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Executive Summary

Due to its limited scope and funding, not all interested parties could be accommodated into KADI. However, the partners in the project have long-standing collaborations with numerous African actors, from observation sites and the organizations operating them to climate-aware cities, institutional partners in countries engaged in improving their GHG and SLCF emission-reporting, or regional agents. The task establishes a dynamic network of networks gathering actors who have shown interest during the preparation of the project. The variety of stakeholders calls for dedicated modes of interaction to connect to people and organizations. The task is closely connected to WP1 to make use of the stakeholders identified in Task 1.2 for climate services, to WP2 for information exchange to and from the pilots, to WP3 in order to inform the strategic design of the African research infrastructure, and to WP4 dedicated to training and knowledge-sharing. During the first reporting period 1, the coordination team at ICOS facilitated and engaged with actors. In this deliverable we outline the stakeholders and the types of collaboration (started and envisaged) or links to the project.

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Introduction

Not all interested parties could be accommodated in this project due to its limited scope and funding. However, the partners in the project have long-standing collaborations with different African actors, be they observation sites and the organizations operating them, climate-aware cities, institutional partners in countries engaged in improving their GHG and SLCF emission-reporting, or regional agents. The task establishes a dynamic network of networks gathering actors having shown interest during the preparation of the project. The variety of stakeholders calls for dedicated modes of interaction to assist in connecting people and organizations. The task will be closely connected to WP1 to make use of the stakeholders identified in Task 1.2 for climate services, to WP2 for information exchange to and from the pilots, to WP3 in order to promote the successive steps of the strategic design of the African research infrastructure, and to WP4 dedicated to training and knowledge-sharing. ICOS has identified and created or re-established contacts who have long term or relevant cooperation and activities with and in Africa. These meetings aimed to identify and compile stakeholders who will be a dynamic network of networks gathering actors having shown interest during the preparation of the project. The starting point was the contacts or participants from the previous ICOS-coordinated project, [SEACRIFOG](#). To maximize the visibility and impact of the project, ICOS has actively sought and used opportunities to interact and present the project at relevant events. These interactions occur through a mix of approaches, online meetings or workshops and webinars, smaller focus groups and bilateral meetings, as well as sessions at international conferences and meetings (e.g. side events at COP meetings organised through ICOS ERIC being an international observer at UNFCCC or using the GEO framework where ICOS ERIC is a participating organisation).

Observation Communities

Group on Earth Observations (GEO)

KADI co-hosted a side event at the GEO Week and ministerial summit 2023. The contact, planning and submission was done in reporting period 1. In addition, we sent an official statement and quote which is on the event web page.¹ The statement and quote were related to co-design of climate services and tailored to support African policy-makers as well as linking in-situ with remote sensing in Africa. It was emphasized that the ground-based measurements of in situ concentrations and fluxes of greenhouse gases (GHGs) in the atmosphere, on land and in the oceans are essential information for many communities in GEO, be they satellite experts for the calibration and validation of their observations, modelers for input in their predictions of climate trends, or developers for the production of new tools based on EO data. From the discussion at the KADI side event it was clear that:

- Africa does not need data, Africa needs collaboration and partnerships to make use of already existing data. Most of the data collection and usage are not connected or aware of the existence of others. To promote transferability to similar contexts or there is a need to increase support for data sharing and collaboration.
- Decision-makers need to be involved and, in some cases, provided with relevant training to make use of the data for policy.
- Co-design, co-creation and local ownership are keys to effective design and use of climate services.

African Group on Earth Observations (AfriGEO)

KADI participated in the symposium of the African Group on Earth Observations in September 2023. The aim was to revisit and revive previous connections to this community. The project was presented with key messages being:

¹ <https://earthobservations.org/events/geo-week-2023/statements>

- The need for increased collaboration between and interoperability between in situ data and remote sensing data.
- The importance of African ownership and a co-creation approach in the identification and design of climate services for Africa.
- The need to strengthen and promote data sharing and open science principles.
- The need for different forms of collaboration (e.g. national, regional, sectoral, disciplines and institutions).

One of the takeaways from AfriGEO is the fact that funding for knowledge sharing is a huge barrier to build human capital in Africa. The solution requires policy buy in - creating the space and being actively involved in knowledge sharing initiatives. KADI has also connected with the AfriGEO secretariat hosted by the Regional Centre for Mapping of Resources for Development (RCMRD). The discussions are centred around co-organizing or participating in training events.

Remote Sensing and Climate Centre (RSCC), Ghana

The contact with KADI has been created via the manager of the Remote Sensing and Climate Centre (RSCC). KADI has established a connection between them and the contact for the GHG flux tower operated in Ghana by the University of Energy and Natural Resources (UENR) in Sunyani and colleagues from CzechGlobe in Czechia. CzechGlobe was a partner in SEACRIFOG, a previous project coordinated by ICOS. This connection ensures that the thinking behind KADI also reach other countries which are not directly involved in the project.

Integrated Carbon Observation System (ICOS)

The meeting with KADI was in the context of defining and measuring research infrastructure impact on society. In the interaction input from another project, ICOS Cities, was also gotten. This meeting enabled ICOS to share its experience with defining and monitoring impact beyond the scientific circles. ICOS cities, from a city and human impact perspective also shared some approaches being developed in the cities involved in the project.

Shallow Marine and Coastal Research Infrastructure (SMCRI)

The Coastal Southern African Biogeochemistry pilot partnered with a pre-established RI (Shallow Marine and Coastal Research Infrastructure (SMCRI; SMCRI, 2022) in South Africa to serve as a test case which can be applied to other coastal areas in Africa.

AU-EU Cooperation and Similar Projects

LEAP- RE, CCSE Partnership & Focus Africa

During the discussions it was highlighted that the Climate change and sustainable energy partnership has so far been focused mostly on renewable energy. It was suggested that KADI could be an element of the climate change dimension of the CCSE partnership as the focus of the project is on climate services.

Global Monitoring for Environment and Security and Africa (GMES and Africa)

GMES and Africa is made up of eight consortia covering five regions and 167 African institutions. The axes of possible collaboration in the AU-EU framework are policy, services development, training and knowledge management. Connection through these axes is possible as both projects include these components. The following links have been identified.

The University of Ghana is leading the West and North consortia to implement 6 services: 1) Monitoring & forecasting oceanography variables, 2) Potential fishing zones and vessel traffic monitoring, 3) Regional marine weather forecast, 4) Monitoring coastal vulnerability, 5) Coastal ecosystem/habitat mapping, 6) Oil spill detection and monitoring. KADI will connect the GMES contact at the University of Ghana with the CzechGlobe who is running a flux tower in Sunyani Ghana.

There is network of academia in GMES Africa (over 30 African Universities). This could be mutually beneficial for the training components in KADI and GMES and Africa in terms of knowledge exchange and dissemination concerning training opportunities. These are currently being linked to start concrete collaboration.

The Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL) is in GMES and Africa and is connected to KADI as a partner in a previous project coordinated by ICOS.

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In addition to these initial connection KADI envisions participation and collaboration at the thematic and joint workshops of GMES and Africa. The joint workshop targets stakeholders from along the different themes. For example: land, water and natural resources, policy makers and climate service users.

DLR (German Aerospace Centre), German Remote Sensing Data Centre Land Surface Dynamics

The collaboration with earth observation driven global data products, such as Global Settlement footprint. Existing cooperation with the Resilience Academy which is the basis of the Dar es Salaam pilot. There are linkages to the Digital Earth Partnership of the World Bank and workshop held in Nairobi, Kenya on February 7- 8th, 2024 (Workshop on Urban Mapping and Monitoring Platform for Kenya Applying local data innovations and Earth observation to strengthen urban performance).

Intra-ACP Climate Services and Related Applications Programme

During the contact meeting, knowledge exchange to support and improve access and use of climate information and applications for decision making processes was identified as one of the collaboration points with KADI.

At the high-level regional forum on agricultural sector development in central Africa, held in November 2023 in Malabo (Equatorial Guinea, the African Caribbean and Pacific (ACP) Ministers of Agriculture and Environment for the development of agriculture in Central Africa decided to set up a carbon monitoring centre to create a carbon market compensation resource. At the time of writing this document, KADI has been in contact to have a follow up meeting to discuss other points of collaboration learn more about the forum's conclusions, especially the following two:

- Creating a regional centre to monitor, certify and manage payments for ecosystem services such as the carbon market, the management of small watersheds, as a means of subsidising small farmers faced with the emergence of large producers and thus ensure sustainable economic growth.
- Accelerating the setting up of the OACPS (Organisation for African Caribbean and Pacific States) platform aimed at facilitating cooperation between member countries in order to promote South-South and Triangular cooperation and enable countries to exchange experiences and technical assistance in their respective areas of expertise.

Una Europa Virtual Exchange in Higher Education (UnaVEx)

The project aims to facilitate the co-creation and implementation of a virtual exchange framework for sustainable education across the universities involved in the project. Three African universities are involved:



University of Kinshasa (Democratic Republic of the Congo); University of Nairobi (Kenya) and; University of Johannesburg (South Africa). UnaVEx is within the Una Europa- Africa partnership. One focus point of the partnership that links to KADI is actions to create a vibrant and diverse international community of researchers across Africa and Europe by supporting the growth and development of early career researchers, with a specific focus on addressing global challenges.

KADI has met and established contact with those involved at the University of Helsinki (coordinator of the project) at the announcement of the start of the project at the end of 2023. The project aims to train 2,500 students plus researchers. KADI sees the possibility to use this as a network for collaboration on training and also disseminating the results of the project.

Digital Earth Africa (DE Africa)

DE Africa is a platform to access earth observation driven decision-ready data sets related to important topics for Africa, such as urbanization, floods, agriculture, coastal erosion. It also offers a sandbox and training materials with potential linkages to KADI pilots and training components.

Citizen science, CSOs and youth-led initiatives

Geospatial Technology and Environment (GeoTE)

The connection to GeoTE was created at 2023 of the Symposium of the African Group on Earth Observations. GeoTE was founded in 2019 as a youth-led initiative promoting sustainable development in local communities. GeoTE aims to utilize geospatial technology to support sustainable development goals through geographic citizen science and participatory geographic information system strategies in implementing community projects. The goal is to enhance inclusiveness in addressing challenges and finding sustainable solutions in local communities. GeoTE Tanzania contributes to open data through [OpenStreetMaps](#). The organization also transforms community knowledge through remote mapping, field data gathering workshops, and capacity-building sessions. The contacts in GeoTE are laureates of the Resilience Academy. KADI met with them and connected them to the Dar es Salaam pilot for collaboration. This already begun with an invitation to a stakeholder workshop organized by the pilot in February 2024 in Dar es Salaam.

Scientific communities, policy- science networks & media

Africa Evidence Network (AEN)

The Africa Evidence Network (AEN) is a broad community of over 5,000 diverse people who share a vision to see an end to poverty and inequality in Africa. The Network's mission is to work with others to contribute to this vision by increasing the use of evidence in decision-making. The Network is pan-African, open to all who live and work on the continent. AEN includes members from government, academia, civil society and other sectors from all African countries. Within this network, all elements of the evidence production and use cycle, from the generation of evidence to its integration into policy and implementation; and all types of evidence including administrative data, evaluations, experimental research, citizen experiences and systematic syntheses of primary studies.

KADI has initiated contact with the Africa Evidence Network and has received permission to prepare a project spotlight article to be included in AEN's newsletter. Other areas of collaboration could be participating in the AEN events and inviting them to planned KADI stakeholder events.

The Continent Newspaper

The Continent is a weekly newspaper produced by African reporters, photographers, illustrators and editors. It is designed to be read and shared on WhatsApp (and other social messaging platforms), and has become the continent's most widely distributed newspaper. Messaging apps provide an easy but less costly reach to a wide but under-served population in Africa. Most African countries have almost 100% mobile phone ownership.² As of 2020, the continent newspaper had 7,000 subscribers on WhatsApp from over 90 countries, with the potential to reach about 80,000 people per week.³ KADI has interacted with the editorial team and is in contact to discuss how this can be used as a dissemination channel for KADI activities and project results.

Audio Media

It is also worth noting that Africa has a myriad of local languages which are used to reach audiences via radio and other audio communication platforms. During KADI's participation at the World Climate Research Programme's Open Science Conference in Kigali in October 2023, KADI gave a short interview to Radio Salus. Radio Salus was officially inaugurated in November 2005, with 26 students attending a training session organised by UNESCO. Since its inception, hundreds of students have been trained there. The station has aims to educate Rwandans to reach sustainable development goals. Radio Salus broadcasts on 97.0 FM and 101.9 FM stereo. It can be listened to online or through Tune on smartphones. The interview was focused on what KADI is and the importance of having an Africa-centred approach to climate adaptation and mitigation, the need for simple communication modes, and why the role of citizens is invaluable. It was aired on the radio on October 23rd with a voice over in the local language (Ikinyarwanda). This also enabled a connection to KADI which can be used, if possible, for dissemination. Radio is a popular communication channel in Africa and could also be explored in the city pilots if possibilities are found.

Ardhi University (ARU), Tanzania

Ardhi University is a sub-contracting partner in the KADI city pilot of Dar es Salaam. The cooperation covers urban planning, climate resilience planning and other geospatial sciences related topics. It is one of the leading organisations of the Tanzania Resilience Academy. The KADI side event at COP28 presentation from the cities pilot was done in cooperation with them. See COP section below. The university is involved in an upcoming new Resilience Academy cooperation in Tanzania starting with GIZ. There is a cooperation with GIZ Tanzania office and a new project related to Tanzania Resilience Academy starting with a funding from a TEI project "Green and Smart Cities SASA". A concrete example of local climate action can be seen from this video¹ by the Resilience Academy.

Existing observation/research stations

The Mount Mugogo Climate Observatory

Connecting stations provides valuable information on observational activities under different geographical and climate conditions. The connection with the organizations responsible for the operation of these stations, usually higher education and research institutions, also brings a view on different institutional arrangements that can inform the work in WP5 on innovative funding solutions. The Rwanda Space agency was a guest at KADI's annual meeting which took place in October 2023 in Kigali. The focus of the presentation was the origins, needs and maintenance of the station. After the meeting, the coordinator of KADI visited the Rwanda

² <https://www.ecofinagency.com/telecom/1601-44176-africa-five-countries-have-near-100-mobile-phone-ownership-survey>

³ <https://reutersinstitute.politics.ox.ac.uk/news/how-publishers-are-engaging-new-audiences-messaging-apps-global-south>

Space Agency for more concrete discussions on how to collaborate. The following collaboration possibilities are ongoing or envisaged in terms of training and scientific cooperation:

- Connecting to other African organisations running climate observatories. KADI will facilitate through existing and prior networks.
- The KADI project can support the establishment of a basic network of universities that can work towards creating a master's program in Atmospheric Chemistry and Climate Sciences as requested by the Rwanda Space Agency. This will be preceded by identification of gaps in the curriculum by the researchers in Rwanda who are involved. As a starting point, experts will be identified within the KADI and ICOS network to plan how to fill these gaps, for instance through virtual lectures.
- Rwanda's involvement as a focal country in the KADI project - linking to the African Earth System modelling pilot to exchange with and strengthen the modelling capacity of the researchers in Rwanda.

GHG flux tower in Ghana

The tower is operated by the University of Energy and Natural Resources (UENR) in Sunyani by [CzechGlobe](#) colleagues from a previous project. Due to the small size of KADI, they are not able to be directly involved but have reignited the connection with them as they have a long experience of extensive activities and networks with African partners.

The Taita research station

The Taita research station is a multidisciplinary research station with climate change as one of the focus areas. We have connected with the person in charge of the station and also linked to the University of Helsinki which is one of the KADI project partners. The interactions with Taita have been focused on connecting to the networks of researchers who use the station. This will widen the opportunity for disseminating the results from KADI. One of such connections is to researchers from the INSA project - participants in a workshop held at Taita in November 2023. The INSA (Integrated Nitrogen Studies in Africa) project brings expertise from different fields in the environmental and social sciences through a network of scientists from Europe and Africa.

Global Networks

Conference of the Parties (COP)

On December 6th 2023, KADI organized a side event at COP28⁴. The event was themed 'Transformative climate services for decision-makers based on observational data'. Transformative climate services are crucial to leverage efficient climate mitigation actions. By mobilising available knowledge, resources and skills, accounting for local realities and using actual data from observations, these services provide decision-makers with tools to tackle their climate-related issues. Drawing, amongst others, on their experience in the KADI project the speakers shared their insights and experiences on co-designing and implementing climate services, showcasing African and European success stories as transferable references. The speakers were from some of the organizations mentioned in this document.

⁴ <https://www.youtube.com/live/-MiOttUQHml?si=WjjDojp5D1oa9BNI>

Global Facility for Disaster Risk Reduction and Recovery (GFDRR, World Bank)

The Digital Earth Partnership (DEP) program of the GFDRR (Joint technical cooperation between WB and ESA, with a focus on EO and digital data and tools for sustainable development. (The DEP program contains Resilience Academy as one element). The resilience academy is the basis of the KADI pilot in Dar es Salaam. KADI has connected as follows:

They were invited to join KADI side event at COP28. They have a Resilience Academy cooperation in Tanzania since 2018. Digital Earth Partnership is a cooperation to scale the model throughout GFDRR projects in the Global South. For leadership training there could be possible linkages to the KADI Knowledge exchange component in WP4.

The Resilience Academy and city pilot linkages to a World Bank workshop held in Nairobi, Kenya on February 7-8th, 2024 (Workshop on Urban Mapping and Monitoring Platform for Kenya Applying local data innovations and Earth observation to strengthen urban performance).

ESA (European Space Agency)

The connection to KADI is via Global Development Assistance GDA in connection with the lead of the Dar es Salaam pilot. This is related to earth observation-based data products and Copernicus services, thematic platforms, global scalable products, GDA (Global Development Assistance). The GDA knowledge platform ABC, which is currently under construction, could be an important link to KADI.

Framework Partnership for Copernicus User Uptake Working Group (FPCUP/WG) Africa

The primary objective of the Working Group (WG) Africa is to settle a meaningful, concerted and scalable effort to build Copernicus related capacities among African Copernicus expert communities and actor networks to enable knowledge growth. The purpose here is to train African trainers in three languages (English, Portuguese and French), and to develop training adapted to local needs and context in a co-design and sustainable/perennial approach with African trainers.

Training materials related to earth observations are available. These may be relevant for the training component in KADI.

Stockholm Environment Institute (SEI) Africa

There is an Africa office in Nairobi where there is a contact to the KADI Cities pilot lead. policy related contact and various projects linked with Africa. The SEI is a planned partner to the Resilience Academy cooperation. The focus is on climate service-related policy. Cooperation is based on finding funding for the Resilience Academy 2.0, which focuses on transfer of the model across African Cities.

Conclusion

The first year focused on connecting or reconnecting to networks that can potentially contribute to the dissemination of the project results. These networks include the main actors necessary to engage with in building and implementation of an observation network in Africa. From this second period we deepen these interactions and map concrete collaborative activities and continue engaging with them as necessary for the project objectives. For instance, these engagements could already be seen in the COP side event and the stakeholder engagement workshop organized by one of the city pilots in February 2024.

LINKS

Africa Evidence Network <https://africaevidencenetwork.org/en/>

African Group on Earth observations <https://www.africageoportal.com/pages/afrigeo>

AfriGEO Symposium 2023 <https://7thafrigeosymposium2023.rcmrd.org/>

Ardhi University <https://www.aru.ac.tz/>

CzechGlobe [Ecosystem station in Ghana officially starts operations - CzechGlobe](#)

COP28 side event information <https://kadi-project.eu/kadi-at-cop28/>

COP28 Side Event stream <https://www.youtube.com/live/-MiOttUQHml?si=WjjiDojp5D1oa9BNI>

Digital Earth Africa <https://www.digitalearthafrica.org/>

European Space Agency <https://www.esa.int/>

FPCUP/WG <https://www.copernicus-user-uptake.eu/user-uptake/details/copernicus-user-uptake-in-africa-492>

Group on Earth Observations <https://earthobservations.org/>

GEOTe <https://www.geote.org/>

German Aerospace Center (DLR) https://www.dlr.de/eoc/en/desktopdefault.aspx/tabid-5278/8856_read-15911/

GFDRR <https://www.gfdr.org/en>

GMES and Africa <http://gmes.africa-union.org/#discover-the-consortia>

ICOS ERIC <https://www.icos-cp.eu/>

ICOS Cities Project <https://www.icos-cp.eu/projects/icos-cities>

Intra-ACP Climate Services and Related Applications Programme https://international-partnerships.ec.europa.eu/policies/programming/projects/intra-acp-climate-services-and-related-application-programme-climsa_en

LEAP RE <https://www.leap-re.eu/>

Mount Mugogo Observatory <https://agage.mit.edu/stations/mt-mugogo>

OpenStreetMap <https://www.openstreetmap.org/#map=4/65.45/26.07>

RSCC <https://gssti.org/research-category/rsccl/>

Radio Salus <http://www.salus.ur.ac.rw/>

The Continent Newspaper <https://www.thecontinent.org/>

Taita Research Station <https://www.helsinki.fi/en/research-stations/taita-research-station>

SEACRIFOG <https://www.seacrifog.eu/>

UnaVEx <https://www.helsinki.fi/en/networks/una-europa-helsinki>