Design of SAFE4ALL case specific onboarding learning modules

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Summary

The SAFE4ALL AFRICA Learning Program plays a crucial role in the project's mission to empower local practitioners with the knowledge, tools, and capacity to address climate challenges, enhancing climate resilience across communities in Ghana, Zimbabwe, and Kenya.

The program is structured around two complementary training tracks: Onboarding Trainings (2025) and Needs-Based Trainings (2026–2027). This deliverable focuses on the Onboarding Trainings, which provide foundational knowledge in climate change, resilience, and the SAFE4ALL AFRICA tools. Needs-Based Trainings, informed by the needs of case studies and ongoing feedback, address evolving practitioner priorities and practical challenges, ensuring the program remains relevant and impactful.

The Learning Program is guided by the Triple-A Framework (Analysis, Ambition, and Action), a flexible approach that supports practitioners in assessing climate risks, setting adaptation goals, and implementing solutions. Training modules are tailored to diverse practitioners groups—technical champions, enablers, and end-users—reflecting the varied expertise and needs within the SAFE4ALL AFRICA network.

A key goal of the SAFE4ALL AFRICA Learning Program is to build a Community of Climate Champions, including the technical champions and enablers, empowering individuals and organizations to co-create sustainable, climate-resilient futures at local, regional, and international levels.

Core principles, such as dynamic content adaptation, learner-centered approaches, and tailored delivery methods, ensure the program's accessibility and effectiveness. A mix of interactive sessions, hands-on exercises, and multimedia resources fosters engagement and knowledge retention, enabling practitioners to integrate climate resilience into their daily practices.

This report outlines the design and content of the onboarding learning modules, centered around three main topics:

1. Fundamentals of climate change and resilience;
2. Stakeholder engagement and Communication;
3. Basics of SAFE4ALL AFRICA tools.

1. Introduction

SAFE4ALL AFRICA aims to empower local practitioners with knowledge, tools, and capacity to increase climate resilience across communities in Ghana, Zimbabwe, and Kenya. The implementation of a Learning Program (Task 5.1 "Develop and implement an open Learning Program for practitioners in the co-creation cases") is an important activity to ensure that the services delivered are used and integrated into their future work.

The Learning Program is driven by three clear objectives: i) to create a network of climate champions, ii) to deliver tailored and user-friendly resources such as manuals and data visualizations, and iii) to bridge the gap between climate information and decision-making. By developing trainings and incorporating climate services into daily operations, SAFE4ALL AFRICA ensures that its tools and services drive meaningful, long-term change across diverse sectors and communities.

The Learning Program is tailored to address the unique needs of the case studies, using outcomes from the needs assessment conducted in WP1 and the collaborative workshops held in Kenya in October 2024. The program is coordinated by Climate Adaptation Services (CAS) and the Resilient Cities Network (R-Cities), with contributions and leadership from other consortium partners who bring their expertise to specific sessions and learning needs assessments.

The training modules of the Learning Program are divided into two training categories: **Onboarding Trainings**, which lay the groundwork with foundational knowledge and skills, and **Needs-Based Trainings**, which respond to the evolving challenges and ambitions of stakeholders. Together, these training tracks ensure the program remains flexible, practical, and impactful, meeting the diverse needs of its participants.

Onboarding Trainings (2025)

The initial phase focuses on onboarding trainings to build foundational knowledge through:

- **Fundamentals of climate change and resilience**
  Led by CAS and R-Cities, this training covers the core principles of climate change and resilience.
- **Stakeholder Engagement and Communication**
  Led by CAS and R-cities, this training focuses on stakeholder engagement, co-creation and climate stories.
- **Basics of SAFE4ALL AFRICA Tools**
  Led by TAHMO and TUD, this training introduces the essential tools and methodologies of the SAFE4ALL AFRICA framework.

Needs-Based Trainings (2026 and 2027)

As we progress, the focus shifts to tailored trainings designed to address the evolving ambitions and actions of stakeholders. These trainings are based on:

- **Needs Relating to Action and Ambition**
  These trainings respond to emerging stakeholder needs, aligning content with practical applications.
- **Existing Identified Needs in Kenya, Ghana, and Zimbabwe**
  Training programs address specific challenges and opportunities identified in the three SAFE4ALL focus countries: Kenya, Ghana, and Zimbabwe.
- **Continued Assessment of Learning Needs**
  Informed by TUD/TAHMO WP1 findings, training content is continuously evaluated and adapted to meet evolving requirements.

Scope of this report
As described in the Grant Agreement (p.41), this deliverable includes the design of case-specific onboarding learning modules. The report begins by outlining the overall structure of the Learning Program and the identified learning needs. It then provides a detailed overview of the onboarding learning modules planned for 2025.

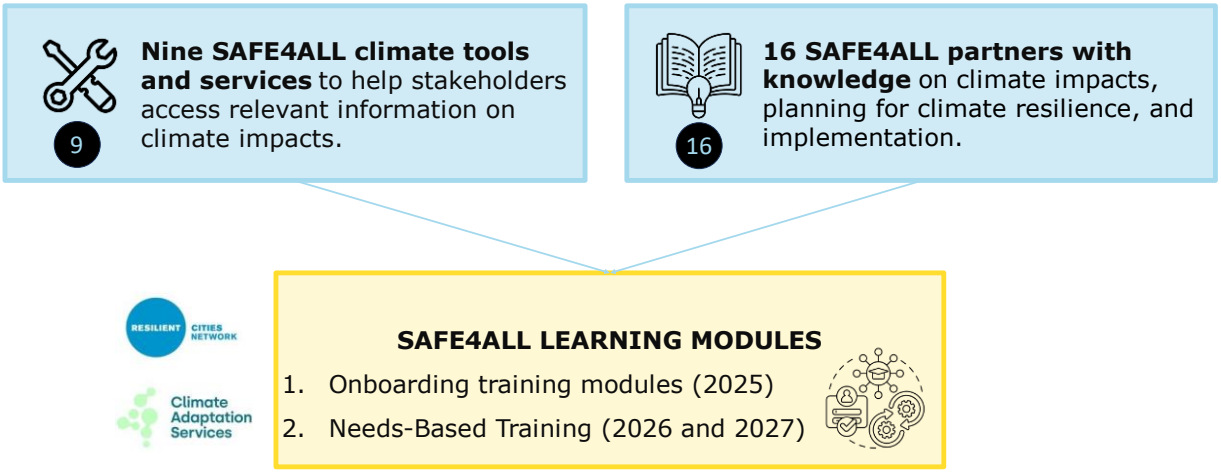
2. Structure of the Learning Program

As part of the SAFE4ALL AFRICA project, various tools will be developed and implemented, generating a wealth of new information. To ensure these outcomes are used and integrated into future work, the Learning Program mobilizes the internal expertise held within the SAFE4ALL AFRICA project. The consortium partners will transfer both technical and conceptual knowledge to actors on the ground working to build resilient agricultural and food systems.

The Learning Program will do this through a series of training courses designed to fill local knowledge gaps and improve capacities to utilize climate services for informed decision making (Figure 1). As such, the Learning Program seeks to locally integrate the **9 climate tools or services** designed to help practitioners access critical information on climate impacts by providing effective transfer of knowledge on utilizing and maintaining these tools. These tools and services are provided by **16 partners** with expertise in understanding climate impacts, planning for climate resilience, and supporting implementation efforts. The Learning Program will lean on the collective knowledge of this strong network of partners to also provide easily accessible and understandable knowledge on key fundamental concepts of climate change.

This dual approach—combining practical training on climate tools with fundamental climate knowledge—aims to empower local practitioners to deploy SAFE4ALL AFRICA's climate services in their decision-making processes, enabling them to better address the climate risks they face.

Figure 1. The SAFE4ALL AFRICA Learning Program integrates a diverse range of tools and knowledge.



Triple-A Framework

The Learning Program is built around the three steps of the Triple-A Framework used in the project: Analysis, Ambition, and Action[1]. This framework aims to achieve adaptation through an on-going cycle of 'analysis-ambition-action' when it comes to producing new climate information as well as giving shape to adaptation by practical interventions. SAFE4ALL AFRICA applies this approach to each case study area of the program and will utilize it as the foundation for the trainings developed through the Learning Program.

The Triple A framework links and organizes adaptation and resilience activities with a focus on simplicity: analysis, ambition, and action. These steps are flexible (do not have a pre-defined order) and can be adapted to the local context and needs to address specific challenges and achieve particular goals. Whatever the combination of the steps results in a learning process, leading to various outcomes and insights and thus advancing in adaptation and resilience.

Unlike fixed step-by-step guidelines, the Triple A framework offers flexible views on the activities, supported by climate services and tools. These activities include understanding climate change impacts, setting goals, implementing actions, and learning from them. The Triple-A framework clusters activities in learning loops that help advancing in urban adaptation, making it flexible and modular, allowing multiple activities to happen simultaneously.

At the start, the focus of the Learning Program will be on **Analysis**, which involves assessing the current and future climate risks: by a better understanding of hazards, exposure, vulnerabilities and different type of impacts. This is followed by **Ambition**, focuses on setting priorities and agendas by

[1] Klerk, I. de, K. van Koppen, M. van Staveren (2021). Climate stress tests as a climate adaptation information tool in Dutch municipalities. Climate Risk Management 33 (2021) 100318. https://doi.org/10.1016/j.crm.2021.100318

identifying key vulnerabilities and developing ambitious adaptation strategies while envisioning positive futures of the *"future we want".* Therefore this leads to **Action**, where the ambitions are translated into implementation and concrete steps to achieve the desired objectives and goals. This involves creating and

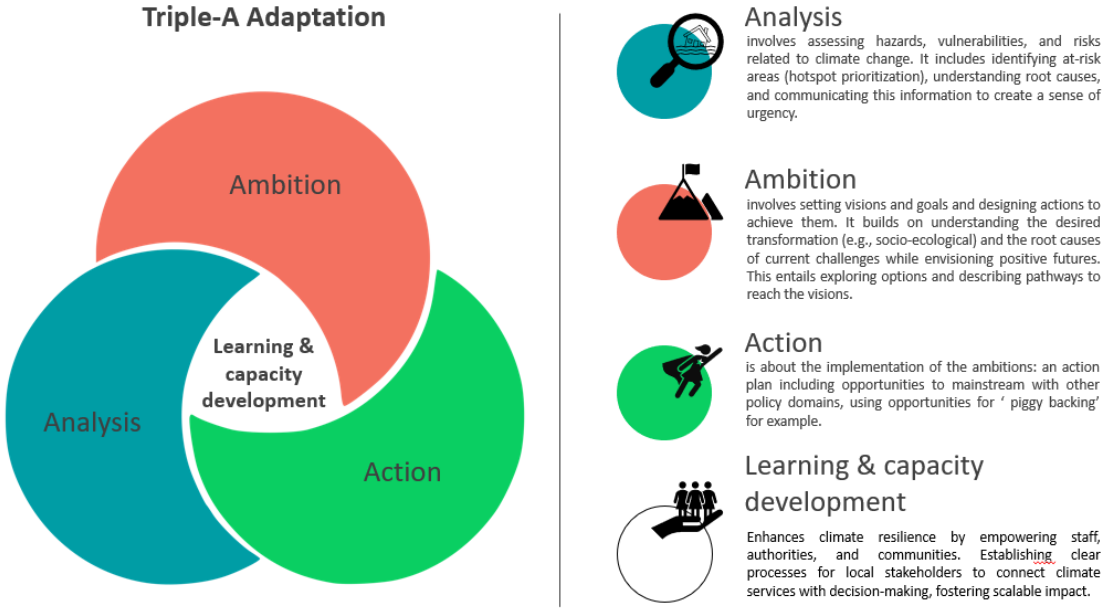


Figure 1. The Triple-A Framework includes Analysis, Ambition, and Action, with learning and capacity development at its core.

implementing adaptation actions and measures to reduce climate risk, considering specific contexts and limitations

A Network of Learning

The Learning Program is designed as a network of interconnected learning (Figure 3), structured around three spheres of practitioners: the technical champions, the enablers, and the end-users, as described in Table 1 below. Each sphere brings diverse perspectives, expertise, and knowledge needs, which the Learning Program aims to address over the course of the SAFE4ALL AFRICA project.

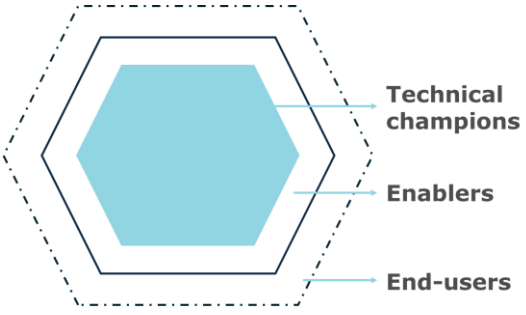


Figure 2. The network of learning

Table 1: The network of learning includes three types of learners with different objectives and preferred training types

	Technical Champions	Enablers	End-users
Who	**Experts**, like staff of meteorological offices and universities, with technical skills to utilize and interpret climate data and services.	Decision-makers, policy advisors, lead-farmers, educators, and extension workers who **facilitate the integration and implementation of climate service**s	Farmers and those active across the food supply chain, academia
Objectives	Ensure **operation, maintenance and use** of climate services **Embed** climate services and make climate information **applicable to decision-making**, research, and practical use across various sectors **Share training** to others, particularly on how to understand outcomes of the climate services	**Ensure use** of climate services in **planning and decision making** for policy change and investments **Transfer knowledge** on climate change and climate action to end-users they are directly in contact with	Use **climate informed decision making on day-to-day activities** within the agro/food supply-chain
Training type	High-level training on **climate and resilience** Technical trainings on utilizing, maintaining, and adapting **climate atlases and climate services**	Practical **training on climate and resilience** Trainings on accessing, using, and interpreting climate atlases and climate services Informed **adaption planning and decision making** **Stakeholder engagement** and building buy-in for action	**Awareness of climate services** and **impacts of climate change** **Link information** developed by climate **services to day-to-day needs**

By encouraging collaboration and knowledge exchange between these spheres, the program informs decision-making across the entire network. Additionally, it creates opportunities for transferring information and providing training between the spheres, leaning on the existing relationships and channels of communication between them, and ensuring a comprehensive and inclusive learning experience.

Community of Champions

The **Community of Champions** within SAFE4ALL AFRICA aims to ensure the sustained use of climate services for informed decision-making at both governmental and community levels and continuation of learning and knowledge sharing. The Learning Program will facilitate the creation of this community by creating opportunities of collaboration and cross-learning of two key spheres in each country:

1. **Technical Champions:**
   whose role is crucial in ensuring that the climate information is generated and applicable to decision-making, research, and practical use across various sectors.

2. **Enablers:**
   who bridge the gap between technical expertise and real-world application, ensuring that climate services reach stakeholders and communities effectively. They provide the necessary resources, guidance, and advocacy to support the adoption of the SAFE4ALL AFRICA tools in decision making.

The **Community of Champions** in each country unites these two spheres to maximize the impact of climate services. While Technical Champions provide the technical expertise to make climate data actionable, Enablers ensure that this information is effectively integrated into policies and practices.

The Learning Program will leverage the Living Labs that will be formed by WP1 to convene these two practitioner types and facilitate information sharing for them. The Program will also provide space for these practitioners to share experiences and knowledge among one another- creating a space for co-learning.

This collaborative approach empowers practitioners at all levels. It enables informed decision-making, peer-to-peer learning on how to enhance communities' resilience and promotes constant learning and information sharing.

3. Principles of the Learning Program

The Learning Program adopts tailored teaching and training methods grounded in a clear and suitable training philosophy. The program is designed based on initial conversations with practitioners on the ground across the above mentioned three spheres and accommodates their learning preferences and needs, which is shared in detail in Section 4 of this report. Guided by this, the Learning Program has established the following principles to guide the delivery of its training courses:

1. Content is dynamic and reviewed regularly
The Learning Program acknowledges that learning needs may vary across case studies and evolve over time. While these needs were tentatively defined during the program's design phase, it is possible that they may evolve as the SAFE4ALL AFRICA project progresses. To address this, the Learning Program incorporates Needs-Based Training, allowing content to be customized based on emerging requirements.

Participants' feedback, collected after each training session, will inform adjustments to ensure the Program aligns with their expectations and goals. The content shall therefore be revisited and adapted, through the reflection process planned in the Learning Program Reports.

2. Learner-centered progress through interactive exercises
The Learning Program places learners at the center of its approach, empowering them to take ownership of their progress. While webinar-style presentations are included to share expert knowledge, the focus of the trainings is on interactive, hands-on exercises that allow learners to actively engage with and shape their learning experience.

By emphasizing co-creation and co-production activities, the program ensures that learning is a collaborative process. This approach encourages independence, critical thinking, and a deeper connection between participants.

3. Customized approaches considerate of technological access
The Learning Program aims to address the challenges practitioners face with insufficient internet access for online training. It will thus provide a range of options including in-person workshops- where possible- in addition to live online modules. To ensure more access to those who have issues with internet and may not be reached by in-person trainings, the content from both will be converted into short, pre-recorded videos that are downloadable even with low-bandwidth internet connections. This will allow interested practitioners to access training when they have good connection and consume the contents whenever they have time. Additionally, the program will create visually engaging and easy-to-understand graphic documents that summarize the key training materials, available for on-demand download. This comprehensive approach ensures accessibility and flexibility for all participants.

4. Tailored content for diverse expertise levels
Recognizing that practitioners vary in their understanding of climate change and resilience concepts, the Learning Program aims to provide tailored content that fits different levels of knowledge. For those just starting on this journey, content is provided that is relevant to their context and simplified for easy comprehension, avoiding technical jargon. For practitioners who are already experts in the field, detailed training materials are provided to meet their advanced needs. The aim is to accommodate the diverse expertise levels of practitioners by offering tailored training that aligns with their specific learning goals.

5. Gender inclusion and sensitivity
The Learning Program aims for at least 30% of both trainers and practitioners from either gender. Additionally, the program fosters an open-minded atmosphere that considers climate change leadership roles for both men and women. Resource materials will be reviewed for gender sensitivity, achieved through engagement and feedback, and gender-segregated data will be collected and analyzed to inform program delivery and evaluation. By adhering to these principles, the program aims to provide inclusive, effective, and impactful training to support the goals of the SAFE4ALL AFRICA project.

4. Learning Needs from the Case Studies

The Learning Program is closely linked with Work Package 1 (Co-creation in case studies) and Work Package 2 (Improved climate services for SSA: innovating existing tools and services). The training modules are designed based on the learning needs of the case studies and informed by the following activities:

- The work done in Task 1.1 "Stock taking: inventory of existing tools and services; policy context and needs" (GA, p. 11), lead by TU Delft. This included a collaborative stock-taking survey conducted across five regions in Ghana (October–November 2024), with 317 responses collected from active farmers.
- Workshops in Kenya in October 2024 with over 20 practitioners and covering all spheres of the Learning Program.
- Workshop in Zimbabwe in December 2024 with around 20 practitioners, covering all spheres of the Learning Program.

Learning needs of Technical champions

The learning needs of technical champions mainly center around the analysis step of the Triple-A toolkit. Their objective is to ensure the effective operation and use of climate services, embedding them into decision-making, research, and practical applications across diverse sectors to maximize their impact. Their identified needs are:

1. Developing and maintaining application and user interface (UI) platforms, like chatbots through WhatsApp. tailored to different user groups.
2. Maintaining and working with climate atlases
3. Applying impact-based forecasting, focusing on translating forecasts into action.
4. Validating weather and climate forecasts.
5. Improving forecast accuracy and data assimilation/integration.
6. Increasing the resolution of forecasts.
7. Understanding digital technologies, big data, and AI.
8. Basic programming skills.
9. Making climate information accessible to end users, such as farmers.

Learning needs of Enablers

The learning needs of enablers span all three steps of the Triple-A Framework—Analysis, Ambition, and Action. Their focus lies in effectively using tools and services for planning and decision-making, rather than gaining deep technical expertise. Enablers prioritize practical application, aiming to understand how to implement and leverage these tools to drive impactful outcomes. Their identified needs are:

10. A basic understanding of climate change.
11. Understanding emerging technologies.
12. Data collection under difficult circumstances (e.g. in conflict areas, or where relationships are weak).
13. Standardizing data for dissemination.
14. Interpreting climate services.

15. Understanding the interconnectedness of climate issues with other challenges and planning for uncertainty.
16. Increasing collaboration to address shared challenges and breaking silos between actors.
17. Connecting climate data to decision-making processes.
18. Communicating climate change and its impacts more effectively by:
    - Securing buy-in from leaders and decision-makers to drive action.
    - Sharing risk knowledge with end users to raise awareness and foster understanding.
    - Identifying the most effective strategies to engage communities and inspire action.
    - Developing clear and practical training manuals to support knowledge dissemination.
19. Transferring knowledge to users of climate services.
20. Work planning and resource mobilization to increase climate investments.
21. Capacity building for project design.

Learning needs of End-users

End-users primarily focus on the Action phase of the Triple-A Framework. They seek practical guidance on how to integrate tools and services into their daily lives, , with a strong emphasis on actionable insights and straightforward applications that meet their specific needs. Key learning needs include

22. Using application and UI platforms, such as chatbots and mobile apps.
23. Understanding the impacts of climate change on agriculture;
24. Developing adaptation plans and options for climate change.
25. Implementing climate-smart farming practices.
26. Improving water management practices, including drainage, irrigation, and rainwater harvesting.

It is important to note that not all learning needs fall within the expertise or scope of the project. As a result, a selection has been made to align the expertise of the project partners with the priorities and requirements of the practitioners as effectively as possible.

The identified needs represent the initial learning needs collected during aforementioned assessments and workshops. However, to ensure the training remains relevant, the identified needs can be reviewed, updated and refined for the Needs-Based Trainings. This adaptive approach allows the program to respond to emerging priorities and incorporate new insights gained through ongoing engagement with practitioners.

5. Onboarding Training

The onboarding training sessions, planned for 2025, will primarily focus on the Analysis step of the Triple-A Framework, though the onboarding sessions will not be confined to it. As outlined in the Grant Agreement (p. 18), these training modules will cover:

- In-depth exploration of existing best practices;
- Fundamentals of climate change and resilience;
- Principles of co-creation and stakeholder engagement;
- Overview of available climate services and platforms developed by the SAFE4ALL project in the African region (coordinated with WP2).

Recognizing that practitioners in each sphere have unique learning requirements, the training has been customized to address the specific needs of each sphere, as detailed Table 2.

As mentioned in the introduction of this document, the Onboarding training will have three modules:

- **Fundamentals of Climate Change and Resilience**
  Conducted by CAS and R-Cities, this training covers the core principles of climate change and **resilience**.
- **Stakeholder engagement and Communication**
  Led by CAS and R-cities, this training focuses on stakeholder engagement, co-creation and climate stories.
- **Basics of SAFE4ALL AFRICA Tools**
  Led by THAMO and TUD, this training introduces the essential tools and methodologies of the SAFE4ALL AFRICA framework.

Table 2: structure of the onboarding trainings

	Technical Champions	Enablers	End-users
General modules	Module 1: Fundamentals of Climate change and resilience Module 2: Stakeholder engagement & Communication Module 3: Basics ofSAFE4ALL tools		Module 1: Fundamentals of Climate change and resilience
Case specific modules	Tailored trainings on the SAFE4ALL services and tools The **technical training week** in March 2025 in Accra (organized by TUD and TAHMO). (L)	Interpretation of tools, linking to decision making	Live training on use of Application/UI platforms, like chatbot and apps.

Format of Onboarding Training Sessions

The needs assessment survey and workshops provided valuable insights into how people prefer to learn, which varies across the different spheres. The onboarding program will combine plenary lectures with group exercises and workshop forms. This approach aims to not only provide participants with valuable content but also offer them opportunities to apply their learning. Moreover, group exercises are also a useful opportunity for participants to reflect and focus on the specific context of their own case study. The onboarding sessions will also include interactive discussions and peer-to-peer learning, fostering dialogue, collaboration, and the sharing of experiences across different case studies.

Although a majority of these onboarding training sessions will be recorded and delivered online, we aim to organize trainings during field visits and general assemblies to accommodate stakeholders with limited internet access. In addition, we will also provide learning materials for those who are unable to join the online and live sessions. This is detailed further in the *Learning Materials on the fundamentals of climate change targeting end-users and those with limited internet access* section of this deliverable (page 28). Table 4 outlines our proposed methods for delivering the various training modules.

Table 2: Format of onboarding training sessions

	Technical Champions	Enablers	End-users
General modules	Online lectures by different experts within the SAFE4ALL AFRICA consortium Online/ In-person interactive exercises to link lectures to practical action Pre-recorded videos of the above developed to be easily downloaded by participants		Graphic and written materials providing basic information on climate change and action Pre-recorded videos with basic explanations
Case specific modules	Live **technical training week** with interactive sessions between the tool providers and technical champions Guidance materials of the tools in the form of, for example, a manual Close contact between the tool providers and tool owners after the training week. Learning about the tools by applying and receiving feedback.	Live training with lectures but mainly interactive sessions. Learning materials about infographics communicating knowledge on climate change.	Live trainings on SAFE4ALL AFRICA tools Preparatory materials and handouts that can be used after receiving the training.

Onboarding Training Sessions Content

Onboarding Training #1. Understanding the fundamentals: Climate change and resilience

Module 1 of the Learning Program is intended to provide an introduction to climate change, setting the ground for the following modules. In particular, it focusses on the basic concepts of climate change and resilience, understanding climate-induced risk and on systemic approaches to dealing with these emerging needs to build a resilient future.

Session 1.1: The Fundamentals of Climate Change - History and Science

This session offers a overview of climate change, exploring its history and scientific basis. Participants will learn the difference between climate and weather and explore the long-term patterns that define climate (change). The session will address the causes of climate change, with an emphasis on human-driven factors accelerating its progression. Discussions will encompass the diverse effects of climate change, including increases in heatwaves, extreme precipitation, droughts, sea level rise, tropical cyclones, and storm surges, highlighting the varied impacts on ecosystems and societies.

Participants will also examine the critical need for global action, focusing on strategies to reduce greenhouse gas emissions (mitigation) and build resilience to climate impacts (adaptation).

We understand that online training can be challenging for End-users, such as farmers. Therefore, this session will be tailored for in-person workshops, where a simplified version will be presented using infographics to enhance accessibility and clarity.

Session 1.1	**The Fundamentals of Climate Change - History and Science**
Lead by	*CAS*
Estimated Time	*1.5 hour*
Supporting consortiums partners	*Weather Impact*
Type	*Online lecture*
Sphere	*Technical Champions and Enablers (online)* *End-users (tailored)*
Learning needs addressed	*10. A basic understanding of climate change.*
Existing resources	*Learning modules on the Kenya Climate Impact atlas (CAS)* *Slides and exercises from tailor-made-training in Ghana (CAS)* *Slides and exercises from tailor-made-trainings in Burundi (WI)*
Learning outcome	*Participants will have a clear understanding of the difference between climate and weather, the urgency of climate change, as well as the multifaceted strategies required to address it effectively. This foundation will prepare participants for deeper exploration and action-oriented learning in following modules.*

Session 1.2: Understanding Climate Risk and its impacts across systems

This session explores the concept of climate risk and how it affects various systems, highlighting the connections between risks and the need for solutions. Participants will learn the basics of climate risk and examine its impacts on key sectors.

Participants will first gain an understanding of climate risk by exploring key concepts such as hazards, exposure, and vulnerability. The session will then examine how climate change affects different systems. For example, it will explore how climate events lead to migration as people are forced to leave their homes, the challenges climate change poses to agriculture, including crop failure and food security issues, and how cities are impacted by increased flooding, heatwaves, and stress on infrastructure. The impacts on food systems will also be covered, looking at disruptions in food production, processing, and distribution.

Finally, the session will introduce "systems thinking" as a way to respond to these risks. By recognizing how risks in one area affect other parts of the system, participants will explore how to develop solutions that address multiple challenges at once and create interconnected strategies for resilience.

Session 1.2	**Understanding Climate Risk and its impacts across systems**
Lead by	*CAS*
Estimated Time	*1.5 hour*
Supporting partners	*Wageningen University, Weather Impact*
Type	*Online lecture*
Sphere	*Technical Champions and Enablers*
Learning needs addressed	*15. Understanding the interconnectedness of climate issues with other challenges and planning for uncertainty.* *23. Understanding the impacts of climate change on agriculture.*
Existing resources	*Learning modules on the Kenya Climate Impact atlas (CAS)* *Slides and exercises from tailor-made-training in Ghana (CAS)* *Learning modules on understanding climate risk (R-Cities)*
Learning outcome	*Participants will have a deeper understanding of the components of climate risk. They will be able to identify and recognize how climate risks affect various sectors, including migration, agriculture, cities, and food systems. Participants will also gain the ability to recognize systems thinking to analyze these interconnected risks.*

Session 1.3: The Fundamentals of Resilience

The Resilience Fundamentals session provides participants with basic understanding of climate resilience, emphasizing the close connection with climate risk and disaster risk management.

The session will delve into resilience theory, presenting the concept of shocks and stresses, with specific reference to climate adverse events and their reverberating consequences. This introduction to resilience will present global examples of climate-induced events and the impacts of these increasing, compounding risk faced by practitioners on the ground. It will highlight why it is critical to address these challenges in a way that is sensitive to the diverse levels of vulnerabilities and nuanced realities experienced by communities on the ground.

The session will also emphasize the importance of using systemic approaches when addressing climate change. The physical, ecological, socio-economic, and the governance systems are inevitably interrelated when it comes to climate action and climate adaptation, showing the importance of a resilient, holistic approach. It will provide participants with guidance on adopting a resilience lens, taking into account different scales (both physical and temporal), and envisioning alternative recovery paths. Lastly, it will spotlight the importance of building capabilities in disaster risk management, in centering equity in climate action and identifying catalytic interventions to achieve multiple resilience outcomes that address compounding challenges at the same time.

Session 1.3	**The Fundamentals of Resilience**
Lead by	*R-Cities*
Estimated Time	*2 hours*
Supporting consortiums partners	*-*
Type	*Online lecture + interactive exercise*
Sphere	*Technical Champions and Enablers*
Learning needs addressed	*15. Understanding the interconnectedness of climate issues with other challenges and planning for uncertainty.* *16. Increasing collaboration to address shared challenges and breaking silos between actors.*
Existing resources	*Learning modules and text on the fundamentals of Resilience (R-Cities)* *City Resilience Framework (R-Cities)*
Learning outcome	*Participants will have a clear understanding of resilience, its relevance to climate risk and disaster management, and how to apply resilience frameworks. They will be able to recognize the importance of a systemic approach to resilience and make informed decisions to foster urban*

Session 1.4: Climate impact workshop

In addition to *Session 1.1: The Fundamentals of Climate Change - History and Science,* this interactive workshop engages practitioners in identifying the local impacts of climate change. Through guided discussions, participants explore how climate change affects their specific regions, sectors, and communities. A key objective of this session is to prioritize the most important impacts identified during the workshop. This prioritization process helps to align the training program aligns with their most urgent needs and challenges.

Moreover, the workshop encourages cross-sector collaboration across participants from various departments and professional backgrounds, leading to the exchange of ideas and perspectives. By actively involving practitioners in this process, the session not only enhances their understanding of climate impacts but also builds a shared sense of purpose and collaboration across disciplines, ultimately strengthening the capacity to address local climate challenges.

Figure 3: Climate impact workshop in Kenya (October 2024)

Session 1.4	**Climate impact workshop**
Lead by	*CAS*
Time	*2 hours*
Supporting partners	*R-Cities, WU*
Type	*Live workshop. In Kenya this workshop was already held in October 2024.*
Sphere	*Technical Champions, Enablers, and End-users*
Learning needs addressed	*10. A basic understanding of climate change.* *16. Increasing collaboration to address shared challenges and breaking silos between actors.* *23. Understanding the impacts of climate change on agriculture*
Existing resources	*Training materials in from Ghana, Kenya, Bangladesh and the Netherlands (CAS)*
Learning outcome	*An understanding of the local impacts of climate change, a prioritized list of key challenges, and enhanced cross-sectoral collaboration.*

Onboarding Training #2: Engaging Stakeholders: Fostering awareness and alignment, and action for Climate Resilience

Module 2 of the Onboarding Program builds on the introductory sessions from the first module. Since successful climate adaptation often requires the involvement of many different stakeholders, this module centers on how to effectively communicate climate information – both to raise awareness and also to inform decision-making. It includes sessions on stakeholder engagement and how to communicate climate data to different groups and users.

Session 2.1: Stakeholder engagement: communicating climate information and climate risk

This session will focus on the key principles of successful stakeholder engagement. Participants will be introduced to a framework for engagement, which includes defining the scope, needs, and options, as well as strategies for dissemination. Various engagement mechanisms and formats, such as workshops, interviews, and working groups, will also be explored.

The session will guide participants through the process of developing an engagement plan. This includes selecting the right stakeholders, establishing a shared understanding of the context, defining roles and responsibilities, and setting clear objectives.

Case studies will be used to showcase effective examples of stakeholder engagement, helping to identify best practices and guidelines for successful engagement activities. Key concepts such as co-design, co-production, and co-dissemination will also be highlighted, providing participants with a comprehensive understanding of collaborative approaches in climate adaptation.

Session 2.1	**Stakeholder engagement: communicating information and climate risk**
Lead by	*R-Cities*
Time	*1.5 hour*
Supporting partners	*CAS*
Type	*Online / in-person interactive session*
Sphere	*Technical Champions and Enablers*
Learning needs addressed	*9. Making climate information accessible to end users, such as farmers.* *16. Increasing collaboration to address shared challenges and breaking silos between actors.* *18. Communicating climate change and its impacts more effectively*
Existing resources	*Learning modules and text on the fundamentals of Resilience (R-Cities)* *City Resilience Framework (R-Cities)* *Holistic resilience strategy development process (R-Cities)*
Learning outcome	*Participants will be inspired on how to communicate climate information to diverse groups, select the right stakeholders, and define roles and responsibilities.*

Session 2.2: An introduction to climate stories

Effective communication of climate information is crucial, and this session will demonstrate how climate research, actions, and services can be presented through climate stories to engage the public and convey key messages.

Climate stories combine images, videos, infographics, and interactive spatial data to tell a compelling story. These can be created using platforms like ArcGIS StoryMaps and can be shared either independently or embedded within websites.

The session will explore how to frame the narrative, define the story's purpose, and identify the target audience. The session will also focus on the process of creating climate stories. In a hands-on group exercise, participants will develop initial concepts, identify the target audience, determine the story's purpose, and design an engaging structure.

Session 2.2	**An introduction to climate stories**
Lead by	*CAS*
Time	*1.5 hour*
Supporting partners	*-*
Type	*Online lecture + interactive exercise*
Sphere	*Technical Champions and Enablers*
Learning needs addressed	*9. Making climate information accessible to end users, such as farmers.* *18. Communicating climate change and its impacts more effectively*
Existing resources	*Climate story manual (CAS)* *Training materials on visualization (CAS)*
Learning outcome	*Participants will have the tools to create climate stories. They will be able to identify the right audience, define the purpose of the story, and design a compelling narrative using multimedia elements.*

Session 2.3 Building buy-in and gaining commitment for action

This session will further develop participants' capacity to effectively link climate information sharing and awareness to decision-making processes. By emphasizing the resilience value of proactive measures, this session will equip participants with the tools to effectively communicate the importance of action to build buy-in from actors in positions of power.

The session will delve into strategies to engage decision-makers and garner their continued support. Through insightful discussions and practical examples, it will explore what it takes to effectively engage key stakeholders and decision-makers in the realm of climate resilience.

Drawing from real-world case studies, it will showcase successful approaches that have been implemented in the past. By examining these examples, participants will gain valuable insights into how climate information sharing can be effectively integrated into decision-making processes, ultimately fostering a more resilient and sustainable future.

Session 2.3	**Building buy-in and gaining political commitment for action**
Lead by	*R-Cities*
Time	*2 hour*
Supporting partners	*-*
Type	*Online lecture + interactive exercise*
Sphere	*Technical Champions and Enablers*
Learning needs addressed	*18. Communicating climate change and its impacts more effectively*
Existing resources	*Holistic resilience strategy development process (R-Cities)*
Learning outcome	*Participants will have guidance to build-buy in and inspire action from stakeholders in positions of power.*

Session 2.4: Adaptation Pyramid workshops

The Adaptation Pyramid is a workshop method for exploring actions to create a climate-resilient system. It consists of three layers:

- Utilizing the natural system
- Taking technical measures
- Responding to extremes

In this session, participants will brainstorm about adaptation goals and measures. These are linked to the pyramid's layers. The workshop will help assess current progress in climate adaptation and identify areas where goals or actions may need adjustment, providing practical insights for building resilience.

Figure 4. Adaptation Pyramid workshop in Kenya (October 2024)

Session 2.4	**Adaptation Pyramid workshop**
Lead by	*CAS*
Time	*2 hours*
Supporting partners	*R-Cities, WU*
Type	*Live workshop. In Kenya this workshop was already held in October 2024.*
Sphere	*Technical Champions, Enablers, and End-users*
Learning needs addressed	*24. Developing adaptation plans and options for climate change.* *25. Implementing climate-smart farming practices.* *26. Improving water management practices, including drainage, irrigation, and rainwater harvesting.*
Existing resources	*Training materials in from the Netherlands and Kenya (CAS)*
Learning outcome	*Learn about different adaptation measures and be able to apply a tool towards climate action.*

Onboarding Training #3: Tools for Climate Action: Basics of SAFE4ALL AFRICA tools (2025-2026)

Module 3 of the Onboarding Program focuses on technical integration of the tools and services from the SAFE4ALL AFRICA consortium. It will provide practitioners with the first, in-depth introduction to the climate services developed by the partners in the consortium while also communicating the value of utilizing these tools to advance informed decision making.

Session 3.1: Fundamentals of Climate Services

This session introduces participants to the core concepts of climate services and their role in supporting climate adaptation and resilience planning. We will provide an overview of available climate services and platforms in the African region. The session also highlights the tools provided by SAFE4ALL AFRICA, demonstrating their functionality and potential use cases. By exploring practical examples, participants will gain insights into how and for what these tools can be applied to real-world scenarios to support effective climate action.

Session 3.1	**Fundamentals of Climate Services**
Lead by	*CAS*
Time	*1.5 hour*
Supporting partners	*WUR*
Type	*Online lecture*
Sphere	*Technical Champions and Enablers*
Learning needs addressed	*14. Interpreting climate services.*
Existing resources	*Slides and exercises from tailor-made-training in Ghana (CAS)*
Learning outcome	*Participants will have the tools to create climate stories. They will be able to identify the right audience, define the purpose of the story, and design a compelling narrative using multimedia elements.*

Session 3.2: Technical training week

During a technical training week, the practitioners receive hands-on training on data assimilation and integration linked to the different tools. The first day starts with presenting an overview of existing tools, models, data and services, followed by a discussion on the needs assessment. The afternoon will be spend on working on Python exercises, using different data (e.g. ERA5, CBAM, CHIRPS), as well as integration of this data. During the second day of the technical training days, parallel in-depth sessions on different tools will give tool owners and practitioners the opportunity to dive deeper into the practical use of the tools.

Session 3.2	**Technical training week**
Lead by	*TU Delft*
Duration	*2 days*
Supporting consortiums partners	*SAFE4ALL Tool partners*
Type	*Live in Accra*
Sphere	*Technical Champions and Enablers*
Learning needs addressed	*1.Developing and maintaining application and user interface (UI) platforms, like chatbots through WhatsApp. tailored to different user groups.* *2.Maintaining and working with climate atlases* *14. Interpreting climate services.* *22. Using application and UI platforms, such as chatbots and mobile apps.*
Learning outcome	*Participants will know more about specific tools and how to use them in practice. At the same time they will have improved their Python programming skills and knowledge on data integration and assimilation.*

Learning Materials on the fundamentals of climate change targeting end-users and those with limited internet access

In addition to the dynamic materials in our online and in-person training programs, we will develop clear and visually engaging infographics and simplified text on climate change and climate action. We will also transition the training sessions done online into short-form videos that can be easily downloaded on low bandwidth.
The materials developed will include:

- Freely available booklets with infographics and description of fundamental concepts of climate change and resilience – which can either be shared on social media platforms like whatsapp/telegram or printed out and shared by Enablers;
- Freely available slide decks with all the materials shared during the on-boarding trainings;
- Freely available exercises and case studies shared as PDF documents;
- Short form pre-recorded videos with the contents of the onboarding programs.

The above materials are designed to accommodate those within the Network of Learning that have limited access to internet services. In particular, the infographics and short-form videos to be developed are a first step to reach the End-users –particularly farming communities - who want to understand the impacts of climate change on their day-to-day practices. Many of the farmers interviewed as part of our initial needs assessment stated that they have limited access to internet services or have affordability issues for internet and smart phones. They mostly rely on media or agricultural extension workers to gain any weather and climate information. Farmers in Ghana also stated that they have limited time for educational purposes. These resources are designed to be easily understood by End-users (i.e. farmers) and to be distributed by Enablers (i.e. agricultural extension workers) to communicate climate risk and potential action.

By simplifying complex concepts into visually appealing and straightforward formats, the Learning Program aims to increase awareness and understanding of climate-related issues and actions among a broader audience within and outside of the selected Community of Champions.

6. Needs-Based Trainings beyond the Onboarding Program

As can be seen from the above sections, several initial needs assessments to define the contents of the onboarding Learning Program were conducted. Building on these assessments, the program plans to engage further with practitioners on the ground to identify localized, context-specific needs that the Learning Program can address.

Guided by SAFE4ALL AFRICA 's WP1, led by TAHMO and TUD, the Learning Program will work to establish more effective communication channels with local practitioners. To achieve this, the program will use the Living Labs that are being developed through WP1 as hubs for knowledge sharing and co-creation of climate information across our case studies. These Labs will help monitor emerging learning needs, allowing for the identification of any missing information or specific knowledge gaps/ emerging needs, taking into account the diverse risks and conditions within the case studies.

By actively gathering feedback and suggestions, the Learning Program aims to refine and adapt our trainings to meet the evolving needs of practitioners. This approach will enable the Program to deliver tailored training sessions that address specific challenges. In this way, the trainings remains relevant and adaptable to the dynamic needs of local practitioners throughout the SAFE4ALL AFRICA project implementation.

We have already identified promising opportunities to offer specialized, optional training sessions tailored to specific cases. These sessions will lean on experiences from the SAFE4ALL AFRICA consortium and will be tailored to topics where a distinct need has been identified. Scheduled for 2026 and 2027, these

training sessions will be developed based on insights gathered through engagements in the Living Labs and designed to support specific projects within the various case study areas where SAFE4ALL AFRICA is active.'

For practitioners, it can be challenging to identify their learning needs if they do not know the available options. Therefore, it could be helpful to present clear and structured choices to ensure they are aware of the Learning Program's offerings and can identify solutions that best suit their needs. Training options that we aim to include are: Resilience Value Realization, portfolio prioritization for climate action, planning for equity and justice, and guidance on how to train other practitioners on using the SAFE4ALL tools. These represent just a number of the options, and we will continue to explore and develop additional offerings based on practitioner feedback and emerging needs.

7. Monitoring, Evaluation and Updates

The Learning Program will follow the overall course of the SAFE4ALL AFRICA project and the progress made within the case studies. As such, its content will be developed dynamically, adapting to the evolving needs of the practitioners in the project. Additionally, the delivery dates for the modules may be adjusted to coordinate with activities from other related activities. Moreover, the content might be revised and tailored to emerging needs from the case studies.

To ensure the program's effectiveness, an evaluation process will be integrated into the Learning Program. At the end of each module, participants will complete surveys designed to measure their satisfaction with the content, training methods, and tools. These evaluations will help identify gaps or critical areas that require attention in following modules and the Needs-Based training. Additionally, learning outcomes will be assessed through assessments to gauge participants' understanding and application of the material.

Living Labs practitioner meetings will serve as an additional feedback mechanism. These meetings will assess how effectively the training supports stakeholders' on-the-ground work and whether learning materials are being distributed and utilized by end-users.

Lastly, as described within the Grant Agreement, the Onboarding Learning modules will be also assessed in the Deliverable 5.6, 'Report of design guidelines of case specific onboarding training modules'. This report is expected to be submitted by M24.

8. Sustainability of training materials

Ensuring training materials are readily available is essential for building local capacity, and securing the long-term success of climate adaptation and risk management initiatives. By making these resources accessible beyond the SAFE4ALL project, we can extend their impact to a wider network of practitioners. In each case study we will develop a **climate atlas**, which will

serve as the central platform for presenting and hosting the training materials, ensuring that practitioners have easy access to critical resources tailored to their specific needs.

These atlases serve as a one-stop resource for climate information, tailored for policymakers and agricultural advisors. By providing accessible data, tools, and local knowledge, the Climate Atlases make complex science understandable and practical, helping practitioners adopt sustainable practices and adapt to changing conditions. The Climate Atlases will serve a dual purpose:

- They will provide valuable information to support the Learning Program.
- They will consolidate all knowledge generated during the Learning Program.

By incorporating these materials into the Climate Atlas, the Learning Program can be scaled up, making the knowledge easily accessible to a wider audience and ensuring broader impact. Ultimately, the Climate Atlases will be handed over to the local Technical champions, ensuring continuity after the project.

We recognize that the Learning Program can only reach a small group of farmers directly. Therefore, we place emphasis on the **train-the-trainer** approach. By training extension workers and other key intermediaries (i.e. Enablers), such as those from organizations like the Zimbabwean Farmers Union, we can extend the program's reach to a much larger group of farmers (i.e. End-users). Subsequently, these trained individuals can peer-to-peer disseminate knowledge and best practices, effectively scaling the program's impact and ensuring that more farmers benefit from the climate resilience tools and strategies developed. This approach helps to build a broader network of trained practitioners.

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