



## ICPAC SHEAR Learning Event Report

Theme:

**Operationalization and Sustainability of Proto-type Products**

Dates: **30-31 March 2021**

Venue: **Virtual**



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## Acronyms

ACREI	Agricultural Climate Resilience Enhancement Initiative
DARAJA	Developing Risk Awareness towards Joint Action
DRR	Disaster Risk Reduction
DFID	Department for International Development
EU H2020	European Union Horizon 2020
FATHUM	Forecasts for Anticipatory Humanitarian Action
FCDO	Foreign Commonwealth Development Office
ForPac	Forecast-based Preparedness Action
GHA	Greater Horn of Africa
GPCs	Global Producing Centres
HyCRISTAL	Integrating Hydro-Climate Science into Policy Decisions for Climate-Resilient Infrastructure and Livelihoods in East Africa
ICPAC	IGAD Climate Prediction and Application Centre
INFORM	INtegrated FORecasting for Mitigation of risk
INFORMETS	INtegration of ForPac products for Operationalization into existing METeorological Services within the GHA countries
KCL	King's College London
KenGen	Kenya Electricity Generating Company
KMD	Kenya Meteorological Department
KRCS	Kenya Red Cross Society
L2CP	Learning to Co-Produce
NFCS	National Framework for Climate Services
NIMFRU	National – Scale Impact – Based Forecasting Flood Risk in Uganda
FbA	Forecast based Action
NMHSs	National Meteorological and Hydrological Services
S2S	Sub-seasonal to Seasonal
SCIPEA	Strengthening Climate Information Partnerships - East Africa
SHEAR	Science for Humanitarian Emergencies and Resilience
SWIFT	Science for Weather Information and Forecasting Techniques
UNMA	Uganda National Meteorological Agency
W2SIP	WISER Support to ICPAC
WMO	World Meteorological Organization

## **Acknowledgment**

The event was supported by the Science for Humanitarian Emergencies and Resilience (SHEAR) consortium project 'Towards Forecast-based Preparedness Action' (ForPac, [www.forpac.org](http://www.forpac.org); Grant number: NE/P000673/1). ICPAC, KRCS, KMD and UNMA provided technical support in organizing the event. Additional technical support came from partners in University of Sussex, University of Leeds, Kings College London and UK Met Office.

## Workshop Overview

The SHEAR Learning Event on Operationalization and Sustainability of Prototype Products was organized by ICPAC in collaboration with KMD, KRCS and UNMA between 30-31 March 2021. The event aimed to share and learn from experiences in co-production and service development across the region. It was held virtually and attended by over 65 participants representing both climate information producer and user communities. The event was supported by ForPac project through its SHEAR Integration and Impact Fund projects (INFORMETs, INFORM and L2CP). New and improved climate services developed across several recent and ongoing climate programmes were reviewed and discussed. Key lessons learned were identified and recommendations for future activities were prepared, focusing on the role of co-production in service development and possible avenues for institutionalization and operationalization of the products.

Key lessons noted included;

- Co-planning, Co-designing and Co-Implementing of projects increases potential for user-relevant outcomes and enhances sustainability of the same.
- Academic institutions are fertile grounds in sustaining and consolidating advances made from programs in a relatively short-lived project. This is due to their longer-term science and coproduction interests as well as links to operational centres.
- Institutions/organisations that will operate the new climate services need the skill sets required to develop and adapt user-tailored products emerging from coproduction. A primary need is for enhanced skills in computer programming languages and other Information Technology (IT) skills needed to analyse and process model outputs.
- Successful communication is central to climate services; however, it was observed that: producer organizations may lack a communications strategy and policy for monitoring reach; communication channels may not be well-chosen; and stakeholders find the technical nature of some communications challenging.

Despite successes noted, a number of challenges emanated from various programs. These include;

- Institutional policy on operationalization and sustainability of advances promised by projects is not generally available to guide beneficiaries on long-term project value and can be lacking from donor organizations' requirements in project planning.
- Organizational capacity building is insufficient: projects frequently operate through capacity training of a single focal-point individual within the organization that will operate the planned new climate service. This creates a precarious situation for long-term operationalization/sustainability.
- Pilot projects that focus on a limited region or number of countries are not scaled-up quickly enough to permit implementation in other countries.

In terms of recommendations for future development, the meeting noted that;

- Producer organizations need to develop policies on sustainability and operationalization, to guide the terms under which project participation is undertaken, while donors policy need to support the shaping of project objectives and realistic resource allocations.
- There is need for continued advocacy to build capacity and train on coproduction, with key partners and stakeholders involved in project scoping from the outset.
- The sustainability of investments in strengthening climate services can build on existing networks and academic and research institutions. New programs, like EU H2020, Down2Earth and ACREI, are now designed with co-production and 'last mile' perspectives incorporated from inception. The projects are working with local community leaders as well as capitalizing on already established institutions as pathways towards sustainability and operationalization of program outcomes.
- Efforts may be encompassed within wider support for National Frameworks for Climate Services (NFCSs).
- Capacity building should be more targeted for sustainability and operationalization of project outputs. There is a need to strengthen training of users organizations in interpretation of climate information (such that stakeholder familiarity with and understanding of climate information attains levels similar to that already achieved for short-range weather information).

## **1.0 Introduction**

There are numerous programs and projects that have been implemented over time within the Greater Horn of Africa (GHA) region with an aim of improving forecast products. In the recent past, ICPAC received funding from DFID and other donor agencies through various science programs to develop products and improve on the existing methodologies and forecasting techniques. The co-developed new forecast products from SHEAR Programs like ForPac, INFORM, FATHUM, NIMFRU as well as other initiatives like W2SIP and SWIFT have been tested in different institutions across different time scales with different stakeholders.

One such innovative project is ForPac whose aim was to improve forecasts of high impact rainfall causing flood and drought across seasonal to sub-seasonal time scales and improve the use of forecasts by integrating these into flood/drought Early Warning Systems (EWS) using an anticipatory approach called Forecast based Action (FbA). Through its sister program, INFORMETs, ForPac aimed to document learning across SHEAR and other programs in terms of scientific advancements, and co-production approaches employed as well as identifying opportunities for sustainability and operationalization of improved products within institutions involved. Despite the effort of the individual projects to transfer knowledge and methodologies to African forecasters, this is usually limited to the personnel that is involved directly with the project. Coupled with high staff turnover within NMHS, this limits institutionalization and operationalization of new products.

## **2.0 Scope and Aim of Workshop**

The learning event aimed at reviewing advances in applied forecasting for short, monthly and seasonal timescales and beyond; progress and experiences in co-production of user-centred services and “last-mile” communication; methodologies to aid their use in decision-making as well as successes and challenges in operationalizing climate services. Learning was drawn from a wide range of projects – with a focus on GHA but also including West Africa and South Asia. Contributing programmes and projects included: SHEAR (ForPac, FATHUM, L2CP), WISER1 (SCIPEA, Western Kenya), WISER2 (W2SIP), GCRF (Africa SWIFT), FCFA (HyCRISTAL), EU H2020 (DOWN2EARTH) and Adaptation Fund (ACREI). There were over 65 participants from users in the Agricultural and Food Security, DRR and Energy sectors, 10 NMHSs across the GHA region, the regional centre ICPAC, GPCs, WMO, academic institutions in Africa, UK and Germany, as well as NGOs and donor organizations.

## **3.0 Highlights on Project Activities and Outputs**

The workshop/learning event was organized under four Thematic areas; Science Advancement; Institutionalization of Pro-type products; Co-Production of climate services in East Africa and Synergies Building & Cross-Project Learnings (see Annex 1 for detailed programs).

### **3.1 Advances in forecasting and forecast evaluation**

- Sub-seasonal to seasonal(S2S) and nowcasting
- ForPac forecast products and Climate Change narratives

- Objective forecasting for seasonal products spearheaded by ICPAC under the W2SIP project. This is currently being applied operationally by ICPAC to generate seasonal forecast products based on GPC outputs. The new method (Objective seasonal forecasting improves the physical basis and quality relative to the former consensus approach and is more traceable; reproducible and forecast is amenable to verification)
- The processing tools, achieved through the support of the projects, are centred at ICPAC and all NMHSs are supported in their use for national seasonal forecasting.
- Under ForPac project, research has shown that GHA OND season is a “sweet spot” for predictability – an opportunity for piloting user-centred, co-produced services.
- There has been a surge of activity in application and evaluation of sub-seasonal forecasting, with test-bed pilots, including evaluation, in 4 countries. Nowcasting techniques have also been piloted to improve short-range (24-hour) forecasts under Africa SWIFT program.
- New high-resolution (convection-permitting models) simulation of African climate made at climate change time scales, have been piloted to improve the simulation of convection in climate change projections, particularly for changes in extreme event frequency.
- Analysis for the GHA finds widely varying seasonal forecast skill across models – thus there is potential to improve skill through selective use of the models rather than following a default position of using all (or most) available models.
- New approaches on model evaluation and forecasting have been proposed with promising results. For example, skill Optimization from best performing GCMs enhances the seasonal forecast skill

### **3.2 User-centred forecast products; methodology to aid decision-making; co-production**

- New, user-relevant, products have been developed in coproduction with users and on a range of timescales. Examples include forecasts of Standardized Precipitation Index (SPI), Soil Moisture (SM), Vegetation Condition Index (VCI), stream flow, reservoir inflow, malaria transmission risk, probability of extreme rainfall events and of rainfall above specified thresholds.
- Experience has been gained in applying methodology to support decision-making, including Forecast-based Action/Financing (FbA/F), Participatory Scenario Planning (PSP), Early Action Protocols (EAPs), and downscaling of forecast to the district level. Climate Risk Narratives (CRNs) and the Future-Climate Current-Policy (FCCP) Framework are supporting decision-making for climate change timescales.
- Transparency in forecast skill has increased. In the GHA this has resulted, for example, in some services focusing on the (most predictable) OND season and at locations where the forecast False Alarm Rate is at user-acceptable levels.
- Resources to guide coproduction have been developed including the WISER-FCFA “Manual for Co-production in African Weather and Climate Services”, the GHA specific “ICPAC Guide for Engagement in Co-producing Climate Services”, while an online course for students of meteorology,



“Learning to Co-Produce (L2CP)”, helps fill a gap in the climate education curriculum.

### **3.3 Forecast communication and Operationalization**

- Several projects have made advances in understanding the channels, mechanisms and agents that control how climate information moves from producer to user (information eco-system been mapping) and in strengthening the communication process and feedback loops. There is increased use of “first glance” visualisation techniques for forecast messages using graphical icons and SMS channels of communication have been extended. Discussion of forecast skill is increasingly part of the dialogue between producers and users.
- Several new prediction services have been institutionalized as part of producer regular outputs, backed up by Standard Operating Procedures (SOPs) and with the means of production transferred, where necessary, from international project partners to “in-house” systems in producer organisations. These include KMD services for Lake Victoria fishers, KenGen and KRCS. Other services have reached a pre-operational pilot stage, e.g., KMD services to NDMA. In some instances, Memorandums of Understanding (MoUs) have been agreed to support the service delivery processes.

## **4.0 Sustainability and Operationalization of Climate Services: Lessons and Challenges**

### **4.1 Lessons**

- Involvement of users from the start (planning stage) of projects increases potential for user-relevant outcomes and thus sustainability.
- With their longer-term science and coproduction interests as well as links to operational centres, academic institutions can play a role in sustaining and consolidating advances made in relatively short-lived projects.
- Organisations that will operate the new climate services need the skill sets required to develop and adapt user-tailored products emerging from coproduction. A primary need is for enhanced skills in computer programming languages and other IT skills needed to analyse and process model outputs.
- Producer organizations may have insufficient resource to upgrade IT hardware and software as required to sustain services developed.
- The concept of coproduction, while increasingly recognized as central to service development, is not widely adopted yet.
- Successful communication is central to climate services; however, it was observed that: producer organisations may lack a communications strategy

and policy for monitoring reach; communication channels may not be well-chosen; and stakeholders find the technical nature of some communications challenging.

- Some users (e.g., NGOs) may view forecasts from different sources which often give varying messages and no information on relative skill. Deciding on which source to use is thus challenging.
- Coproduction requires active Monitoring Evaluation and Learning (MEL) to ascertain if a service is working and how, if necessary, to change it. Resources and capacity for MEL are frequently not sufficient.

## **4.2 Challenges/Limitations**

- Institutional policy on operationalization and sustainability of advances promised by projects is not generally available to guide beneficiaries on long-term project value and can be lacking from donor organizations' requirements in project planning.
- At project close, service delivery processes dependent on project funding may cease and hinder robust institutionalization.
- Organizational capacity building is insufficient: projects frequently operate through capacity training of a single focal-point individual within the organization that will operate the planned new climate service. This creates a precarious situation for long-term operationalization/sustainability.
- Human resources at beneficiary organizations are frequently limited and allocation of more than a single focal point is challenging. Project budget constraints are also a limiting factor.
- Pilot projects that focus on a limited region or number of countries are not scaled-up quickly enough to permit implementation in other countries.

## **5.0 Recommendations for sustainability and operationalization of services**

- Producer organizations develop policies on sustainability and operationalization, to help guide terms of project participation, and that donors develop policy to shape project objectives and realistic resource allocations.
- There is continued advocacy for and capacity training on co-production, with stakeholders involved in project scoping from the outset. This may be achieved under wider support for NFCSSs. Standardized templates for user/producer feedback may assist the coproduction process.
- Emerging experience with coproduced services continues to be documented, including the differences these services make to the stakeholders' operations and the benefits they bring (including socio-economic benefits, SEB). Enhanced sharing of experiences across programmes/projects will assist this.
- Capacity building is more targeted to sustainability and operationalization of project outputs, including through: training of the "organization rather than

the individual” (many rather than few); training on required underpinning technical skills sets such as computer programming; training of stakeholder organizations in interpretation of climate information (such that stakeholder familiarity with and understanding of climate information attains levels similar to that already achieved for short-range weather information).

- Standard operating procedures (SOPs) are developed for both producer and user organizations. For the producer, these document the service production process – to aid robust operationalization and timely delivery by the producer organization; for the user, they aid institutionalization of actions and procedures to be made on receipt of the service.
- Producer organizations develop strategies for communication of climate information that include consideration of all channels/networks of communication and ways to maximize the service reach to populations.
- The role of academic institutions within the coproduction process is strengthened to broaden the pool of expertise in developing climate services e.g., in researching and evaluating new products and in capacity training.

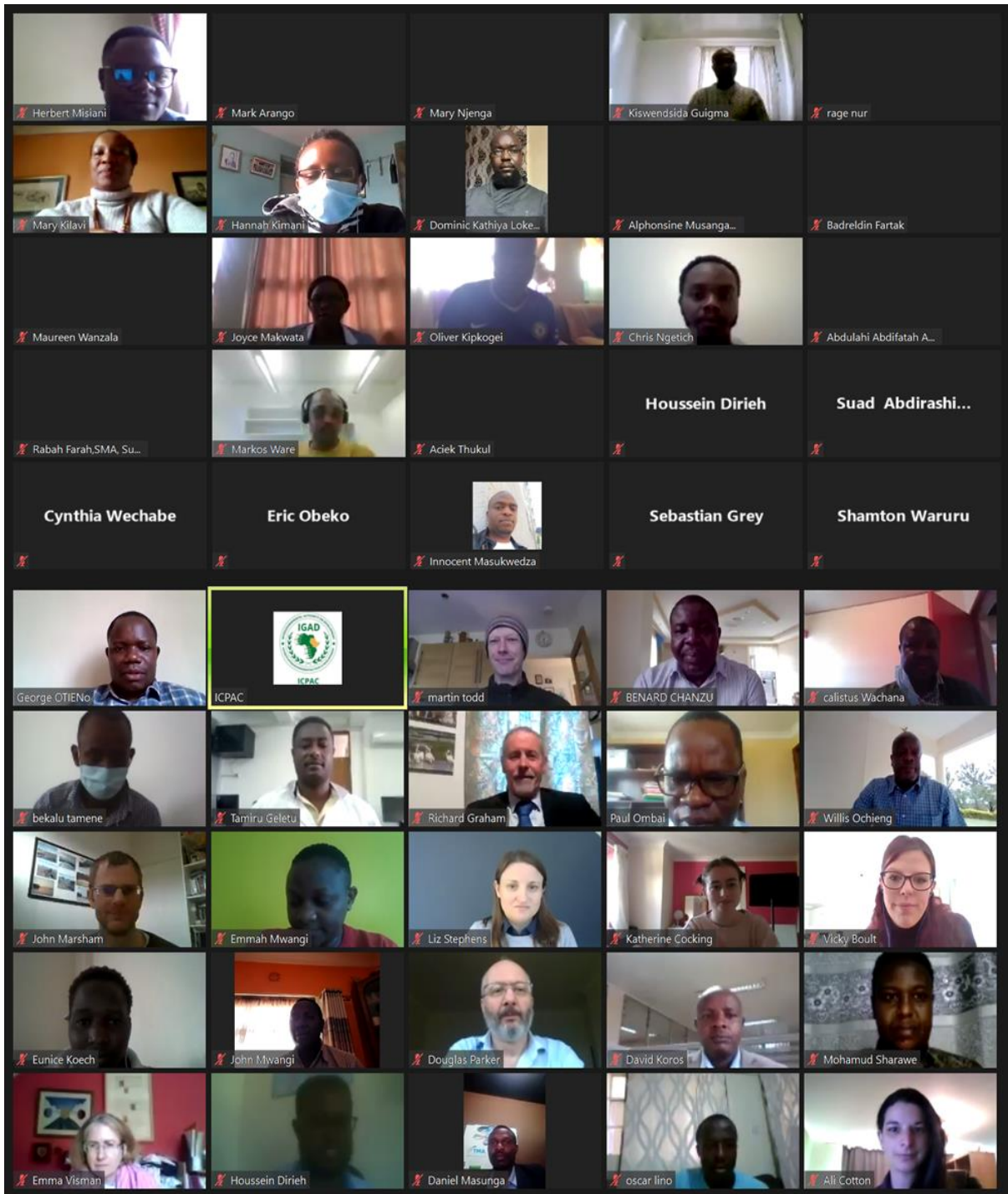
## Annex

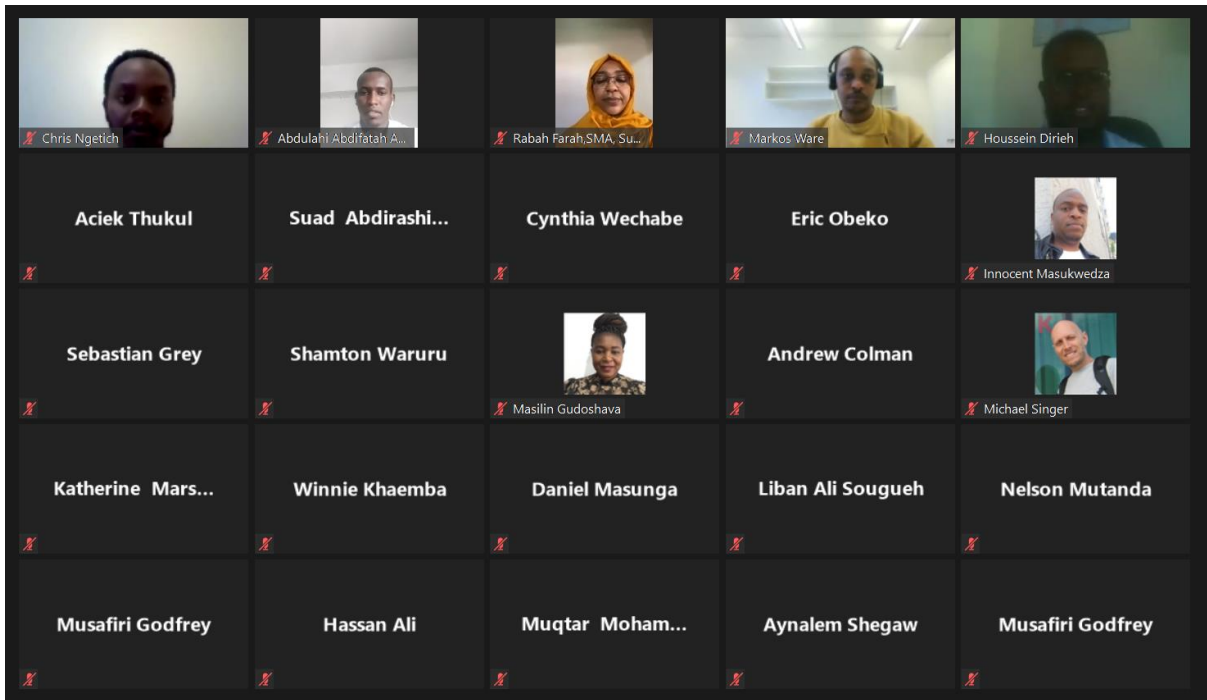
### Annex 1: program of Learning Event

TIME	ACTIVITY	30 <sup>th</sup> March 2021	FACILITATION
<b>SESSION I: SETTING THE STAGE AND OFFICIAL OPENING</b>			
09:30 – 10:00	<ul style="list-style-type: none"> <li>● <b>Registration/Participants join zoom</b> and self-introduce by video and chat box</li> </ul>		<b>MODERATOR</b> Barbara/Kimathi /Kabaka
10.00 – 10.25	<p><i>Official Opening remarks</i></p> <ul style="list-style-type: none"> <li>● <i>Keynote speech, <b>Chanzu Benard (5mins)</b></i></li> <li>● <i>Kengen experience of CIS co-developed with KMD; <b>Willis Ochieng (5mins)</b></i></li> <li>● <i>SHEAR learning Experiences, KB team, (5mins)</i></li> <li>● <i>Keynote speech ForPAc project , <b>Martin Todd(5mins)</b></i></li> <li>● <i>Official opening Statements Remarks , <b>Paul (5mins)</b></i></li> </ul>		<b>MODERATOR</b> George <b>RAPPORTEUR:</b> Eunice Koech
<b>Session II: Science Advancement</b>			
10.25- 11.00	<ul style="list-style-type: none"> <li>● Objective forecasting (<b>W2SIP, Graham, 15mins</b>)</li> <li>● S2S and Nowcasting (<b>SWIFT, Doug, 15mins</b>),</li> </ul>		<b>MODERATOR:</b> Emmah <b>RAPPORTEUR:</b> Mark
<b>11.00 -11.20 TEA BREAK</b>			
11.20- 11.30	<ul style="list-style-type: none"> <li>● <b>Plenary Discussion</b> for above 2 presentations (10mins)</li> </ul>		<b>MODERATOR:</b> Misiani
11.30- 12.00	<ul style="list-style-type: none"> <li>● <i>Prototype products from ForPAc experiences (Mary, 10mins)</i></li> <li>● <i>Soil moisture forecasts on s2s timescale &amp; Water Requirement (Vicky, 10mins)</i></li> <li>● <b>Plenary for Above 2 presentations (10mins)</b></li> </ul>		<b>RAPPORTEUR:</b> Mark
12.00- 12.40	<ul style="list-style-type: none"> <li>● <i>Climate change narratives (Hycristal, John Masham, 15mins)</i></li> <li>● <i>Experiences of FATHUM/RC Early Action Protocols (Liz/Alison, 15mins)</i></li> <li>● <b>Plenary on above 2 presentations (10mins)</b></li> </ul>		
12.40- 14.00	<b>Lunch Break</b>		
<b>SESSION III: Institutionalization of Pro-type products</b>			

14.00-15.00	<ul style="list-style-type: none"> <li>● <i>WISER1(Wachana, 7mins)</i></li> <li>● <i>Climate Information Services (CIS) with Kengen(Chris 7mins)</i></li> <li>● <i>Daraja Pilot project experiences (Emma Visman, 7mins)</i></li> </ul> <p><b>Breakout sessions(30mins)</b></p>	<p><b>MODERATOR:</b> Emmah</p> <p><b>RAPPORTEUR:</b> Eunice</p>
<b>End of Day 1 Learning Event</b>		
<b>31<sup>st</sup> March 2021</b>		
<b>SESSION IV: Co-Production of climate services in East Africa</b>		
<b>09.30-10.00: Participants join zoom and self-introduce by video and chat box</b>		
10.00-10.45	<ul style="list-style-type: none"> <li>● How beneficial is L2CP manual to met services and how can NHMS use it for its sustainability (<b>Emma V, 10mins</b>)</li> <li>● Operations and sustainability of co-production at country levels/Basics on co-production processes/guidance to countries for co-production &amp; sustainability of co-production (<b>Jemima, 10mins</b>)</li> <li>● <b>Plenary Discussion (Jemima, 25mins)</b></li> </ul>	<p><b>MODERATOR:</b> <i>Mary Kilavi</i></p> <p><b>RAPPORTEUR:</b> <i>Amos</i></p>
10.45-11.10	<b>Coffee/Tea Break</b>	
<b>SESSION V: Synergies Building &amp; Cross-Project Learnings</b>		
11.10:11.40	<ul style="list-style-type: none"> <li>● <b>New initiatives from Projects</b> <ul style="list-style-type: none"> <li>● Down2Earth (Michael, 10mins)</li> <li>● Policy in climate information services: Insights from Down2Earth project (Winnie, 10mins)</li> <li>● ACREI (Oliver, 10mins)</li> </ul> </li> </ul> <p><b>Break out session (30mins)</b></p>	<p><b>MODERATOR :</b> Maslin</p> <p><b>RAPPORTEUR:</b> Amos</p>
11.40-12.20		
12.20-13.05	<ul style="list-style-type: none"> <li>✓ Summary of sessions/issues raised across the whole event (George, 5mins)</li> <li>✓ Donor Perspectives of climate service programs/Next area of focus in Africa? <ul style="list-style-type: none"> <li>● <i>Dr Arame Tall, World Bank Group, 10mins</i></li> <li>● <i>Dr Alessandro, WMO, 10mins</i></li> <li>● <i>Katherine Marsden, Climate Science Adviser, FCDO, 10mins</i></li> </ul> </li> <li>✓ Closing Remarks (Martin/Graham/Paul, 10mins)</li> </ul>	<p><b>Moderators:</b> <b>Emma V</b></p> <p><b>Rapporteur:</b> <i>Maslin</i></p>
<b>Close of Learning Event</b>		

## Annex 2: Photo Session





## Links to Presentation Materials

<https://teams.microsoft.com/#/files/Reports?threadId=19%3A70ca40f002dc4e34bda8db13b4990c80%40thread.tacv2&ctx=channel&context=LearningEvent&rootfolder=%252Fsites%252FDown2Earth%252FShared%2520Documents%252FReports%252FReports-Monthly%252FLearningEvent>