

## WASCAL-RUFORUM AICCRA PROJECT



Elaboration of additional Modules on Climate Smart Agriculture and Climate Information System for Staff, Students & other stakeholders in Universities in Africa







Dakar, Senegal October 11 – 14, 2022 Prepared by:

Dr. Francis Otto, RUFORUM Dr. William Amponsah, WASCAL

# Elaboration of Additional Modules on Climate Smart Agriculture and Climate Information System for Staff, Students, and other Stakeholders in Universities in Africa

## **Participants**

Prof KONE Daouda, Director, WASCAL CBD

Prof. Issakha YOUM, Senegal representative to the Board of WASCAL

Prof. Rabani ADAMOU – Niger. Director Graduate programme

Dr Robert Zougmore, Coordinator, AICCRA

Dr. William AMPONSAH, Scientific Coordninator of WASCAL, Kwame Nkrumah

University of Science and Technology, Ghana

Dr. Portia Adade WILLIAMS STEPRI- CSIR, Accra, Ghana

Prof. ADEYEWA Debo, Director of WASCAL Climate system, Akure, Nigeria

Prof. Zelalem BEKEKO, Haramaya, University, Ethiopia

Dr. Michael TUFFOUR, HoD Water Resources and Sustainable Development

Dr. Francis OTTO, RUFORUM, Uganda

Dr. Yacouba DIALLO, Director of WASCAL programme in Climate Change and Agriculture

Dr. Ibrahima BARRY, Director for WASCAL programme in Climate Change Economics, UCAD, Senegal

Prof. Julien ADOUNKPE, University of Abomey Calavi, Benin

Prof. Majaliwa Mwanjawolo, Soil Scientist, RUFORUM

Prof. Wilson Agyei AGYARE, Director for Climate Change Land use, Kwame Nkrumah University of Science and Technology, Ghana

Prof. Komi AGBOKA, Director or Programme Change Disaster Risk Management, Lome, Togo

Prof. Betty Ezati, Curriculum expert, Makerere University

Prof. FATOGOMA Sorho, WASCAL Progamme on Climate Change and Biodiversity,

Scientific Coordinator, UFHB, Abidjan, Cote d'Ivore

Selasi WETO, WASCAL, CBD

John MAAMU, WASCAL, CBD

### Online Participants:

Dr Savadogo Moumini, WASCAL Executive Director

Dr. Florence Nakayiwa, Dep. Exec. Secretary, RUFOROM

Dr. Amanda Grossi, IRI's -USA

# Recap of Day 1 – 11th October, 2022

### Welcome - Prof. Daouda Kone

- Arrival and Registration of the participants Selasi Weto, WASCAL.
- A brief description of the meeting and presentation of the agenda Prof. KONE Daouda.
- Welcomed participants and acknowledged the representation from various countries who have come to support the people of West Africa on the issue of Climate Change.

### Opening Remarks - Dr. Florence Nakayiwa, Dep. Exec. Secretary, RUFOROM

- Greetings from Prof. Adipala (Exec. Secretary, RUFOROM).
- Recognized all participants present.
- Impacts of the AICCRA programme on all sectors of the economy.
- Universities are tasked to impact knowledge throughout the communities.
- Universities should impact generational knowledge on the impacts of climate change and the concept of CIS and CSA.
- The practical in their action.
- Stressed on the important collaboration with WASCAL on this project.
- Wished us a fruitful deliberation.
- Welcomed participants to RUFORUM AGM in Harare.

## Opening Remark - Dr. Robert Zougmore, Coordinator, AICCRA

- Thanked everyone for being here and being committed in this programme.
- AICCRA is about connecting things, partners, not about creating new knowledge, but accelerating action and impact.
- Training modules should be beneficial to every student, staff and communities on the continent targeting 1.5 million farmers.
- Every partner should work to achieve this goal while using best practices of climate smart agriculture.
- Experience from Countries outside West Africa, like Ethiopia is helpful to the WASCAL.
- Demonstrate to the donor how AICCRA benefited the entire African continent and not just the target countries.

### Opening Remark - Dr. Savadogo Moumini, Executive Director, WASCAL

- Appreciated the role of the Universities collaborating with WASCAL.
- Thanked AICCRA for the excellent leadership in climate smart agriculture and information service in Africa.
- Appreciated RUFORUM for good leadership and partnership and opportunity to team up for joint effort for delivering AICCRA programme.
- Reiterated that this is as a result of the commendable achievement of the CGIAR project.
- Assured AICCRA that WASCAL and RUFORUM cherish partnership and network that goes beyond Africa – a true work of AICRRA for adopting and sharing information on CSA.
- Seven (7) modules have already been developed to help Universities to effectively impact the society.
- Confident in the quality and diversity of international partners and stakeholder to develop curricula on CSA and CIS.
- Students and staff will be aware of and be at easy to talk about CSA.

- Curricula on climate change and environmental issues that fits the purpose identification of gaps.
- Curricula that train students as fast and as effective as possible.
- Thanked all for the presence in this meeting.

### Programme Agenda

- Prof Daouda KONE presented the agenda and schedule for the programme.
- The agenda was validated and adopted for the meeting by participants.

## Expectation of the meeting - Prof. KONE Daouda

- COP26 includes commitment to integrate sustainability and climate change in curricula of formal education systems.
- African institutions and commissions are working towards realising this commitment.
- Phase 1: Creation of the course contents.
  - ➤ Eight (8) steps from May Nov, 2022
  - Curricula pilot with 100,000 students by Sept/Nov, 2022
  - English, French, Arabic, Swahili, Portuguese and other African languages
- Phase 2: Large scale course deployment
  - ➤ Seven (7) steps from Dec, 2022 Dec, 2023)
- Accelerating impacts of CGIAR climate research for Africa (AICCRA) project builds on CGIAR research programme on CCAFS in Africa
- Technology focus:
  - Sustainably increase production (productivity)
  - ➤ Reduce/remove GHGs (mitigation)
  - > Enhance resilience (adaptation)
  - > Economic/cost analysis (tangible benefits)
  - > Potential positive effect on the farmer
- Example: AgInfo package developed by CoC and partners.
- Specific issues
  - > Identify partners of universities as stakeholders
  - > Need assessment
  - > Partners' needs
  - > Develop training materials
- Expected results
- Methodology of collaboration with host universities
- Expected outcomes
- Proposed course modules
- Out reach beyond West Africa
- Methods and approaches of model development
- Cascade training for CSM and CIS in Universities curricula
- Expected deliverables
- Perspectives (short term content finalization, validation of material, mid-term)

### **General Discussion**

- How to disseminate of results and information to the 100,000 participants?
- Integrate 50% of the contents in the university curricula. What will be the methodology?
- Integration in already existing programmes or stand-alone programmes?
- Integration with already existing programmes will be at the mercy of these programmes.

### Comments by Dr Robert Zougmore, AICCRA Coordinator

- AICCRA perspectives and orientation on CSA and CIS into University Curricula.
- Gender mainstreaming and empowerment activities (at least 30 % for female to access the course modules)
- AICCRA phase one is 3 years (closing in 2023)
- We have to show that there is success (outcome) from the partnership for the World Bank to renew its support to the activities
- The need to have a strategy for implementation.
- Consider institutional and administrative engagement and strategies.
- WASCAL should focus on innovating strategies to enhance the uptake of the concepts by students.
- RUFORUM is ever ready to coordinate for experts in CIS and CSA to be involved for students to develop interest in these concepts.



Figure 1: Groupe Photo at the end of the opening Ceremony with participants including the regional Coordinator of AICCRA, Dr Robert Zougmoré (second on the first row from the leff) and the representative of WASCAL Governing Board (Prof Issakha Youm, 2<sup>nd</sup> from the right on the first row)

## Prof. Ahmadou Aly Mbaye, Vice Chancellor of University Check Anta Diop

- Climate change is a cross cutting issue for our economies.
- On behalf of RUFORUM and WASCAL universities he welcomed participants to Dakar in Senegal.



Figure 2: Groupe Photo after the visit of the VC, Prof Mbaye (3<sup>rd</sup> from the right) to the participants

# Overview of the meeting in Nairobi - Prof. Majaliwa

- Representatives from Burundi, Ethiopia, Kenya, Uganda, Z
- Online awareness creation on CSA and CIS Nov, 2021
- Workplan to develop and implement the modules
  - ➤ Needs Assessment
  - Liaison with partners
  - > Development of the module
  - Rolling out
- 6 out of 7 modules for East and Southern Africa have been co-developed and are available (course guide, facilitator's guide and presentation)
- Testing and rolling out the module. First training of the Deans will be done in December 2022

### **Module Presentation and Discussion**

### Soil Nutrients and Water Management in Crop Production – Prof. Zelalem Bekeko

- Eight sections, all for 48 hours
- Three Aims/ objectives articulated
- Mode of delivery
- Assessment method
- To be adopted for undergraduate or post graduate level depending on the target audience to identified

# Indigenous and local trees based agroforestry systems involving – Prof. Achille Assogbadjo

- Presented by Prof. Kone
- Learning Outcomes: 4 with one verb for each outcome
- Content outline: 6 sessions
- Clear links between LOs and sessions
- Delivery approaches: multiple
- Assessment: multiple
- Duration: 80 hours (10 hs x 6 session, 20 hs of field work)

- Details of each session clearly elaborated.
- Discussion on the 300-slide detailed content.

### Overview of the meeting in Nairobi – Prof. Betty Ezati

- Module system was agreed
- Sessions under each module
- Content of module
  - ➤ Module name
  - ➤ Module rationale
  - ➤ Module Description
  - ➤ Module Aim
  - ➤ Module Learning outcome
  - > Entry requirements
  - Duration
  - ➤ Mode of instruction
- Content of each session
  - Session name
  - > Session description
  - ➤ Learning outcome
  - ➤ Mode of delivery
  - > Teaching and Learning materials
  - > Mode of assessment
  - > Reading list

## Curricula development - Prof. Betty Ezati

- From idea, need assessment until implementation and evaluation.
- Curricula answer questions/solve problems.
- Makes it a thoughtful activity.
- Five action steps for curriculum design
  - > Situational analysis
  - > Formulation of learning outcomes
  - > Deriving content
  - > Selection of appropriate methods and media
  - > Determine the assessment strategies
- Four levels for the formulation of learning outcomes
  - > Factual
  - > Conceptual
  - Practical/ professional
  - Metacognitive
- Example: Climate change
  - > Factual: Define climate change
  - ➤ Conceptual: Analyse the effect of climate change
  - Practical: Design intervention to address the effect of climate change
  - Metacognitive: Evaluate the social and economic impacts of CC
- Implementation
  - ➤ Planning for teaching (pre-active, active, post active phases of teaching)
  - Active session (introduction teaching, conclusion)
- Selecting the appropriate methods
- Facilitating training Plan
- Facilitating a session Asking questions

- Assessment
  - ➤ Continuous, summative?
  - Participants should evaluate the model

### IRI's CSA and CIS knowledge products and services – Dr. Amanda Grossi

- IRI approach to Education and Training in Climate Risk Management for Agriculture
  - ➤ Generate, Translate, Transfer and Use knowledge
- What is the role of your university in supporting adaptation and strengthening the agriculture and food system?
- Why develop curricula?
  - > Gap in using climate information, lack of capacity
  - > Problem of not using climate information
  - ➤ How to access and use of climate data
- The IRI approach Building on and expanding the AICCRA- Ethiopia approach
  - Competency based
  - > Systems oriented
  - ➤ Meets and stimulates demand for high quality climate information services
  - ➤ Maximizes reach and impact through ToT
  - Emphasizes co-production and iterative feedback
- Example: Climate Risk Management in Agricultural Extension (CRMAE)
  - ➤ M1: Climate basics
  - ➤ M2: Climate information products and tools
  - ➤ M3: Climate sensitive agricultural decisions
  - ➤ M4: Integrating climate services into agricultural extension
- CRMAE resources
  - > Facilitator's guide
  - > Link to ppt presentations

### End of Day 1

• Closing and way froward for the next day - Prof Koné Daouda

# Recap of Day 2 – 12th October, 2022

## Welcome - Prof. Daouda Kone

- The second day session started with arrival and registration of the participants.
- Prof Kone welcomed participants to Day 2 of the programme.
- Recap of day 1 was elaborately provided by Dr. William Amponsah

## Policy documents and advocacy - Dr. Portia Adade Williams

- What does Policy entail? General description
  - > Call for action, decision making, governments
  - > Context, vision, actions, actors
  - ➤ Circle: agenda setting, policy formulation, policy implementation, monitoring and evaluation, policy review
  - Consultative process (institutional team, stakeholders, team of experts)
  - Formulation of policy: research, consultations, drafting, further consultations, re-drafting, finalize, adoption, publishing and launching
  - Actor and funding (private sector, academia, government, mass media, lead agency)
  - ➤ Monitoring and evaluation: SMART monitoring criteria, monitoring activities, evaluation criteria, evaluation methods

- Policy reviews: a number of reasons for this, process the results of the review.
- Progress made with CSA relevant policy documents. What next?
- · Global frameworks informing CSA commitment and actions
  - > UN Paris Climate Agreement
  - Sustainable Development Goals
  - > UN Food systems summit
  - ➤ Sendai Framework for Disaster Risk Reduction 2012-2030
  - ➤ UN decade on ecosystem restoration 2021-2030
- Continental frameworks (African context)
  - Agenda 2063
  - African Union Climate and resilient development and action plan 2022-2032
  - > Malabo Declaration on accelerated agricultural growth and transformation for shared prosperity and improved livelihood
  - > AU Green stimulus action plan
  - Adaptation for African Agriculture
- Regional Development Plans (West Africa)
  - ➤ West Africa Institute for Climate Smart Agriculture
- National Level
  - ➤ National adaptation programme of action
  - > Nationally appropriate mitigation actions
- Implementation progress
  - ➤ Over 15 countries have climate smart profiles
  - ➤ 12 have CS investment
  - ➤ Multiple countries have included CSA in their national policies, strategies, or plans
  - > Progress in implementing the African continental policy frameworks is generally low
  - ➤ Kenya has done well in terms of investment with over 250m USD
- Enabling policies and governance need to improve
  - ➤ Limited technical capacity
  - > Weak institutional capacity
- Vision for CSA adapted future should be differentiated structured and improved policy coordination
  - > Improve policy review
  - > Improve policy coordination
  - ➤ Policy advocacy to be stepped up (research to influence policy, assess policy environment, stakeholder mapping)
- Key success factors:
  - > Evidence-based decision making is very important
  - > Inclusive governance
  - > Implementation and formulation are equally important
  - > Universities are important in supporting

# Discussion on Policy Advocacy - All Participant

- Sometimes governments don't consult.
- Human resources to be first in key success factors.
- Power analysis, those behind the scenes... where do universities belong in terms of influence line?
- How do we get to influence the processes of policy formulation and implementation?
- Need to think of short-term training for policy advocacy.

• We have good policies but not accessible – awareness creation through technology.

# Renewable energy, water resources and agriculture nexus under climate change – Prof. Rabani Adamou

- Rationale:
  - > Considered population growth
  - ➤ Shortage of essential resources, adverse climate impact
- Description:
  - ➤ Connection between water, energy and food to enable sustainable and effective resource management in the region
  - ➤ Use of solar lighting and cooling
  - > Solar water pumping
  - > Drip irrigation and distance irrigation
  - Soil improvement (bio mass and waste management)
- Content:
  - ➤ Four sessions (Global warming and climate change, Sustainable development theory and global SDG, WEF nexus challenges and opportunities in SSA, Technologies and good practices for green agriculture solution in SSA)
- Aim: Provide solid understanding of WEF nexus.
- 4 Learning outcomes:
  - ➤ LO1: Understand how human activities can affect climate (air pollution, greenhouse effect, global warming and climate change)
  - ➤ LO2: Analyze of interdependencies and relationships between water, energy and food (WEF) three resources
  - LO3: Evaluate WEF challenges and opportunities in line with SDGs in SSA
- Delivery approach:
  - Interactive lectures, Tutorial and laboratory hands-on-activities, interaction with experts and key stakeholders, case study, field trips, group work
- Beneficiaries
- Assessment: cases studies, situational analysis, problem and solution, labs hands-on, field work report
- Reference materials.
- Duration: 60+20 hours
- Yet to develop the details of the 4 sessions.

# Discussion on Renewable energy, water resources and agriculture nexus under climate change – All Participant

- SSA climate change has a lot of impact like drought.
- The issue of biogas and fertilizer production are important.
- Need to work with partners already working on similar modules.
- Upscaling from farmer level to PhD level.
- Need to relook at the learning objectives.
- Provided comments for consideration in stating learning outcomes and other aspects of the module.
- Need to reflect on the documentation to polish it better.

# Disaster risk management in crop production, livestock and aquaculture – Dr. Agboka Komi

- Rationale
  - Linked to SDGs and national priorities.

- Module description
- Learning outcomes
- Entry requirements
- Duration 40 hrs
- Target audience
- Mode of delivery
- Mode of assessment
- Reading list
- Existing programmes
- Potential programme
- Module content (5 Sessions)
  - ➤ Climate disaster risk in agriculture and food systems.
  - Climate information systems.
  - ➤ Water resources in crop, livestock and aquaculture.
  - > Strategies for integrated DRM in crop, livestock and aquaculture.
  - > Case studies.
- Contents of sessions presented
- Other details of sessions yet to be developed.

# Discussion on disaster risk management in crop production livestock and aquaculture – All participants

- Suggested a number of adjustments for improving the layout of the module contents.
- General content and order of the sessions.
- To include drought related content.
- Revisit the target audience.
- Collapse session 5 into other sessions.
- Review learning outcomes and merge some.
- Need to realign the contents.

# Pest and diseases management in crop, fish and livestock production - Prof Fatogoma Sorho

- Followed module format
- Justification
- 5 learning outcomes
- Entry requirements
- Duration of 50 hours
- 4 sessions
- Clearly elaborated on the contents of the different sessions.

# $\label{eq:constraint} \textbf{Discussion on pest and diseases management in crop, fish and livestock production} - \textbf{All participants}$

- Entry requirements needs review.
- Outcome and objectives to have action verbs.
- Possibly do away with objectives.
- Revisit the write up for consistency and make adjustment on grammar.
- Focus on specific species of crops, livestock and aquaculture.
- Session on 'biotic and abiotic stresses' was proposed to be a stand-alone module.

# Policy Framework to support implementation of CSA and CIS - Dr Portia Adade Williams

- Module name
- Module rationale
- Module description
- Module learning outcome
- Aim: Improve review and coordination and strengthen multi level capacities to support implementation of CSA and CIS
- 4 module sessions
  - Session 1: Introduction to policy and policy process (4 sections)
  - Session 2: Strategic Framework for development and implementation of inclusive CSA policy and programmes (5 sections)
  - Session 3: Conducting monitoring, Evaluation and review of CSA and CIS relevant policies
  - Session 4: Creating an enabling environment for upscaling CSA and CIS (5 Sections)
- Beneficiaries (academia, policy makers NGO, Civil society)
- Delivery approach of the module
- Assessment modes
- Reference materials

# Discussion on Policy Framework to support implementation of CSA and CIS – All participants

- Stakeholders not comprehensive enough.
- Policy on data acquisition and use need to be included.
- Decision support tools and use of technologies to support policy processes.
- Module name needs to be revisit, too long and should not have active verbs.
- Realign the points under rationale to tell a story justification.
- · Objectives and learning outcomes to be revisited

#### End of Day 2

- Closing remarks by Prof. Mwanjalolo Majaliwa
- Expressed optimism that good progress is being made by all groups
- Advised that by mid of November substantial work needs to have been done to allow for presentation in Harare in December

## Recap of Day 3 – 13th October, 2022

### Welcome - Prof. Daouda Kone

- The third day session started with arrival and registration of the participants.
- Prof Kone welcomed participants to Day 3 of the programme.
- Recap of day 1 was elaborately provided by Dr. William Amponsah

# Commentary/Presentation on the approach to the Training of Trainers at the university level – Prof Betty Ezati

- Reflection on objectives and learning outcomes
- Differences between the two were given
  - Objectives: describes intention, focuses on what the teacher will do, opportunities
  - ➤ Outcomes: describes the result of learning, focus on what the students will do, how learning us used
- A number of examples of objectives and learning outcomes were provided

# Commentary/Presentation on the approach to the Training of Trainers at the university level – Prof Betty Ezati

- Today learning outcomes are used as opposed to the objectives
  - ➤ Learning outcomes emphasize deep learning than content coverage and promote course alignment and coherence
- It was advised that knowledge, skills and attitudes should be considered in developing learning outcomes
- A number of verbs were presented as suitable in stating learning outcome for factual, procedural and metacognitive
- Learning outcome should be SMART

### Implementing ToT-Prof Betty Ezati

- Who are we going to train?
- How do we upgrade and downgrade the module?
- Tailoring the curriculum to be taught by others
- Acknowledging that intellectual competence and pedagogical competence are different qualities
- Focus on handling methods, contents, learning environment, nature of adult learners
- Elaborate description of characteristics of adult learners were highlighted
- Emphasis given on the careful planning of the learning session and how it should be run effectively
- Careful choice of teaching method is important

### Discussion approach to the Training of Trainers at the university level -All Participants

- How to deal with science subjects that very intensive and hard to understand or explain like in the case of mathematics and physics?
- Time allocated to finish ToT and whether to focus more on how to teach the contents than the contents
- How to adapt the same module for farmers, students and other categories
- Attitude change, how do we make sure that this is achieved?

#### **Refined Curriculum – Curricula developers**

- Dr. Portia ADADE Williams
  - > Updated the module title
  - > Module description updated
  - Learning outcomes were revised
- Prof. Sorho FATOGOMA
  - > Included the beneficiaries
  - ➤ Updated the module description but still needs to be enhanced
  - ➤ Adjusted the learning outcomes, ranking them from the factual to the metacognitive
  - ➤ Adjusted the time allotted for each of the 5 sessions
- Prof. Rabani ADAMOU
  - > Tittle was adjusted and is still to be fine tuned
  - ➤ Module duration was redone
  - The four sessions were distributed to the various experts to develop contents
- Prof. Komi AGBOKA
  - ➤ Module description was improved

- > Duration was adjusted to 60 hours
- ➤ Mode of teaching, and assessment were revised
- ➤ Module content was rearranged but needs further review
- Each of the 5 sessions was updated

### Module on Soil Carbon Sequestration - Dr. Yacouba DIALLO

- Module rationale was presented
- Module description was also presented
- Entry requirements
- Duration
- Mode of delivery
- Beneficiary list
- Mode of assessment
- Session contents
- Details of sectional structure yet to be developed.

## Artificial Intelligence - Tool for climate and crop Production - Prof Maïssa Mbaye

- The experimental farms
- Edge AI-IoT Node
- Cloud Fog
- Edge AI hardware platforms
- AI software frameworks (TensorFlow, Keras, Scikit-learn, (py) Tourch
- Rift valley fever outbreaks early warning system
- Data sources
  - > ISRA and national Health System
  - > Local communities
  - > EU open data portal
  - > FAO Rift valley fever
  - > WHO
- Temperature has been investigated but result is not strong enough
- Evaluation of pollution
- Smart agriculture- AfricaRise uses deep learning
- Cheaper approach to recognize disease

#### **Discussion**

- Needs a lot of data
- How to train out students to use AI
- Difference between deep learning and machine learning
- How can historical data be effectively used
- How to build a sustainably practical solution for small holder farmers
- Need to build collaboration with other African institutions/ countries to bolster the
  efforts to use AI and ML techniques to build solutions to help solve continental
  challenges
- Using AI deep learning for crop production improvement smart agriculture

## Roadmap validation - Prof Majaliwa - Prof Koné

- Improvement of the modules by October 29 Team leaders
- Review of modules November 1-15
- Testing in Zimbabwe December 8- 16
- Finalization of the modules December January

- Elaboration of the modules December 12-14
- Closing Prof Koné Daouda

# Recap of Day 4 – 14<sup>th</sup> October, 2022 Filed visit to show case on the use of CSA and C

Filed visit to show case on the use of CSA and CIS at Daga-Brian in Fatik region ( $\sim 500$  km from Dakar)



a)



b)

Figure 3 a: picture of the communities and their chief (first seated from the right) involved in the demonstration and used of CSA and CIS at Daga Birame et Kafrine in Sénégal as indicated on the plaque below



Figure 4 a and b: Participants of the curricula development at the demonstration site of CSA and CIS at Daga Birame et Kafrine in Sénégal where groundnut, cowpea and millet are under evaluation and also the use of pv for water pumping for irrigation will be using in the near future.







Figure 5: Participants in figure 5a are following explanation of demonstration conducted on the site using groundnuts and in 5b where there is a manual rain gauge in addition to an automatic rain gauge in 5c

The visit at been ended by addressing participant thankful and gratitude to the communities of farmers in the village

# Roadmap on Modules on Climate Smart Agriculture and Climate Information System for Staff, students and other stakeholders in Universities

Activities	Period	Responsible
Improvement of the modules content for review	October 29th	Team leaders
Review of modules	November 1-15	WASCAL
Short courses development	21-26 November 2022	WASCAL
Testing in Zimbabwe	December 10-16	RUFORUM/WASCAL
Finalization of the modules content	December to january 15th	Team leaders
Elaboration of the module implementation strategies into the Universities	December 12-14	All participants