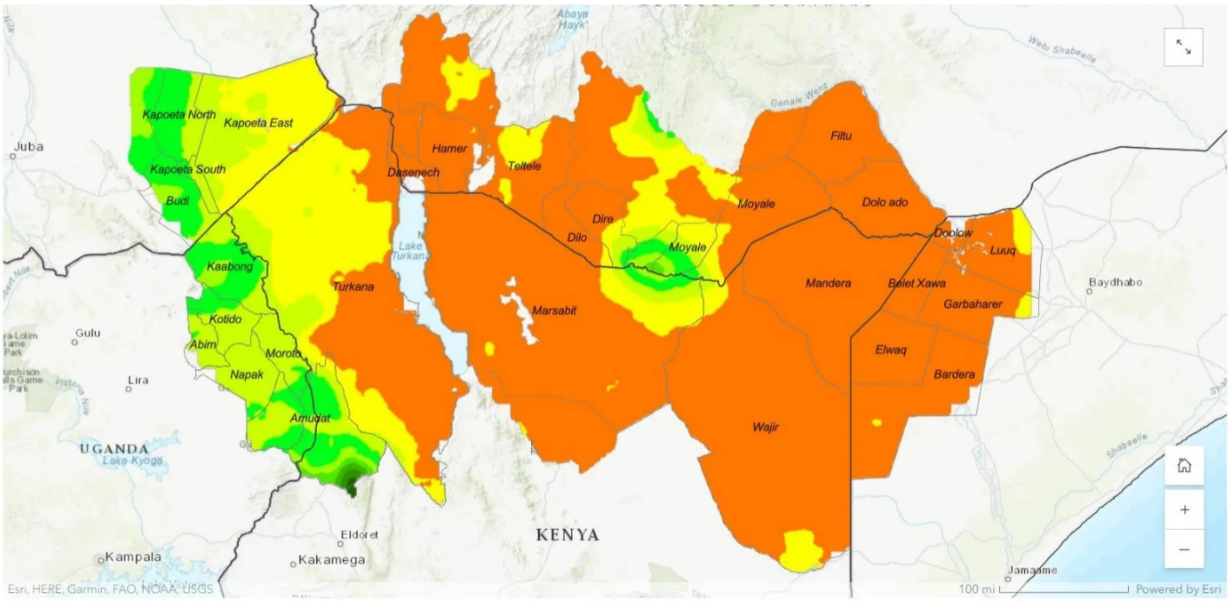
Training of Trainers for Learning Hubs/Community Interactions: FOrecasts for Local Action (FOLA)



Seasonal Rangeland Forage Prediction JJAS 2024

Dominic Kniveton
University of Sussex
UK
Email: kafw3@sussex.ac.uk

Emma Visman
Save the Children UK
Email: emma.visman@savethechildren.org

Ahmed Mohamoud
IGAD Centre for Pastoral Areas and Livestock Development (ICPALD)
Kenya
Email: ahmed.mohamoud@igad.int

1. INTRODUCTION

This training was originally designed for working in pastoralist communities in the cross-border clusters of the Horn of Africa (see Figure 1 below), although it is felt it is well suited to other contexts. In the past, pastoralist livelihoods have proven to be largely resilient to multiple stresses and shocks of the environment and climate including droughts, floods, heatwaves water scarcity and rangeland degradation. The practices embedded in pastoralist livelihoods have been informed by local, indigenous and traditional knowledge. This knowledge is accessible to many in the community and potentially adaptable to new information and experience. Scientifically derived forecasts hold the potential to strengthen the actions of the community before these stresses and shocks occur. Additionally, science can provide information on new threats such as climate change and invasive species. In between these two groups of communities and forecast providers, mandated agencies such as the Red Cross Red Crescent Societies, Save the Children fund, Oxfam and World Food Programme stand to bridge gaps between the community's capacity to cope with what is required on the ground. However, their ability to act in transboundary situations is often hampered by national demarcations of governance and sustained engagement with local communities. The learning hubs or community engagements are intended to facilitate the two-way dialogue between representatives of all the different groups in pastoralist communities, the research community, and those agencies mandated to assist those in need to plan and undertake effective anticipatory actions.

2. OBJECTIVES

The overall aim of this engagement is to co-develop the tools for engaging the community to understand and develop their anticipatory actions in the IGAD clusters, for different environmental and climate conditions while sharing knowledge and information on the practices of different stakeholders.

The specific objectives include:

- How do we ensure we are talking with a representative cross section of the community with particular emphasis on the most vulnerable?
- Understanding the above people's coping mechanisms/anticipatory actions in times of livelihood and health stress and shock.
- Understanding what information they use (and where they get it from) to make decisions before a stress and shock.
- What obstacles they face in mitigating or reducing their risk to these stresses and shocks?
- Combining local, traditional and indigenous knowledge with scientific knowledge.
- Turning weather, climate and environmental forecasts into impact forecasts, risk assessments and action plans.
- Recording the engagement.
- Preparing for the engagement.

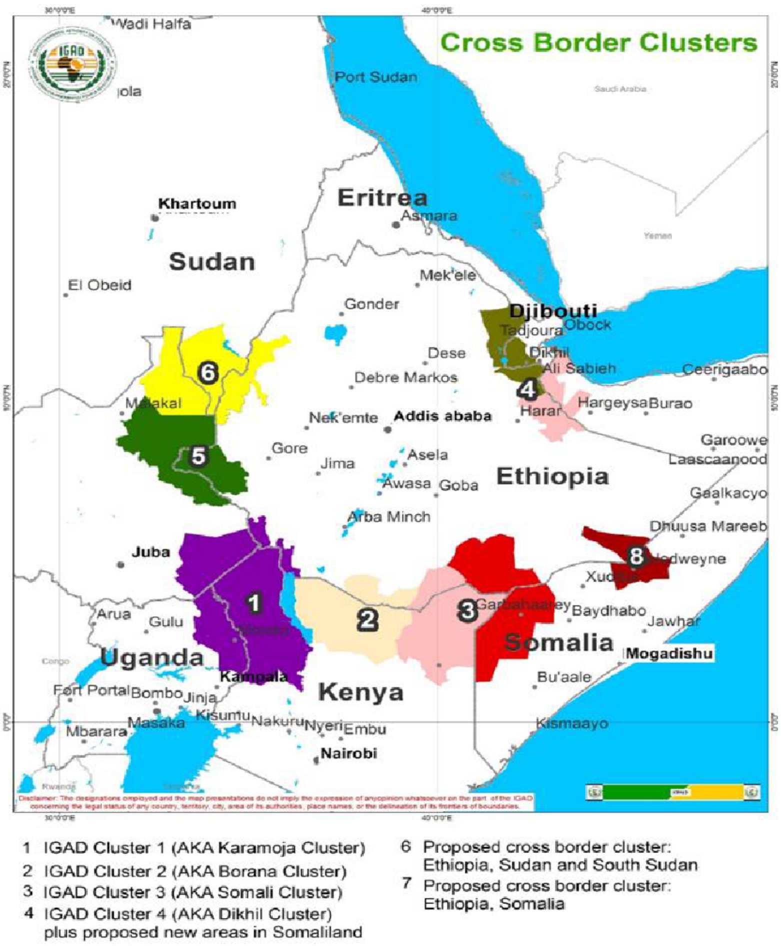


Figure 1. The IGAD Cluster Regions.

3. STRUCTURE OF THE REPORT

The report is structured into different sections to be followed sequentially and is designed to accompany the policy brief. This report is designed to explain the bare bones of the process suggested for the engagement. Clearly the exact engagement should be modified with the context. Each section is designed around a set of issues to consider when planning and carrying out the engagement. We propose that the engagement follows the principles of co-production as shown in Figure 2 below and outlined in Vincent et al. 2021[1].

[1] Vincent, K., Steynor, A., McClure, A., Visman, E., Waagsaether, K.L., Carter, S. and Mittal, N., 2021. Co-production: learning from contexts. Climate Risk in Africa: Adaptation and Resilience, pp.37-56.

Figure 2. Ten principles for co-production (Carter et al. 2019)[2].

In this context one of the key principles of co-production is to ensure that the outputs of co-production dialogue reflect the community contexts and needs of the decision-making process around developing and actioning anticipatory actions. This means understanding the community needs and decision-making context, designing engagements to fit within specific cultural contexts, understanding power dynamics and remaining cognisant (and sometimes humble) about the level of contribution that may result from the process.

Trust is probably the most important factor to making co-production work and be a long lasting process. According to Vincent et al. (2021, p42) “Building trust and equitable relationships takes time and often resources, but the resulting trust allows for an increasingly open sharing of ideas, opinions and knowledge needed to truly understand each other’s worldviews, positions, strengths and weaknesses. Open dialogue about the intended process and outcomes of co-production is important to build trust. Without trust between partners, the co-production process is, at best, superficial and, at worst, detrimental to any future engagements and/or use of any products that may result from the process”. Fundamental to building trust is the need to embrace diversity, respect differences and recognise that we each bring different knowledge and values. Related to diversity is the need to enhancing inclusivity making sure that all participants of co-production feel valued and safe, regardless of their social characteristics and identities, such as gender, age, ethnicity, sexuality and language.

---

[2] Carter, S., Steynor, A., Vincent, K., Visman, E., & Waagsaether, K. (2019). Co-production of African weather and climate services. Manual. Cape Town: Future Climate for Africa and Weather and Climate Information Services for Africa. Retrieved from https://futureclimateafrica.org/coproduction-manual

Vincent et al. (2021, p42) state that the key to inclusion is empathy: “Empathy is important; stakeholders should be encouraged to listen to others and understand their perspectives. This might involve being sensitive to historic privileges, prejudices and biases and doing things differently. For example, ensuring that women can participate might require that the timing, location and activities of meetings account for the social norms that typically restrict women’s input. Without explicit consideration of inclusivity, there is a risk of excluding marginalised or less powerful groups. Inadvertent exclusion of certain user groups would likely reinforce inequality and produce information that is not usable in a particular context.” Inclusion also benefits from the recognition of different worldviews and moving beyond the assumed superiority of ‘objective’ science, to a space where the variety of knowledges and experiences are valued and heard. In particular, the co-production approach can benefit from co-developing universally understood terminology which is underpinned by an understanding of the way that people experience and perceive climate-related risks, the sources of information that they use and trust and the formats that are most accessible to them. Supporting inclusive approaches to climate services and anticipatory action, the approach has drawn in part from Save the Children’s child-centred and community based approach to DRR, EWS (Save the Children (2024) Child-centered Early Warning Systems: Examples and Good Practice) and Anticipatory Action (Save the Children (2024) Anticipatory Action: A Child-centered Guide), including an ongoing tailored training being run together with key stakeholders, including forecast providers (including ICPAC and national forecast providers), at-risk children and communities, across countries in the Horn of Africa region.

In the past we have started the conversation by saying that:

- We are not telling them what to do or what to believe, rather developing plans together for what to do if times of hardship are forecast.
- We ask them to ask as many questions as they want.
- That there is no such thing as a stupid question, nor a bad idea.
- That they are the experts.

The first main question we suggest thinking about is ‘how to get the right people in the room?’ with the pre-question ‘who are the right people we want to engage with?’

4. AGREEING A COMMON UNDERSTANDING OF TERMS.

There are many terms and phrases used in work around climate resilience that mean different things to different people, not least the word ‘resilience’. Below we suggest a number of definitions and ways to describe these terms to be adapted to the different contexts but feel free to amend to your own definitions.

- Resilience has been defined as ‘describing the capacity or ability to anticipate and cope with shocks, and to recover from their impacts’[3]. While an example from a different context, we find trying to replicate the exercise shown in the video at https://www.soccercoachtv.com/Sample/SampleChairsTeamBuildingExercise.html helps us to explain what we understand by resilience.

[3] https://www.lse.ac.uk/granthaminstitute/explainers/what-is-the-difference-between-climate-change-adaptation-and-resilience/

- Anticipatory actions tend to mean acting ahead of predicted hazards to prevent or reduce acute humanitarian impacts before they fully unfold.[4]
- Early warnings systems and early actions means taking steps to act ahead of hazards thanks to weather forecasts, risk communication and preparedness capacities.[5]
- Risk can be defined as the possibility of something bad happening.
- According to the European Space Agency "the difference between weather and climate is simply a matter of time. Weather refers to the short-term conditions of the atmosphere, while climate describes the average weather conditions over a long period of time."[6]

5. WHY LEARNING LABS/COMMUNITY ENGAGEMENT

In our case we say we are carrying out learning labs 'to co-develop anticipatory action plans at the community level, for different environmental and climate conditions while sharing knowledge and information on the practices of different stakeholders'. In other words: to include the community's expertise in building resilience to climate related shocks and stresses. As part of this we are trying to:

- Determine current livelihood risks in the recent past from the community's perspective.
- Assess the socio-economic impacts, vulnerability and capacity around environmental and climate variability and change in the cluster.
- Identify local, traditional and indigenous anticipatory action practices and decision-making processes, barriers and opportunities for action.
- Share early warning information of the potential impacts of climate variability on the environment and on livelihood options.
- Develop and exemplify a methodology to blend these sources of information and derive community based anticipatory actions to mitigate livelihood risks.
- Identify livelihoods and communication channels of communities for sharing of knowledge and information.

Once the terms of the engagement have been defined, one route to helping the engagement is to ask the community what they want from it?

6. STARTING THE CONVERSATION ABOUT LOCAL, INDIGENOUS AND TRADITIONAL KNOWLEDGE AND FORECASTS.

Local, indigenous and traditional (LIT) knowledge is recognised as providing detailed local information about climate-related risks and their impacts for specific livelihood and social groups. Engaging with it is thought to build trust. Through engagement with LIT knowledge and forecasts we can learn specific localised terminologies for communicating forecast

---

[4] https://www.undrr.org/media/101447/download?startDownload=20250225
[5] https://redcross.eu/projects/advancing-early-warning-and-early-action-a-community-centred-approach-by-the-finnish-red-cross#:
[6] https://www.esa.int/Applications/Observing_the_Earth/Space_for_our_climate/Weather_vs_climate_What_s_the_difference#:~:text=The%20difference%20between%20weather%20and,a%20long%20period%20of%20time.

information, such as words for heavy rainfall, drought, and winds; and, localised communication channels and local Early warning systems (EWS).

Try to avoid giving people a framing of knowledge where they have to choose between LIT and scientific sources of knowledge, or people may be more likely to follow the local knowledge.

An exercise we have found that is helpful to start this conversation is described below from the Global Network for Civil Society Organisations for Disaster Reduction (GNDR).[7] This exercise, called Knowledge Timelines will explore the different types of knowledge about the weather and climate that people use to make decisions and consider their similarities and differences. Knowledge about the weather, climate and their impacts originates from diverse sources, some locally based or cultural interpretations of natural phenomena, some from science and some from everyday experience. The Knowledge Timelines exercise can build an understanding of the types of weather and climate information which a community currently uses. It can also strengthen understanding of the different sources of weather and climate information currently available at different timeframes and geographic scales, and support transparent discussion about the levels of accuracy across both local and scientific sources.

Step 1. Encourage the audience to remember a past climate event using non-climate events to prompt their memory. For example, identify a period when there was significant flooding and some locally relevant social or cultural events that were also taking place at this time.

Step 2. Ask about the different information that people had on the climate/weather event before it occurred (LIT forecasts), and at what times this was available relative to the event. This might include forecasts they've heard on the radio etc.

Step 3. Describe the scientific forecasts available on this event (see SECTION 10). Then describe the uncertainty and confidence in these scientific forecasts as a function of forecast lead-time and how it varies over space (e.g. it is more accurate over flat areas than hilly locations). You might need to talk to the forecast providers to find out the confidence they have in their forecasts.

Step 4. Ask the community to describe the confidence and uncertainties they have in the LIT forecasts they use. Ask them to describe the basis of their assessment. Compare the characteristics of each type of forecast (i.e. LIT and scientific), bringing to the fore that they both display uncertainty over time and space.

Figure 3, below, depicts a discussion from the use of the Knowledge Timelines amongst farmers' groups in Mbeere, Kenya. While LIT forecast indicators will be specific to each community, levels of accuracy and challenges in scientific forecasts are, for the most part, shared across regions and dependent on emerging scientific understandings of weather and climate.

---

[7] Kniveton, D., Visman, E., Tall, A., Diop, M., Ewbank, R., Njoroge, E., and Pearson, L. 2014. Dealing with uncertainty: integrating local and scientific knowledge of the climate and weather. Disasters, 39(S1), S35–S53. https://onlinelibrary.wiley.com/doi/10.1111/disa.12108

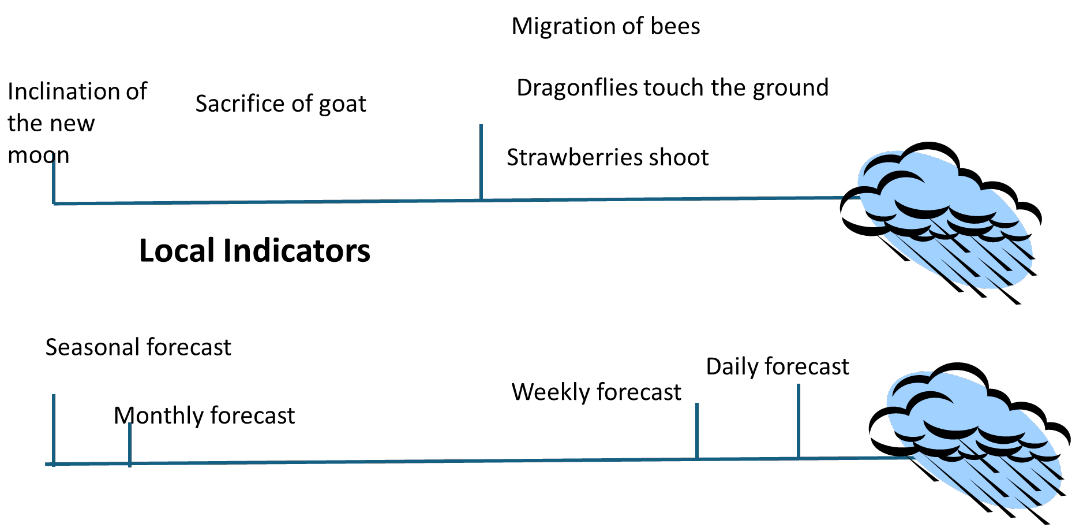


Figure 3. Example knowledge timelines for LIT and scientific forecasts.

7. ESTABLISHING AN IDEA OF THE DISASTER RISK PROFILE OF THE COMMUNITY

Drawing out a timeline of the climate and weather-related hazards faced by the community can be done graphically along a line to represent time. Use Post-it notes to identify different hazard events and the actions people took both before and after the events. Try to bring out how and if these events effected different people differently (with coloured Post-it notes). From this, see if it is possible to define different groups of people in terms of their vulnerability to different hazards and their ability to cope with them. Gather this information so you have a kind of catalogue of the community's vulnerability to disaster. Explore any anticipatory actions they took and combine this information into an action menu.

8. DEVELOPING A COMBINED FORECAST

Building on the acknowledgment of local, indigenous and traditional (LIT) forecasts and its similar characteristics to scientific forecasts. The next step in the engagement is to explore how the community might combine LIT[8] and scientific forecasts into a community consensus forecast. Here we suggest the following process:

Step 1. Choose a rainfall or temperature or vegetation forecast of a hazardous event (see Section 11) (e.g. above a temperature of 35ºC or heavy rainfall likely to cause flash flooding).

Step 2. Combine the scientific and LIT forecasts to produce a combined forecast using a forecast matrix (Figure 4), as below. In this matrix red indicates a combined forecast of a strong hazard, orange is a forecast of a medium hazard, yellow is a forecast of a weak hazard and green is a forecast of no hazard. The level of the combined hazard (i.e. the colours and pattern of colours vary with the situation and discussion of those in the workshop). Deciding what colour, the different combinations of LIT and scientific forecasts merit comes from a discussion with the community. Be prepared for this to change over time

[8] It should be noted that LIT forecasts are sometimes not of the weather and climate but might be of the impact of atmospheric hazards. In such cases it makes sense to convert the scientific forecasts first (SECTION 9) to impact based forecasts before combining them (this section)

with for example, initially the community favouring the LIT forecast before moving towards accepting the scientific forecast as having some validity.

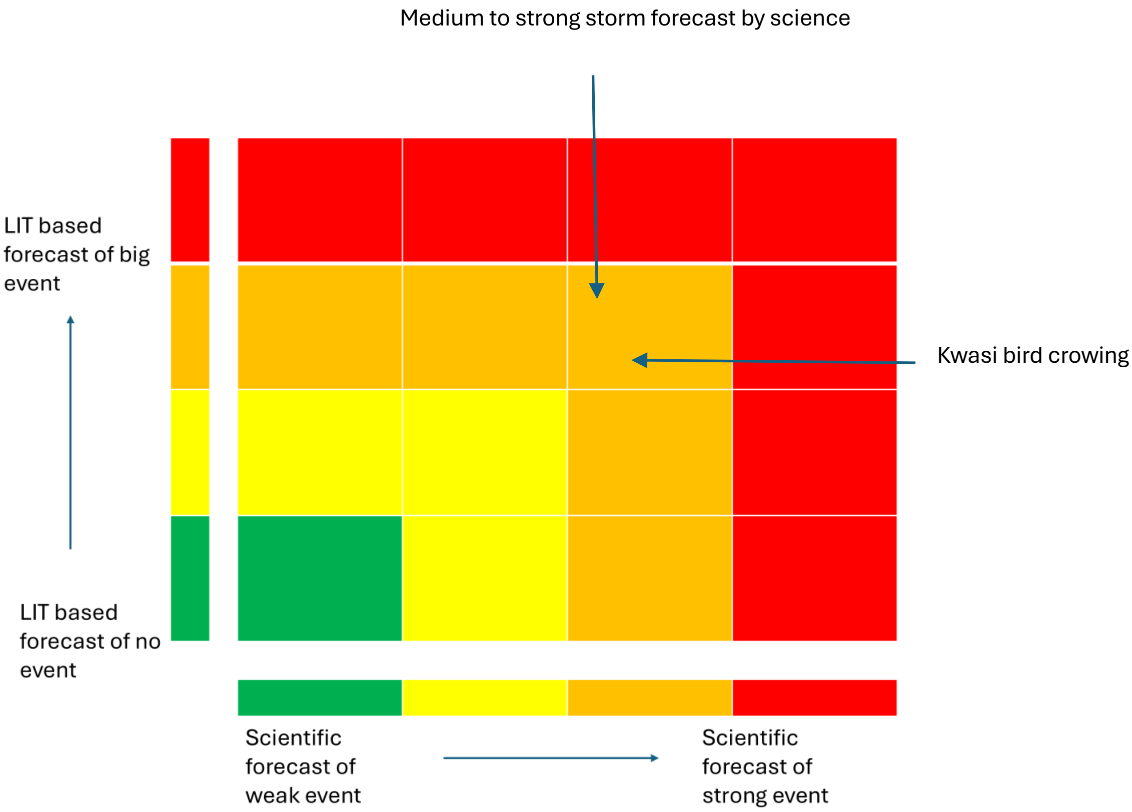


Figure 4. The forecast matrix.

An example of the use of this approach from Lake Victoria in Africa (Onyango et al 2021) used the combination of forecasts to provide warning of dangerous weather conditions for fishing. In a meeting of local stakeholders and the Kenyan Meteorological Department, the LIT indicator of the Kwasi eagle crowing was presented, which is taken locally in Kenya as warning fishers of looming dangerous squalls. This combined with a forecast from the scientific early warning system of an upcoming medium strength storm resulting in a decision for the event to be indicated as orange (see above). This would signify a hazard warning equivalent of 3 on a scale of 1 to 4 where 1 is hazardous conditions are not forecast and 4 is a forecast of highly hazardous conditions.

Remember that the colouring (i.e. setting of the combined forecast level) of different combinations will come out of the discussion). Likewise the number of categories of the forecasts is for the group to decide. You can have a different numbers of categories for the different types of forecast, say 2 for the LIT forecast and 3 for the scientific. In terms of different patterns for example, a discussion that favours LIT forecasts will likely look like the matrix below (Figure 5).

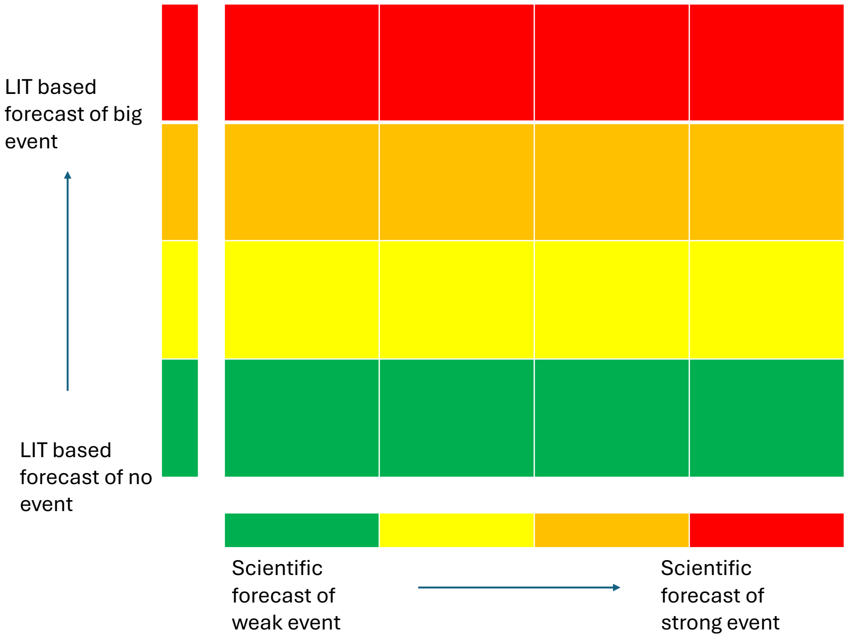


Figure 5. A LIT focused combined forecast matrix

Whereas as a discussion that favours the scientific forecast is likely to look more like that below (Figure 6).

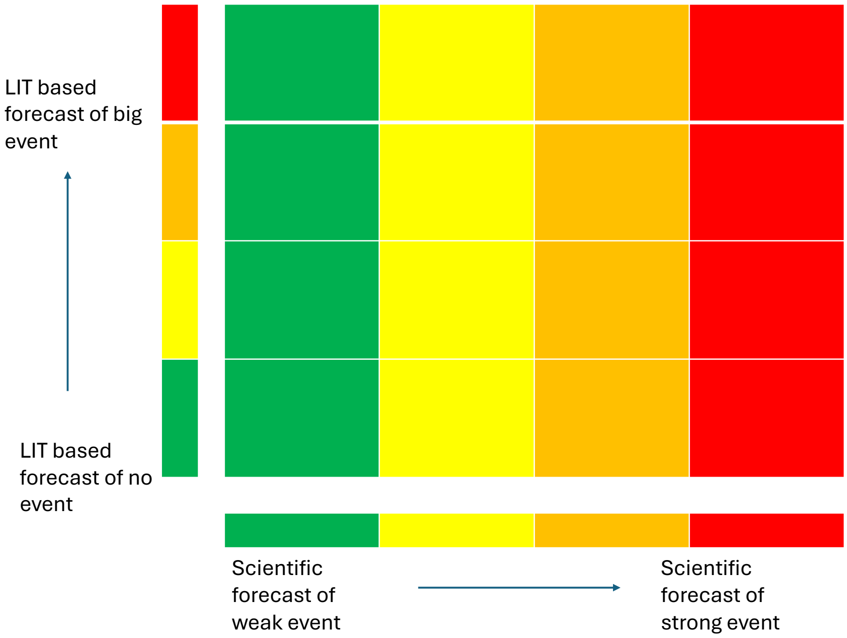


Figure 6. A scientific focused combined forecast matrix

And a combined forecast that favours the LIT forecast but takes into account the scientific forecast when it depicts a strong hazard might look like Figure 7.

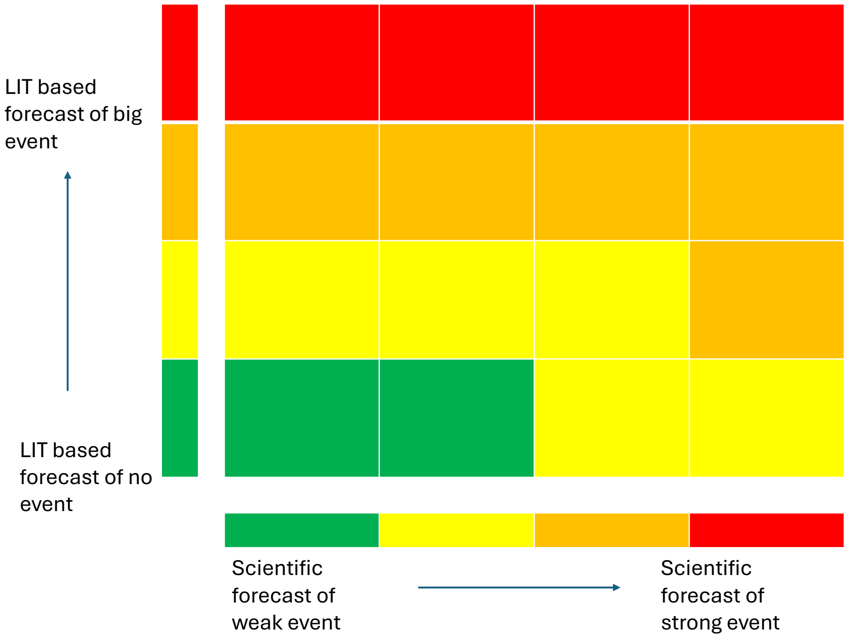


Figure 7. A LIT leaning combined forecast matrix

How you communicate this matrix depends on you. One simple exercise is to select two teams; one to represent the categories of the LIT forecast, the other to represent the different categories of the scientific forecast. In this case there are four categories. The rest of the group are the deciders. Number each member of the teams from 1 to 4 where 1 is no hazardous event and 4 is a hazardous event. Each person should be prepared to describe under what conditions from LIT or science would justify their number of a forecasted hazard. Line up two teams at right angles to each other from 1 to 4. Spin the 4-sided spinner twice where the first number indicates which member of the LIT team is to walk out to the space between the two teams, and the second number refers to who is chosen from the science team.

The two people selected tell everyone why they should believe their forecasts. The rest of the group votes on what level of hazard the combined forecast should indicate for that combination. Repeat several times and a rapporteur fills in the forecast matrix.

9. MAKING IMPACT-BASED FORECASTS

A weather, vegetation or climate based scientific forecast or a combined forecast (from the above section) can be converted into an impact-based forecast using a matrix similar to that below (the arrangement of the colours will evolve from the process) by considering the vulnerability of the section of the community. In this example the impact forecast ranges from no potential impact (white) to a potentially high impact (purple). Defining vulnerability and the impact of hazardous condition will be helped by undertaking section 7. In particular, bringing back the vulnerability catalogue from section 7 will help the process of making an impact-based forecast.

Remember that the colouring (i.e. setting of the level of the impact forecasted) of different combinations of vulnerability and hazard, will come out of the discussion. Likewise, the number of categories you have of different levels of risk, hazard and vulnerability is for the group to decide.

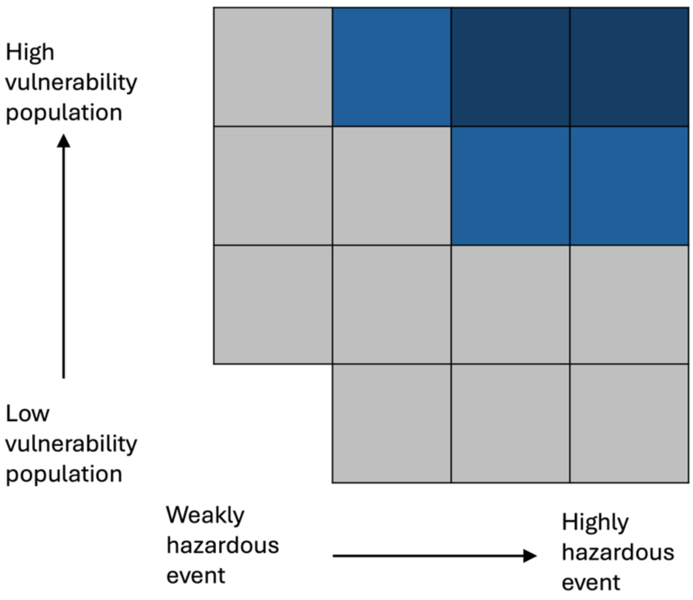


Figure 8. An impact-based forecast matrix

As an example, in Figure 9, if we took a weather forecast of a temperature of 36°C (a temperature hazard) and considered vulnerability in terms of the age of person experiencing the temperature. Then, a newly born child (of age of zero to 27 days), which is highly vulnerable to temperatures, would be deemed as forecasting a hazard with a dangerous level of impact to newborn children.

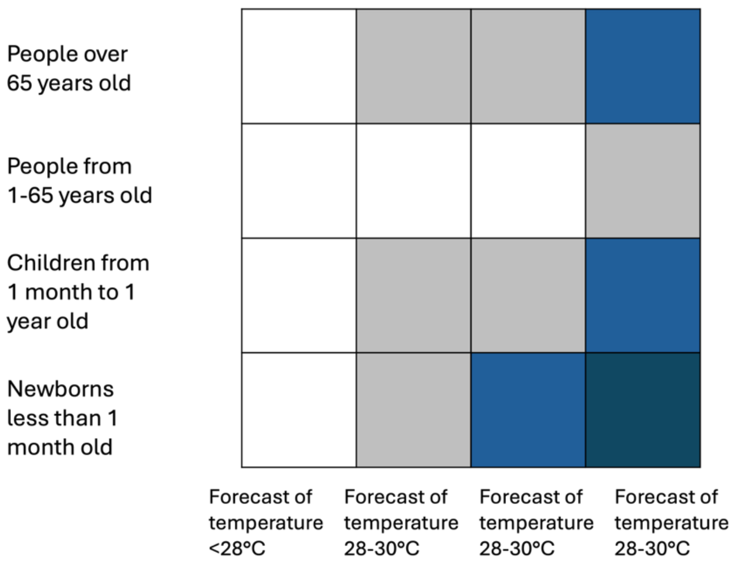


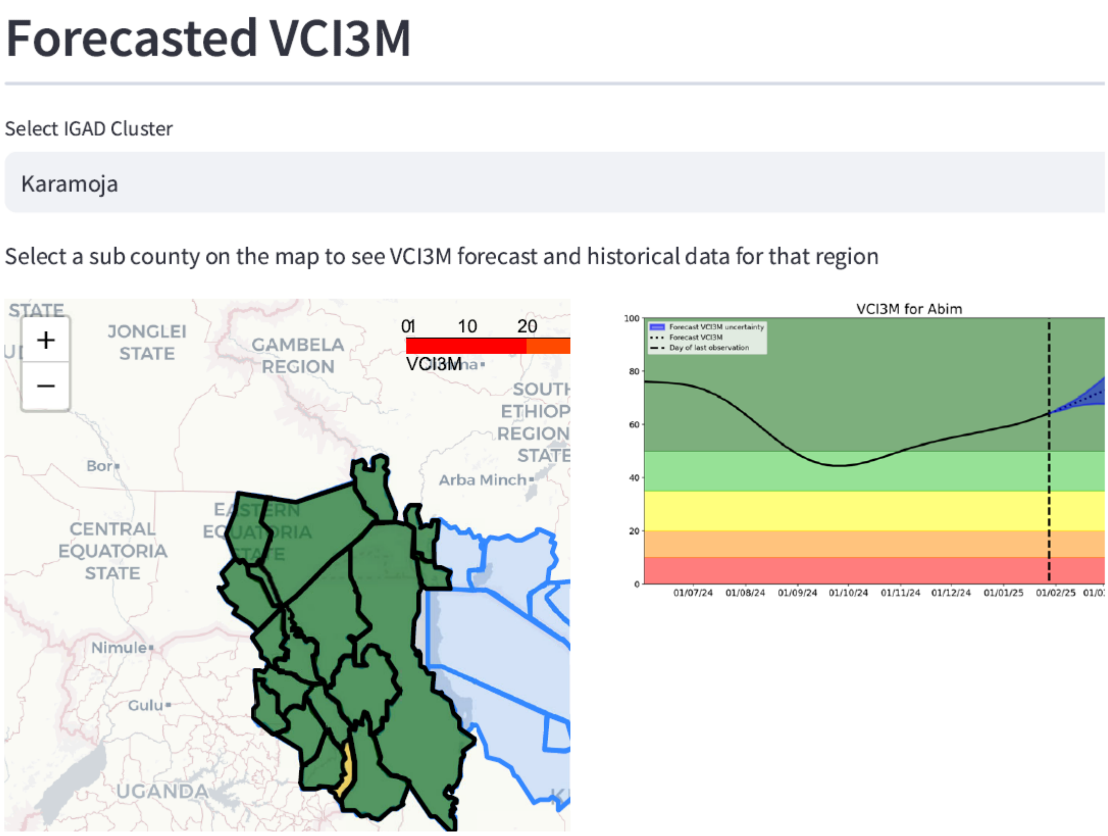
Figure 9. Impact matrix for a temperature forecast and the impact on an individual's health.

The likelihood of the impact should be inferred by a group discussion based on the likelihood of the forecast of the hazard. How you communicate this matrix depends on you. One simple exercise is to select two teams of four; one representing the different vulnerabilities of the community, one representing the range of the hazard forecast from the consensus forecast. The rest of the group are the deciders. Number each member of the teams from 1 to 4 where 1 is low vulnerability and 4 is a highly vulnerable population for the team representing vulnerability and where 1 is a weak hazard and 4 is a strong hazard from the forecast team. Each person should be prepared to describe the reasons that would justify the level of vulnerability or hazard they are given. Line up two teams at right angles to each other in number order. Spin the 4-sided spinner twice, where the first number indicates which member of the vulnerability team is to walk out to the space between the two teams, and the second number refers to who is selected from the hazard team. The two people decide what level of impact their combination represents. The rest of the group discuss whether they agree to this level of impact. Repeat several times and a rapporteur fills in the impact matrix.

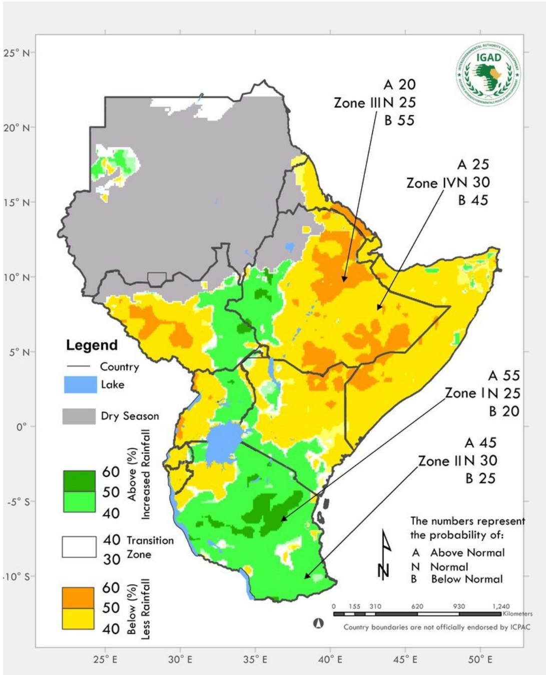
10. SCIENTIFIC FORECASTS

A variety of organisations produce forecasts of the climate, weather and vegetation. Below we give a few examples that are used and produced by PASSAGE project partners:

Vegetation forecasts: https://astrocastvisualisation.streamlit.app/~/+/



Seasonal climate forecasts: https://www.icpac.net/seasonal-forecast/



Key Highlights from the Climate Outlook

•Below-average rainfall is expected in much of Somalia, eastern and northern Kenya, southern and northeastern Ethiopia, Djibouti, coastal Eritrea, western South Sudan, southern and western Uganda, Rwanda, Burundi, and northwestern Tanzania. There is an enhanced likelihood of below normal conditions for the cross-border areas of Ethiopia-Kenya-Somalia, southern Eritrea, and parts of southwestern South Sudan.

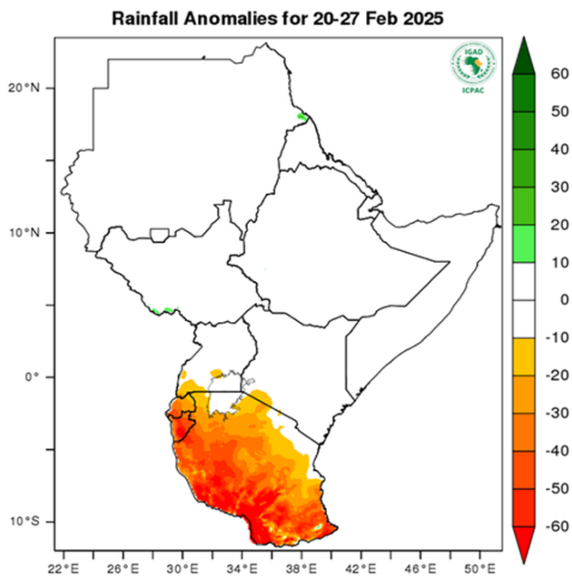
•Wetter-than-normal conditions are expected over most parts of Tanzania, eastern Uganda, eastern South Sudan, and western Ethiopia.

•Additionally, there is a high chance (over 70%) that the seasonal rainfall will exceed 200 mm in southwestern Ethiopia, western Kenya, Uganda, Rwanda, Burundi, and Tanzania.

•The temperature forecast indicates a higher likelihood of warmer-than-normal conditions across most parts of the Greater Horn of Africa, with the highest probabilities (more than 75%) over Sudan, Ethiopia, Eritrea, Djibouti, northern Somalia, and northern Kenya.

•An early to normal onset is expected in most parts of the region, except for localised areas in central Kenya, southern Ethiopia, and central Somalia, where a delayed start is likely.

Weekly weather forecasts: https://www.icpac.net/weekly-forecast/



11. RISK ASSESSMENTS AND ANTICIPATORY ACTION PLANNING

Risk assessments combine the level of the impact-based forecast with the likelihood of that impact forecast occurring. Yet again, we can use a matrix to explain the risks associated with climate, weather and vegetation extremes and their impacts on communities. In the matrix below (Figure 10), the level of risk of a particular impact is signified by the colours of the squares that represent the intersection of the forecasted impact and the likelihood of it occurring. Grey represents no risk all the way to red which represents the highest level of risk. As before, remember that the colouring (i.e. setting of the level of risk) of different combinations of likelihood and impact will come out of the discussion. Likewise, the number of categories of risk and the colours used to represent them is for the group to decide.

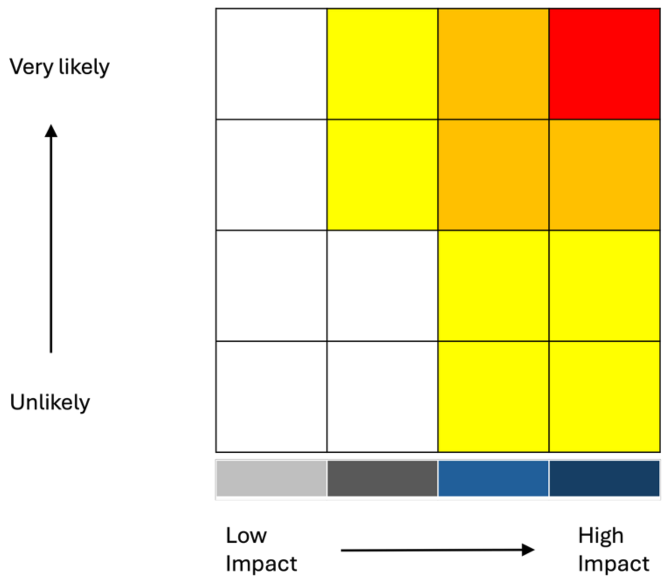


Figure 10. A risk matrix from the combination of the level of impact forecasted and the likelihood of that forecast being true.

For each level of risk the group should be encouraged to write down the anticipatory actions they would take, the ones they would like to take and the barriers to taking them. This part of the process is best done in smaller sub-groups representing the different levels of vulnerability in the community. Bringing back the menu of anticipatory actions identified in section 7 will also help this step.

How you communicate this matrix depends on you. One simple exercise is to select two teams of four; one representing the likelihood of an impact, one representing the range of the impact forecast. The rest of the group are the deciders. Number each member of the teams from 1 to 4 where 1 is a low likelihood and 4 is highly likely for the likelihood team and 1 is a low impact and 4 is a high impact forecast. Each person should be prepared to describe the reasons that would justify the likelihood or impact level the number they have been given. Line up two teams at right angles to each other in number order. Spin the 4-sided spinner twice where the first number indicates which member of the likelihood team is to walk out to the space between the two teams, and the second number refers to the impact team.

The two people decide what level of risk their combination represents to their community. The rest of the group discuss whether they agree to this level of risk. Repeat several times and rapporteur fills in the risk matrix.

One of the (frankly annoying) characteristics of forecasts is that they are uncertain. To help proof anticipatory actions to this uncertainty it is worth asking each sub-group to consider their actions in terms of how **F**LEXIBLE they are to changing forecasts and likelihoods (i.e. could the actions be easily changed as new forecasts arise); how **R**OBUST they are to different impact scenarios (i.e. would the actions be applicable if different impacts came to fruition); how **E**CONOMICAL or low regrets the actions are (i.e. could the actions still be useful even if the forecast was wrong); and how **E**QUITABLE the actions are (i.e. could the actions put other people at greater risk). These considerations can be remembered by the mnemonic **FREE**.[9]

12. PREPARATION AND RECORDING OF LABS/ENGAGEMENT

A number of things are required to help prepare for the labs. These include:

- Identifying the communities to engage with.
- Identifying the organisations/channels needed to engage them and their entry points.
- Who are the key people in the community? E.g. who are the most vulnerable, who are the decision makers, what is the formation of the group we are engaging with?
- What phrases, language and concepts are we going to use/agree?
- Which sources are we going to use for forecasts e.g. ICPAC, National Meteorological Services, livestock authorities, NGOs, NDMA, ICPALD.
- Looking up the scientific forecast
- Find out the confidence the forecasters have in these forecasts.
- Paper and coloured pens to draw the matrices, timelines and action plans.

Try to record all of your activities with the community, including the dates and location of the engagement, agreed definitions, knowledge timelines, disaster profiles, the LIT and scientific forecasts used, the matrices, a description of the engagement including numbers of people attending, their gender distribution, their vulnerability and the different categories of vulnerability, a description of the social, economic, environment and demographic context and the anticipatory actions they develop for each group, indicating any changes from before the engagement. For recording the LIT forecast information you might want to use the following table format.

Season	Indicator	Type of change observed	Length of observation of change	Prediction (of, lead time, over what area?)	Confidence in prediction (skill of forecast)	Who uses them?	Who is telling you this?

[9] Audia, C., Visman, E., Fox, G., Mwangi, E., Kilavi, M., Arango, M., Ayeb-Karlsson, S. and Kniveton, D., 2021. Decision-making heuristics for managing climate-related risks: introducing equity to the FREE framework. Climate Risk in Africa: Adaptation and Resilience, pp.57-76.