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Contents

1. INTRODUCTION

In recent years, the intersection of climate change and food security has become a critical focus for governments, organizations, and agricultural stakeholders worldwide. As extreme weather events, shifts in growing seasons, and unpredictable climate patterns continue to disrupt food production, regions across the globe are grappling with how to sustain agricultural productivity while ensuring food safety and accessibility.

The webinars conducted on this topic brought together experts, policymakers, and practitioners to explore these pressing issues and discuss strategies for fostering resilience in food systems amid growing environmental challenges.

The first and second webinars in this series provided a comprehensive overview of the key factors impacting food security, particularly focusing on climate-related challenges and policy responses. Through these discussions, participants explored both immediate concerns—such as economic accessibility, supply chain vulnerabilities, and crop sensitivity to climate shifts—as well as long-term strategies for strengthening food systems. Topics ranged from the importance of sustainable agricultural practices and technological adoption to the role of policymakers in supporting local farmers and improving regulatory frameworks.

The webinars not only facilitated knowledge exchange but also laid the groundwork for actionable solutions that can be scaled to address food security in diverse contexts.

1.1. PURPOSE

The purpose of this deliverable is to synthesize the insights and outcomes from the two webinars, providing a comprehensive analysis of the challenges, strategies, and policy recommendations discussed by participants. It aims to serve as a valuable resource for policymakers, stakeholders, and practitioners seeking to address the impacts of climate change on food systems. By highlighting key areas such as technological adoption, regulatory frameworks, sustainable agricultural practices, and government support, this document seeks to guide future actions and initiatives that can enhance food security and resilience in vulnerable regions.

1.2. SCOPE

This document provides a comprehensive review and analysis of the outcomes from the two webinars focused on climate change, food security, and technological innovations in agriculture. It consolidates the key insights, discussions, and policy recommendations that emerged during the sessions. The document also includes a foreword that sets the context for these discussions, highlighting the growing urgency of addressing food security in the face of climate change, and framing the role of advanced technologies in fostering resilience in agricultural systems. A conclusion section ties together the key learnings, emphasizing the next steps and potential actions that stakeholders, policymakers, and practitioners can take to further strengthen food security initiatives in Africa and beyond. The aim is to offer both a reflection on the discussions held and a roadmap for future engagement and implementation.

2. DEFINITIONS AND ACRONYMS

2.1.ACRONYMS

Acronyms used in this document and needing a definition are included in the following table:

Acronym	Definition
CAP	Common Agricultural Policy
EAC	East African Community
EC	European Commission
ESA	European Space Agency
FAO	Food And Agriculture Organization
GSS	General Services Support
KCEO	Knowledge Centre on Earth Observation
SDG	Sustainable Development Goals
SOFI	State of Food Security and Nutrition in the World
UN	United Nations
WHO	Word Health Organization

3. OUTCOMES FROM THE WEBINARS

The first webinar laid the groundwork for exploring the impact of climate change on food security, providing participants with a comprehensive understanding of the fundamental challenges affecting their regions. It focused primarily on identifying immediate food security issues such as economic accessibility, supply chain disruptions, and climate change impacts. By discussing vulnerable crops and specific measures to address these concerns, the session introduced participants to the broader context of how climate change is reshaping agricultural practices. This initial session was essential in creating a baseline of knowledge, as it allowed participants to share their experiences and begin considering solutions like sustainable agriculture and government support for smallholder farmers.

In contrast, the second webinar built upon this foundation, delving deeper into more complex issues like policy adaptation, technology adoption, and the role of government support in food security. The evolution in participation between the two webinars reflects an increased level of engagement and understanding among the attendees. In the second session, participants demonstrated a clearer grasp of the topics at hand, as evidenced by the more nuanced discussions around specific technical challenges such as data handling, climate-resilient agriculture, and the importance of precise agricultural technologies like satellite remote sensing. The increase in participation also suggests that the first webinar successfully piqued interest, resulting in a more informed and invested audience for the second instalment.

The shift in focus from broad food security challenges in the first webinar to more specific policy recommendations, technological solutions, and practical applications in the second demonstrates the progression in the participants' knowledge. As participants became more familiar with the project and its goals, the discussions evolved to address not just the "what" of climate change's impact on food security, but the "how" – particularly how to mitigate these effects through innovative practices and government policy. This progression also highlights the project's capacity to engage stakeholders at multiple levels, from immediate agricultural concerns to long-term policy reform.

Ultimately, the second webinar represented a deeper and more strategic conversation, one that was possible because of the foundational knowledge laid in the first session. The improvement in participation and the growing complexity of the discussions indicate that participants were not only more familiar with the project but also more capable of contributing meaningful insights into future solutions. This sequential approach, from understanding to strategic planning, demonstrates a well-structured pathway for engaging stakeholders in addressing the intertwined issues of climate change and food security.

WEBINAR 1: FEEDBACK REPORT

Date of Webinar: 9th May 2024
Topic: Advancing Food Safety & Food Security in Africa through AFRI4CAST

AFRI4CAST webinar marks a pivotal moment for stakeholders engaged in addressing Africa's pressing challenges in food safety and food security. The inaugural event was set to unveil the sophisticated methodologies and cutting-edge technologies that AFRI4CAST employed, with a special focus on its pilot sites in Uganda and Kenya. Attendees gained insights into how satellite data and advanced sensors are being leveraged to predict agricultural trends, monitor environmental conditions, and enhance the decision-making capabilities of farmers and policymakers alike. The webinar was not only an opportunity to learn about these transformative tools but also a platform to discuss their practical applications and potential to substantially improve agricultural practices across the continent.

AGENDA

Time (Hours: Minutes) CEST	- Session Title – Description	Presenter
10:00 - 10:10	**Welcome and Introduction**	
	Brief welcome by the host.	**AGROAPPS**
	Overview of the webinar's objectives and outline.	**GMV**
10:10 - 10:30	**Introduction to AFRI4CAST**	
	Presentation on the origins, goals, and overarching mission of the AFRI4CAST project.	**AGROAPPS**
10:30 - 10:50	**Methodologies and Technologies**	
	Detailed explanation of the sensors and technologies used for data collection.	**AGROAPPS**
10:50 - 11:10	**Focus on Pilot Sites: Uganda and Kenya**	
	Discussion of pilot projects in Uganda and Kenya. Presentation of specific applications and outcomes from these sites.	**AGROAPPS**
11:10 - 11:30	**User Needs and Policy Frameworks: Shaping High-Level Strategies for Food Security**	
	Characterization of users within the AFRI4CAST framework, exploring their diverse needs.	**GMV**
	Presentation on needs and how these drive the development of supportive policy measures.	**GMV**
11:30 - 11:50	**Theoretical Use Case Presentation**	
	Presentation of a theoretical use case to illustrate potential impacts. Discussion on how AFRI4CAST can be applied to solve real-world problems in agriculture and food security.	
11:50 - 12:00	**Interactive Questionnaire and Feedback**	
	Conduct an interactive questionnaire with real-time feedback tools.	**GMV**
	Engage participants with direct questions and encourage them to share their insights and queries.	**GMV**
12:00	**Closing Remarks**	
	Summary of the key points covered.	**GMV**
	Information on future webinars and how to stay engaged with the AFRI4CAST project.	**GMV**
	Thank attendees for their participation and conclude the webinar.	**AGROAPPS**

Outcomes from the questionnaire

1. Impact of Climate Change on Food Security

Out of 8 participants, 88% indicated that they perceive changes in food security due to climate change. A significant majority have observed the impacts, with only 13% expressing uncertainty. This suggests a broad awareness among participants of the tangible effects climate change is having on their regions.

2. Primary Food Security Challenges

The key food security challenges identified were:

- **Economic Accessibility** (Ranked 1st)
- **Climate Change Impacts** and **Supply Chain Issues** (Tied for 2nd)

Economic constraints and disruptions to supply chains, alongside the direct impacts of climate change, emerged as the most pressing concerns for ensuring food security.

3. Effects of Climate Change on Food Security

Participants identified **extreme weather events** (63%) and **shifts in growing seasons** (38%) as the primary ways in which climate change is impacting food security. Interestingly, no one mentioned droughts and water scarcity, which may indicate regional variability in how climate change affects agriculture.

4. Vulnerable Crops

Participants identified the crops most vulnerable to climate-related challenges as:

1. **Maize**
2. **Beans**
3. **Tea**
4. **Coffee**

These crops are staple commodities in many regions, and their vulnerability poses significant risks to food security.

5. Measures to Address Food Security Concerns

Participants rated the following measures to address food security concerns (on a scale of 1 to 10):

- **Investing in sustainable agricultural practices**: 7.5
- **Government subsidies and support for smallholder farmers**: 7.9
- **Improving food storage**: 6.9

- **Reducing food waste**: 7.3

This suggests a high level of support for government involvement in supporting farmers and encouraging sustainable agricultural practices.

6. Successful Food Security Initiatives

Participants highlighted several initiatives, including:

- **Community-supported agriculture**: Offering financial security to farmers through direct consumer engagement.
- **Agroforestry practices** in Africa: Integrating trees into agricultural systems to improve food security.
- **Institutional frameworks** in Uganda: An established program through the Prime Minister's Office that includes food security programs.

These examples indicate a growing recognition of the importance of both community engagement and institutional support in addressing food security challenges.

7. Prevalent Food Safety Issues

Participants identified the following food safety issues in their regions:

- **Contamination of food with pesticides and chemicals**: 43%
- **Microbial contamination**: 14%
- **Improper food handling and storage**: 14%
- **Other**: 29%

Food contamination, particularly from pesticides, remains a significant issue, reinforcing the need for better regulatory controls and safer agricultural practices.

8. Suggestions for Improving Food Safety in the Context of Climate Change

Key suggestions included:

1. **Policy and regulatory frameworks** to enforce food safety standards.
2. **Promoting climate-resilient agriculture** to minimize the impacts of climate change.
3. **Strengthening food supply chains** to ensure consistent food availability.
4. **Community engagement and public awareness** efforts to improve understanding of food safety.
5. **Enhancing monitoring and surveillance** systems for early detection of food safety risks.
6. **Educating and training food handlers** to improve hygiene and storage practices.

9. Agricultural Tools and Data Usage

Participants reported using tools such as **precision agriculture platforms** and **Earth observation data**, along with **artificial intelligence** and **mapping apps** for agricultural decision-making. However, challenges in handling large datasets and disseminating information efficiently were mentioned, highlighting the need for improved data management tools.

10. Accessing and Sharing Agricultural Data

Participants access agricultural data through a combination of:

- **Online platforms and websites** (33%)
- **Local agricultural extension services** (33%)
- **Locally collected data** (33%)

For sharing data, 63% of participants use **online platforms**, while others rely on printed reports (25%) and local media (13%).

11. Technical Challenges

Key technical challenges mentioned were:

- **Handling large datasets** efficiently, especially in real-time.
- **Data collection models** that save time and cost, and the need for effective dissemination mechanisms.

12. Role of Policymakers

Participants identified several roles for policymakers in addressing food security and climate change:

1. **Fund research** into climate-resilient crops.
2. **Create incentives** for local food production to reduce market dependency.
3. **Support new farming technologies** and **enforce regulations**.
4. **Develop disaster preparedness programs** to protect food systems.
5. **Promote sustainability** in agriculture.

13. Adaptation of Agricultural Policies

Participants emphasized the need for policy adaptations to better address current challenges:

- **Revise water management policies** to enhance irrigation efficiency: 7.2
- **Update subsidies** to prioritize sustainable farming: 8.7
- **Reform import/export policies** to stabilize food prices: 8.5

14. Collaboration and Support from Government and International Organizations

Suggestions for collaboration included:

- **More research applied to real problems**, particularly related to climate resilience.
- **Direct financial support**, especially in data collection and dissemination models.
- **Increased subsidies** to support smallholder farmers and foster innovation.

15. Additional Suggestions

Participants expressed the need to **raise awareness** about climate change and food security. They also suggested that governments invest more in **research and development** of climate-resilient crops and practices and proposed the creation of an **African platform** for information sharing and decision-making support.

The first webinar provided valuable insights into the growing challenges posed by climate change on food security. Participants highlighted the significant impacts of extreme weather events and shifts in growing seasons, particularly on staple crops like maize, beans, tea, and coffee. While sustainable agricultural practices and government support for smallholder farmers were identified as key measures to address food security concerns, there remains a strong need for improved policy frameworks, better management of food safety, and enhanced data accessibility.

To better address the needs of participants, future webinars should focus on enhancing technical infrastructure for real-time data handling and fostering more efficient data dissemination models. Strengthening policy and regulatory frameworks, particularly in water management and food safety, remains crucial. Participants also expressed a desire for more in-depth exploration of successful food security initiatives, and practical strategies for applying research to real-world challenges. Addressing the concerns about the cost and complexity of satellite remote sensing for small-scale farmers could also help improve agricultural resilience.

As climate change continues to pose significant risks to food security, it is vital to promote **climate-resilient agricultural practices** and develop comprehensive **disaster preparedness programs**. Governments and international organizations must collaborate to provide financial and technical support for smallholder farmers, enhance agricultural infrastructure, and invest in research and development of sustainable farming technologies. Building platforms for knowledge sharing and increasing public awareness on climate-related food security issues will be key in fostering resilience and ensuring long-term food security in vulnerable regions.

WEBINAR 2: FEEDBACK REPORT

Date of Webinar: 11th July 2024
Topic: Second Webinar 2 Afri4Cast & Tembo

Presenter	Topic
GMV	Importance of advanced Earth Observation (EO) techniques for food security and safety in Africa Explanation of Hyperspectral and Thermal EO data How these techniques are used to monitor and predict crop conditions
SIA	Case studies from pilot countries (Kenya and Uganda) Detailed presentation of various Afri4Cast products Applications of these products for monitoring wheat, maize, and rice
AgroApps	Demonstration of how the products can be used in practical scenarios (Platform presentation) How Afri4Cast products align with TEMBO Africa's objectives

1. Overall Webinar Rating

Out of 22 attendees, 21 participants rated the webinar:

- **Excellent**: 6 responses (29%)
- **Very Good**: 12 responses (57%)
- **Good**: 3 responses (14%)
- **Fair**: 0 responses
- **Poor**: 0 responses

The majority (86%) rated the webinar as either "Excellent" or "Very Good," indicating strong overall satisfaction.

The webinar was well-received, with 86% of participants rating it as "Excellent" or "Very Good." This indicates that the majority found the content and delivery engaging and valuable.

2. Relevance of Content

When asked about the relevance of the webinar content to their work, participants responded as follows:

- **Extremely relevant**: 17 responses (81%)

- **Moderately relevant**: 4 responses (19%)

- **Slightly relevant**: 0 responses

- **Not relevant at all**: 0 responses

A significant portion (81%) found the webinar content to be "Extremely relevant," suggesting that the material closely aligned with their professional needs.

An impressive 81% of respondents found the webinar content to be "Extremely relevant" to their work. This highlights that the topics discussed resonated well with participants' professional needs.

3. Areas for Improvement

15 participants provided suggestions for improvement. Common themes included:

- **Technical Issues**: Mentioned several times as an area to address, such as issues with slides, presentation flow, and network stability.

- **Presentation Time**: Many attendees felt that more time should be allocated to the presenters, especially for those from insitu data collection countries.

- **Practical Applications**: Some attendees suggested giving more focus on practical applications and how to implement the results shared during the webinar.

- **Missed Previous Webinar**: Some attendees noted they missed the first webinar and expressed interest in knowing what was discussed then.

While overall satisfaction was high, recurring suggestions for improvement focused on resolving technical issues and allocating more time for presenters. These adjustments could enhance the participant experience in future webinars.

4. Interest in Future Participation

When asked about their likelihood of participating in future webinars, participants responded:

- **Very likely**: 12 responses (60%)

- **Likely**: 7 responses (35%)

- **Neutral**: 1 response (5%)

- **Unlikely**: 0 responses

- **Very unlikely**: 0 responses

The results show strong interest, with 95% of participants likely to attend future events. Participants expressed strong interest in attending future webinars, with 95% indicating they were "Very likely" or "Likely" to participate again, suggesting high engagement and perceived value from the session.

5. Impact of Climate Change on Food Security

Participants' perceptions of climate change's impact on food security in their region:

- **Extremely significant**: 11 responses (58%)

- **Very significant**: 6 responses (32%)

- **Moderately significant**: 1 response (5%)

- **Slightly significant**: 1 response (5%)

- **Not significant at all**: 0 responses

Over 90% of respondents see climate change as either "Extremely" or "Very significant" to food security in their region.

The majority of respondents (90%) view climate change as a "Very significant" or "Extremely significant" factor affecting food security, underlining the urgency of addressing this challenge in future discussions.

6. Main Challenges to Food Security

Participants highlighted the following as the main challenges to food security:

- **Climate Change Impacts**: 7 responses (37%)

- **Agricultural Practices**: 7 responses (37%)

- **Economic Factors**: 3 responses (16%)

- **Political Instability**: 2 responses (11%)

- **Access to Technology**: 0 responses

Climate change and agricultural practices are seen as the dominant challenges. Participants identified climate change and agricultural practices as the primary challenges to food security, both receiving equal emphasis. This demonstrates the need for continued focus on both environmental and farming methods.

7. Main Food Safety Issues

Participants' responses on the main food safety issues in their regions were as follows:

- **Contamination (e.g., pesticides, chemicals)**: 10 responses (53%)
- **Poor hygiene practices in food handling**: 4 responses (21%)
- **Lack of proper food storage**: 2 responses (11%)
- **Inadequate food safety regulations**: 2 responses (11%)
- **Mislabeling or fraudulent products**: 1 response (5%)

Contamination of food was the most prominent issue, cited by over half of the respondents.

Contamination of food was recognized as the leading food safety issue, pointing to a need for better regulation and control of pesticides and chemicals to ensure safer food practices.

8. Effectiveness of Food Safety Regulations

Participants rated the effectiveness of current food safety regulations:

- **Very effective**: 1 response (5%)
- **Effective**: 9 responses (47%)
- **Neutral**: 6 responses (32%)
- **Ineffective**: 3 responses (16%)
- **Very ineffective**: 0 responses

A large portion of participants found food safety regulations either "Effective" or were neutral on their effectiveness.

While nearly half of respondents (47%) rated food safety regulations as "Effective," a notable 32% remained neutral, and 16% found them "Ineffective," indicating room for regulatory improvement in ensuring food safety.

9. Accessibility of Agricultural Technology

Participants rated the accessibility of modern agricultural technology:

- **Very accessible**: 3 responses (17%)
- **Somewhat accessible**: 6 responses (33%)
- **Neutral**: 3 responses (17%)

- **Somewhat inaccessible**: 5 responses (28%)

- **Very inaccessible**: 1 response (6%)

A significant proportion (34%) indicated that agricultural technology is somewhat or very inaccessible in their region.

Only 17% of respondents found agricultural technology to be "Very accessible," with a significant portion reporting barriers to access, suggesting the need for more efforts to make modern technology more widely available.

10. Barriers to Adopting Agricultural Technology

Key barriers identified to adopting new agricultural technologies include:

- **High cost**: 9 responses (50%)

- **Lack of awareness or information**: 4 responses (22%)

- **Insufficient training or technical support**: 4 responses (22%)

- **Limited access to financing**: 1 response (6%)

High costs were identified as the biggest barrier to adopting new agricultural technologies, followed by a lack of awareness and training, indicating that financial and educational support could help increase technology adoption.

11. Technical Challenges Faced in the Field

Participants identified the following as major technical challenges:

- **Ease of getting information and suitable local solutions**

- **Lack of suitable technology**

- **Lack of reliable updated high-resolution data**

- **Network stability**

- **Financial sustainability of services**

Participants reported a range of technical challenges, including difficulties in obtaining reliable data and suitable technology, as well as network and financial constraints. These issues need addressing to enhance efficiency in agricultural practices.

12. Government Support for Agriculture

Participants rated government support for the agricultural sector:

- **Very supportive**: 0 responses

- **Supportive**: 7 responses (44%)

- **Neutral**: 8 responses (50%)

- **Unsupportive**: 1 response (6%)

- **Very unsupportive**: 0 responses

The majority of participants felt government support for agriculture was either "Supportive" or "Neutral," with some room for improvement in fostering stronger support for the sector.

13. Policy Priorities for Improving Agriculture and Food Security

Participants suggested the following government policy priorities:

1. Education and training for farmers

2. Investment in agricultural infrastructure

3. Research and development in agriculture

4. Environmental and sustainability regulations

5. Trade policies that support local farmers

6. Subsidies for farmers

Education, infrastructure investment, and research were identified as the top priorities for improving food security and agricultural productivity, indicating where government and stakeholders should focus their efforts.

14. Challenges in Implementing Agricultural Policies

The main challenges highlighted in implementing agricultural policies were:

- **Corruption and lack of transparency**: 32%

- **Inadequate stakeholder engagement**: 22%

- **Insufficient funding**: 20%

- **Lack of coordination between government agencies**: 15%

- **Bureaucratic hurdles**: 7%

- **Political instability**: 5%

Corruption and lack of transparency emerged as the most significant challenges in implementing effective agricultural policies, highlighting the need for more transparent governance and better stakeholder engagement to drive policy success.

4. FOREWORD AND CONCLUSION

The feedback from the webinar reflects strong overall satisfaction, with the majority of participants rating the event highly and finding the content extremely relevant to their work. Critical issues such as the impact of climate change on food security, barriers to agricultural technology adoption, and food safety concerns were discussed, aligning well with the professional interests of the attendees. However, participants also raised important points for improvement, including technical issues and a desire for more time to explore key topics in greater depth.

Several recurring themes suggest avenues for enhancement in future initiative that could envision webinars:

- Firstly, resolving technical issues, particularly those related to presentations and connectivity, should be prioritized to ensure a smoother experience for participants.
- Additionally, attendees frequently requested more time for presentations, especially for case studies and insights from regions directly involved in data collection. This would allow for a more in-depth exploration of complex topics.
- There was also interest in focusing more on practical applications and solutions, indicating a need for webinars to bridge the gap between theoretical discussions and real-world implementation.
- Improved follow-up communication, such as providing a summary or access to missed webinars, could also be beneficial for participants who missed earlier sessions.

Looking ahead, future webinars should continue to focus on pressing topics for the audience as a must. Expanding the scope to include more interactive sessions, where participants can share their own experiences and challenges, would enhance engagement and foster a sense of community among professionals tackling similar issues.

Furthermore, providing more detailed insights into policy recommendations, government support, and funding opportunities could help attendees implement changes in their own regions. Ensuring ongoing dialogue and offering practical tools for technology adoption and food safety improvements will be critical in addressing the challenges identified. By focusing on these areas and fostering greater collaboration, future webinars can further contribute to advancing agricultural sustainability and food security in an increasingly complex global environment.

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