



## **Training Workshop on Climate Services for Building climate resilience of the Agriculture Sector in Africa using CLIMTAG**

**Tentative Date: October 09-11, 2023, Venue: Hotel xxx Place: Lilongwe - Malawi**

### **Concept Note**

#### **I. Introduction and overview**

The agricultural sector is of utmost importance to the subsistence of the majority of population. Its sensitivity to weather and climatic changes urges for well-thought-out agricultural policies and adaptation measures.

Agriculture is strongly dependent on weather, hence very vulnerable to weather variability and climatic changes. Climate change is expected to increase weather variability and enhance the vulnerability of already exposed regions, including those that are already warm and prone to drought. Rainfall patterns may shift leading to associated **crop calendars** and the **timing of management activities**.

Adaptation is essential to make existing agricultural systems resilient against climatic changes and extreme weather events and to maximize agricultural yield. To assess climate impacts and design robust adaptation strategies, it is essential to have access to reliable, region-specific climate information.

Countries have expressed their requirements for customized climate information services to meet their needs for managing climate risks. Governments require climate change projections to better mainstream climate change impacts reduction interventions in agricultural policies and practices. They need to come up with notes, briefs, and reports on national agricultural policy, with action plans and perspectives for a smart agriculture sector.

Importantly, climate change information is also required as an essential input for the preparation and update of the National Determined Contributions (NDCs), in which countries have to outline and communicate their post-2020 climate actions, as agreed within the framework of the Paris Agreement (2015). This entails not only efforts to reduce national emissions but also measures to adapt to the impacts of climate change. Currently, NDC preparation in most LDCs is seriously hampered because of the lack of some most basic localized climate information – which also means that the simple fact of providing access to local climate information may bring about huge impacts.

Currently, users in many LDC countries almost exclusively employ historical climate information based on meteorological station data, which are generally obtained from local sources. Unfortunately, these data are often highly scattered, irregular and



fragmented, with a sparse geographic coverage, lacking coherence (e.g., in units, formats, time increments) and quality control. It is hard for stakeholders to find their way through the data that are available for their area of interest. When historical climate data is available, this information is often incomplete or not adequate for use. Also, data continuity for the coming years are not always ensured.

Climate change is expected to increase weather variability and to make warm and drought-prone regions, such as parts of the African continent even drier, hotter with significant disruptions on the agriculture calendar due to late/early start or end of the season. Rainfall patterns and the associated crop calendars and management practices may shift. Adapting existing agricultural systems is essential to render the systems as resilient as possible to climatic changes and extreme weather events, as well as to maximize agricultural yields.

In Africa where many people depend on smallholder farming for daily subsistence and food security tailored information about the past, present and future climate is very important. To assess the impact of climate change and design adaptation strategies in sectors like agriculture, climate information should be region-specific, reliable and easily accessible.

**CLIMTAG**, the **CL**imate **I**nfor**M**ation **T**ool for **AG**riculture, aims to provide decision makers in the agricultural sector with operational climate information, for example about the start of the rainy season or the duration of a drought period. The web-based tool operates at country level and visualizes past, present and future actionable climate information, allowing its users to assess the severity of upcoming climatic changes, design robust national adaptation measures (which can form part of National Adaptation Plans and updates), or support applications for international climate finance.

CLIMTAG uses temperature, precipitation and a variety of other climate data from past climate reconstruction ([‘ERA5 reanalysis’](#)) and future climate projections ([‘CMIP5 projections’](#)), delivered via the Copernicus Climate Data Store ([CDS](#)), to calculate operational agro-climatic indicators. These indicators have been defined in cooperation with local stakeholders (including experts active within National Meteorological Services, Departments of Agriculture and Research Centres). The CMIP5 climate projections are bias-corrected to strengthen their consistency with the past observed climate. Based on orographic information, the indicators are downscaled to a resolution of one kilometer to ensure practical applicability in the field.

Within the tool, users can select the dataset (ERA5 vs. CMIP5), time horizon (past, present to near, medium and long term future) and climate indicator of interest. The climate information appears in a dynamic and customizable country map. In addition, within season variability and future trends can be explored at district level via intuitive graphs. Users can also download the information for further use in documentation or downstream applications.



CLIMTAG has originally been developed to offer climate information for Malawi, Mozambique and Zambia, including 23 agro-climatic actionable indicators. Yet, after the planned geographical and thematic upscaling, CLIMTAG-Africa offer information for over 20 countries in Sub-Saharan Africa and include more than 30 agro-climate indicators. International climate funds are being considered to further expand the service to more countries and catalyze further uptake.

## **II. Objective and outputs**

The objective of the workshop is to bring together climate service providers and agriculture sector users to:

- Discuss climate information currently available and its use by the local agriculture sector;
- Identify, explore and discuss agriculture relevant climate data in the Copernicus Climate Change data store;
- Review actionable climate indices for the agriculture sector and their generation with the CLIMTAG tool;
- Run practical sessions on indices generation and use for local adaptation planning and action with local NGOs and Meteorological Services as collaborating stakeholders for service provision and delivery;
- Share experiences on case studies;
- Present the Africa Drought Observatory System and its products prototype;
- Discuss way forward on upscaling phase of the CLIMTAG tool in Africa’;
- Collect the Expression of Interest Letters for the upscaling phase.

The outputs of the workshop will include:

- A report on input data and methods of the CLIMTAG tool, and sample actionable indicators for the agriculture sector resilience and adaptation to climate change;
- Example of agriculture calendar updated with CLIMTAG output;
- Expression of Interest letters Collected’;
- Africa Drought Observatory System presented.

## **III. Methodology and participation**

After the opening ceremony, the motivation, objectives and expectations from the training will be highlighted by ACMAD and VITO. An introductory session will include the purpose of CLIMTAG, and its methodology comprising its input datasets (including the Copernicus Climate Data Store), the agro-climate indicator definitions and its data processing and visualization approaches. The main elements of the agriculture calendar across climate regions of Africa as provided by CLIMTAG and guidance on the interpretation of CLIMTAG outputs will be presented. During the interactive sessions, participants will have the opportunity to explore CLIMTAG in guided, hands-on exercises. On the last day, a presentation of the Africa Drought Observatory System and hands-on exercise to explore the products prototype will be followed by discussions on the way



forward. The session will end with prospects for new CLIMTAG developments and offers participants the possibility to give feedback for future development and use of CLIMTAG. A closing ceremony will be organized.

The event is organized by ACMAD, VITO, OVO and KENTER with local NGOs and Malawi Meteorological Services.

Participants to the training are experts from National Meteorological and Hydrological Services, FAO country representatives and ministries of agriculture staff involved in extension service programmes and agriculture resilience initiatives.

#### **IV. Facilitation**

The workshop will be led by facilitators and experts invited or designated by the African Centre of Meteorological Applications for Development (ACMAD), VITO, OVO and KENTER.

#### **V. Format and timing**

The workshop will be run as physical and hybrid event and will consist of sessions on three consecutive days. The first session will include opening ceremony and the purpose/expectations from the training as well as presentations on the status of and gaps on climate services for the agriculture sector in Africa. The last session will include recommendations and conclusions on the future development and use of CLIMTAG and closing ceremony. Each Lecture session will commence with an introductory presentation of the session by ACMAD and VITO, presentations by facilitators and experts on datasets, methods, tools, products, actionable indices for the agriculture calendar update and adaptation options. Total working period is 3 days.

#### **VI. Other information**

Agenda, training materials and guidelines for participation will be provided a few weeks before and during the event.

#### **VII. DRAFT WORKSHOP PROGRAMME**

| <b>Time (GMT+1)</b>                                | <b>Activities</b>                                   | <b>Responsability</b>    |
|--|---|--------------------------|
| <b>Day 1: October 09, 2023</b>                     |   |                          |
| <b>SESSION 1: Registration and Opening Session</b> |   |                          |
| 0900-0945  | Welcome remarks and statements                      | Malawi Met Service/ACMAD |
| 0945-1000  | Remarks on African Climate Services and Agriculture | AUC /ACMAD               |

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|  | Development policies and programmes for smallholder farming  |   |
|  | Official opening address by the local host   | Malawi ministries in charge of meteorology and/or agriculture |
|  | <b>Adoption of the agenda</b>  |   |
| 1000-1015  | Presentation and Adoption of the agenda and programme for the training   | - ACMAD<br>- All participants                                 |
| 1015-1030  | Purpose and objectives of the training   | ACMAD   |
| 1030-1200  | CLIMTAG overview: <ul style="list-style-type: none"> <li>- Rationale/purpose</li> <li>- Features overview</li> <li>- Demo of dashboard with agro-climate indicators and seasonal forecasts</li> <li>- perspectives</li> </ul> <p>Discussions</p> | ACMAD /VITO   |
| <b>1200-1215</b>   | <b>Break</b>   |   |
| <b>SESSION 2: COPERNICUS DATA STORE AND INPUT DATASETS FOR CLIMTAG</b> |  |   |
| 1215-1315  | - Demo cases of CLIMTAG presented by Kenter<br>- Hands-on exercises with CLIMTAG for Malawi and other countries  | ACMAD, VITO, KENTER   |
| <b>1315-1530</b>   | <b>Lunch Break</b>   |   |
| 1530-1800  | - Summary on the agriculture calendars per country or climate region in Africa   | Ministries of agriculture /NMHSs, Malawi Met Service          |
| <b>Jour 2 : 10 October 2023</b>  |  |   |
| <b>SESSION3 : HANDS-ON EXERCICES ON CLIMTAG</b>                        |  |   |
| 0830-1100  | Summary on the agriculture calendars per country or climate region in Africa   | Ministries of agriculture /NMHSs                              |
| <b>1100-1115</b>   | <b>Break</b>   |   |
| 1115-1300  | Deep dive into CLIMTAG: input datasets, methods,   | ACMAD<br>VITO   |



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|   | indicator definitions<br><b>And Hands-on session</b>  |  |
| 1300-1500   | <b>Lunch Break</b>  |  |
| 1500-1700   | Hands-on exercises on products generation with CLIMTAG  | ACMAD, VITO                                      |
| <b>1700-1715</b>  | <b>Break</b>  |  |
| <b>Jour 3: 11 October 2023</b>                              |   |  |
| <b>SESSION3 : HANDS ON EXERCISES ON CLIMTAG (Continued)</b> |   |  |
| 0830-1100   | Practical on actionable indices generation and use for adaptation option selection<br>Discussions and way forward/prospects | ACMAD VITO<br>OVO, KENTER<br>ONG locale<br>NMHSs |
| <b>1100-1115</b>  | <b>Break</b>  |  |
| 1115-1300   | Presentation of the Drought Observatory System and products prototype   | ACMAD  |
| <b>1300-1500</b>  | <b>Lunch Break</b>  |  |
| 1500-1730   | Conclusions.<br>Feedback/Recommendations and Closing ceremony   | ALL  |
| <b>1730</b>   | <b>CLOSURE OF THE WORKSHOP</b>  | <b>ACMAD, AUC, VITO, MALAWI</b>                  |