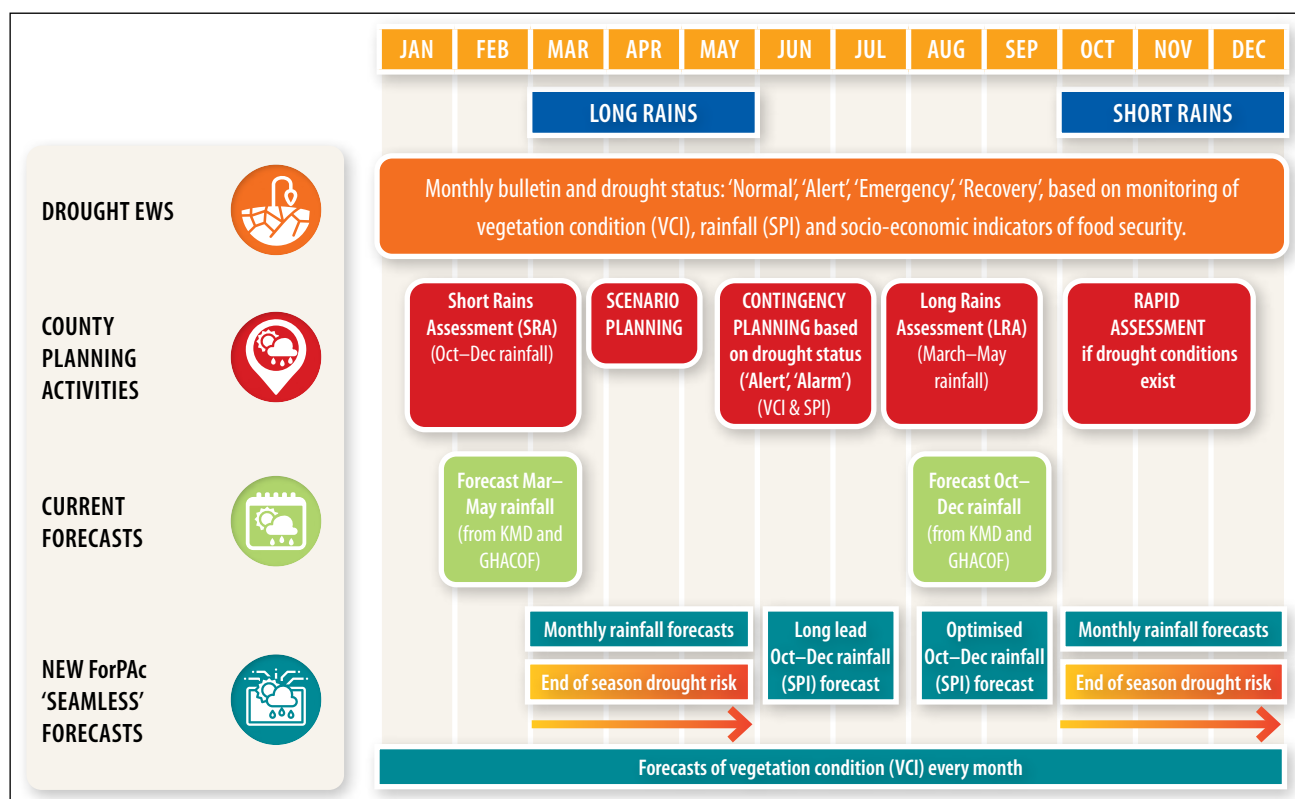
Kenya has a developed EWS for drought, but that system is based on monitoring drought conditions. Therefore, actions are responsive rather than anticipatory, and there is no EWS for flood in Nairobi. While the



Aim of the project

Towards Forecast-based Preparedness and Action

(ForPac) is a research project to support more anticipatory drought and urban flood risk management in Kenya. ForPac was designed around a co-production approach, bringing together mandated agencies responsible for weather and climate forecasting for flood and drought risk management in Kenya with researchers in the United Kingdom. ForPac aims to co-produce weather/climate information that meets the direct needs of decision-makers and develop approaches to integrating forecasts into drought and flood Early Warning Systems (EWS).



Co-produced seasonal calendar of the drought early warning system, current forecasts and where new tailored forecasts could align better within existing decision-making processes in Kenya. (Source: ICHA, 2020)

Kenya Meteorological Department (KMD) produces relevant forecasts, these are not integrated into the drought EWS. Currently, production of climate information and risk management decision-making are siloed processes, with limited information sharing – for example, on the skill of forecasts – highlighting the need for co-production.

Who was involved and what were their roles?

ForPac, with coordination by the University of Sussex, brought together:

- Climate information producers: the KMD and the Intergovernmental Authority on Development (IGAD) Climate Prediction and Applications Centre (ICPAC) and the Met Office
- 'Users' of climate information: the mandated agencies responsible for risk management and climate information users, including national agencies of the Kenya Red Cross Society (KRCS) and the National Drought Management Authority (NDMA), county/local level stakeholders and drought/flood risk managers
- Researchers from the University of Sussex, the University of Oxford and King's College London.

Dates

December 2016–December 2020

Countries

Kenya



What was co-produced?

Outputs consisted of new, prototype forecast products, validated and piloted with users in decision-making, that fit directly into existing risk management systems.

- **Drought risk forecast:**
New, more useful forecasts, tailored to support the county drought EWS and contingency planning process, that are made available at the right time (See seasonal calendar infographic, page 137).
- **Flood risk forecast:**
Prototype forecasts providing seasonal (months ahead) and sub-seasonal (weeks ahead) information on the risk of heavy rainfall in Nairobi.

Crucially, ForPac supported an embedded ForPac staff member in each of the national Kenyan institutions involved, to lead the work, interface with leadership in each organisation, build trust and mainstream capacity. The main vehicle for co-production has been sustained engagements with stakeholder groups. In the project's drought case study, this was the Kitui County Steering Group for drought management and, in Nairobi, the project convened a group, including county government, emergency services, utility companies and community-based organisations.

How was co-production done?

Each case study started with a **Participatory Impact Pathways Analysis** (PIPA): a method for complex projects to bring together implementers, users and other stakeholders and make explicit the users' objectives and needs. This was followed by climate training and the trialling of new products through a 'pilot programme' during the October–December 2019 short rains. ForPac's PIPA included a range of activities which echo many of the recognised building blocks of co-production.

Build common ground

During the first workshop in July 2018, the team mapped out the forecasting and risk management context and 'landscape', and stakeholders agreed on a common understanding of, and objectives for, the project. The workshop participants co-produced a mapping of the seasonal calendar of climate and related livelihood activities (see seasonal calendar infographic, page 137), the timing of climate information release and drought management decision-making processes. This guided the identification of 'entry points' for new decision-relevant forecast products.

Co-explore need

Stakeholders developed 'problem trees' to identify challenges with forecast uptake and, where possible, to align forecast products with existing forecast metrics used in the drought early warning system. The 'problem trees' also identified training needs for stakeholders, and indicated that the project needed to invest in strengthening decision-makers' capacities and confidence in key climate concepts and their interpretation of existing forecasts.

Co-develop solutions

Based on the training needs assessment, the research team developed a climate information training course designed to strengthen understanding of the fundamentals of climate prediction and existing and proposed forecast products. 'Forecast pilot' exercises were then co-led, introducing new, prototype forecast products with additional training and scenario planning for what actions could be taken based on these new forecasts. The pilot included three workshops, each issuing the most recent forecasts, from months ahead of time to shorter lead times, allowing forecast users to see the evolution of the forecasts in real time.

Evaluate

Finally, the research team developed an extensive baseline, encompassing key informant interviews with decision-makers at national level and, within each pilot, including an ongoing process of participatory learning and review through end-of-workshop surveys and feedback sessions. For example, the final annual meeting included a learning review, based on 'round robin' discussion groups about the usefulness of particular forecast products. These activities showed that, while participants were better able to understand and use new forecasts for early action, institutional support and funding to do so remained uneven. The project has since focused on advocacy with the key agencies to embed these approaches.

Lessons to learn from:

- **Co-production provided evidence of the potential benefits of new decision-relevant forecast products and forecast-based decision support systems:** Such evidence is necessary to justify changes to operational systems and the investments required.
- **Partnerships between forecast producers and forecast users were strengthened:** ForPAC supported full-time researchers who were embedded in each organisation. This was a necessary condition to drive the co-production process, but, in itself, is not sufficient to ensure that enhanced partnerships are sustained in the long-term.
- **Sustainability requires formalised institutional partnerships, commitment to resourcing and capacity building:** This requires buy-in from institutional leadership and may be further supported by an enabling policy environment.
- **Learning and capacity building must be accrued in the institutions and not just in the individuals involved:** This requires a commitment to sharing and training a wider body of staff.
- **It is not business as usual:** While co-production was very productive, the team acknowledged that it can disrupt normal practices and routines. In this case, it required working with the institutions involved to change processes – an intensive and lengthy exercise.

Benefits of the co-production approach



- Identification and sustained engagement of a core group of decision-makers from project outset built trust and partnerships.
- Frequent engagements built common ground, trust and a safe open space to establish a detailed common understanding of how the existing early warning system works, what information is used, the sources of the information and the strengths and limitations of the system, as well as the nature of forecasting science.
- Forecast producers build an understanding of decision-maker systems, issues and needs, while decision-makers better understand forecast characteristics and build appropriate levels of trust in forecasts. Co-production can also make clear the benefits of the explicit provision of forecast skill, which may help overcome reluctance to provide this.
- Institutional mapping and needs assessment, facilitated by co-production, helped the project team to understand the political environment in which decisions are taken, identify possible champions for this approach and identify feasible entry points for forecast-based approaches in the system.
- Co-production-led process has increased the climate information producers' capacities to produce tailored and appropriate forecasts to support flood and drought risk management.
- Through co-exploring risk management decision-making systems/early warning systems and co-developing solutions between forecast users and decision-makers, forecast-based early action approaches were integrated into nationally owned EWS.

REFERENCES

ICHA/Kenya Red Cross (2020) 'Barriers of using climate and weather forecasts in drought planning and decision making.' Nairobi: Kenya Red Cross. (<https://www.forecast-based-financing.org/wp-content/uploads/2020/04/Forecast-Barriers.pdf>).