Mobility in Innovative Green Technologies for Climate Change Mitigation and Sustainable Bioeconomy (INTERACT – Africa)

WORK PACKAGE 3 (TASK 3.2)

Deliverable 3.2

Data Management Plan

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INTERACT-Africa Consortium

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List of abbreviations

AAU	-	Addis Ababa University
DMP	-	Data management Plan
DPO	-	Data Protection Officer
EACEA	-	European Education and Culture Executive Agency
EU	-	European Union
FAIR	-	Findable, Accessible, Interoperable and Re-usable
GDPR	-	General Data Protection Regulation
IFA	-	Institut Facultaire Des Sciences Agronomiques (IFA) De Yangambi (IFA-Yangambi)
INTERACT-Africa	-	Mobility in Innovative Green Technologies for Climate Change Mitigation and Sustainable Bioeconomy
IPR	-	Intellectual Property Rights
MENDEL	-	Mendelova Univerzita V Brne
MU	-	Moi University
MUST	-	Mbarara University of Science and Technology
NDICI	-	Neighbourhood, Development and International Cooperation Instrument
NGO	-	Non-Governmental Organization
RRI	-	Responsible Research and Innovation
SUA	-	Sokoine University of Agriculture

Summary

This document introduces the plan that the INTERACT-Africa project will follow for data management. It provides a summary of the data types and sources that will be used or generated during the project as identified by the project consortium partners, and the way the project results will be shared. By project results this deliverable defines any kind of information including scientific publications, Open-Source code, open datasets, anonymous interview results, or mock-up datasets used for gathering feedback from various entities that may be used or generated from the project. The datasets, including research data, related to the project's work packages, will be collected and are managed according to their level of availability (public or sensitive/confidential). The INTERACT-Africa Data Management also follows the Guidelines on FAIR Data Management, i.e., data must be findable, accessible, interoperable, and reusable.

This deliverable is the initial version of the project's Data Management Plan. Throughout the project, the DMP will be updated whenever significant changes arise, such as (but not limited to) new data, new innovations, patent filings, changes in the consortium members and others.

1.0. Introduction

The Data Management Plan (DMP) explains the proposed actions for the overall control of INTERACT-Africa's data and publications. The DMP is a "living document" that will be continuously updated during the project. In order to derive the data sources which will be used and created within the project, a collaborative methodology is followed where all partners dealing with data are involved. This deliverable is structured as follows: In Section 2 the document provides a summary of the types and sources of data; Section 3 provides the description of the practices for safeguarding that the INTERACT-Africa research data are findable, accessible, interoperable and re-usable (FAIR), Section 4 gives an account of the allocated resources for data management, then as an appreciation of the data security and ethical considerations, principles to be adopted is provided in Sections 5, 6 and 7.

2.0. Data Summary

INTERACT-Africa project commit to disseminating the results of the project to the widest possible audience, with the goal of enabling the scalability of its successful activities and impact creation. Produced material, including scientific publications, Open-Source code, open datasets, anonymous interview results, documented best practices, or mock-up datasets used for gathering feedback from various entities that may be used or generated from the project will be made available through accessible dissemination channels as part of the project's open data and communication commitment. The project results and deliverables will be available on the INTERACT-Africa website, as well as the NDICI/IPA/INSC/DOAG Project Results platform, available through the Funding & Tenders Portal, according to the dissemination level retained in the Grant Agreement (Article 17).

Therefore, this Data Management Plan (DMP) aims to provide an overview for the production and handling of all data and project-related documentation. It provides a broad analysis of what types and formats of data will be gathered and/or generated in the project, processed, and/or stored by

INTERACT-Africa partners, and if and how it will be made open and accessible for verification and re-use during the project and afterwards. All beneficiaries are informed of the applicable regulations around human participation, informed consent, data processing, data security, and the pertinent regulations. It follows the Horizon Europe Guidelines in FAIR (Findable, Accessible, Interoperable, Reusable) Data Management[1] and has used the European Commission's DMP template (EU Grants: Data management plan [HE]:V1.1 – 01.04.2022) as a guideline.

All partners are aware of the Ethics clauses in Article 14 of the Grant Agreement and the obligation to comply with ethical and Intellectual Property Rights (IPR) rules set out therein and explained in the Annotated Model Grant Agreement (Article 14 and Annex 5; Article 16 and Annex 5)[2]. The project will respect the privacy of all stakeholders and citizens and will seek free and fully informed consent where personal identifiable data is collected and processed. Processing of personal data will respect the Data Protection Principles.

The projects data will originate from available information, activities including research laboratory tests, simulations, field research and scientific investigations/observations, project's trusted partners, external evaluators, and various third-party beneficiaries. The collaborators of INTERACT-Africa will be contributing to an array of important information, including open datasets, open-source coding, scientific publications and/or white-papers, anonymized survey results for impact assessment and research purposes and more, via Open Access channels. The consortium will provide Open Data and Open Access to results arising from the project to support a number of goals, namely: (i) Improving dissemination and exploitation of data and results for scalability and impact creation; (ii) Improving access and reuse of research data generated within the project; and (iii) Knowledge sharing with academia, the wider public, interested stakeholders, and the scientific community.

Documentation and research data repositories will follow the EU's best practice, with a focus on open access, peer-reviewed journal articles, conference papers, and datasets of various types. The DMP is expected to be regularly updated over the project's course. When personal data collection or processing is started, the DMP information will be updated accordingly to include updated data summaries, consent forms, compliance, and institutional approval where necessary. Processing of personal data will respect the Data Protection Principles under the Grant Agreement (Article 15) in compliance with the applicable EU, international and national law on data protection (in particular, Regulation 2016/679[3]), and it will be accessible for authorized users only (validated via authentication processes).

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[1] "Guidelines on Data Management in Horizon 2020",
http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf
[2] EU Grants: AGA — Annotated Grant Agreement: EU Funding Programmes 2021 - 2027. V1.0 – 01.04.2023: aga_en.pdf (europa.eu)
[3] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC ('GDPR') (OJ L 119, 4.5.2016, p. 1). Regulation - 2016/679 - EN - gdpr - EUR-Lex (europa.eu)

Deliverables are expected to be used both internally and externally, to both inform the project and its team members about activities and results, and to inform external stakeholders and potential collaborators. Making an efficient management of data and providing the mechanisms to deliver high quality standards is of vital importance.

3.0. FAIR data

During the course of the project, every dataset generated on the purpose of the project will be described on a dataset by dataset basis using the INTERACT-Africa template.

3.1. Making data findable, including provisions for metadata

Any data and supplementary material generated by INTERACT-Africa will be rendered traceable and locatable via unique identification protocols. All files will be distinctly identified through the utilization of standardized naming conventions and file versioning procedures. INTERACT-Africa will employ user-friendly search keywords to promote the effective reuse of data by all stakeholders. The metadata standards that will be adopted will offer the ability to annotate both the data gathered/generated and its substance with keywords, while adhering to certain standards like the Dublin Core generic metadata standard[4], providing specific information for data related to Biology, Chemistry and Information Sciences and Technology fields.

To ensure that INTERACT-Africa paves a path in alignment with the FAIR data principles, (meta) data will:

- Be associated with a unique and permanent global identifier such as *Dataset Number-WP Number-ENTITY Name/Title of activity or deliverable*
- Include comprehensive metadata for complete data interpretation,
- Be catalogued in a source which serves and honors easy searching, and
- Use clear versioning of all reports, documents and deliverables so their status and evolution is clearly recorded

3.2. Making data accessible

3.2.1. Repository

INTERACT-Africa project aims at making data as open as possible, through disseminating the non-sensitive results in widely accessible databases or indexes (such as 'open access' or 'open data' portals or similar repositories, whether free of charge or not). In this regard;

- we specify for each dataset whether it is open or not and explain the reasons why. All research data linked to open publications will be open by default, as well as digital research data generated by the action

- data will be made available by using open repositories. Zenodo will be used as a common and 'by default' system to store all open INTERACT-Africa datasets. Proper versioning of the dataset will be maintained in Zenodo. Repositories of partner institutions will be used with each partner details and proper acknowledgments. In all the released datasets, proper acknowledgments, credits, descriptions and citation formats of the dataset will be given. INTERACT-Africa reports and deliverables will be accessible from the project webpages.
- in general terms INTERACT-Africa data will be based on standard software in order to make it available to a broader audience. This aspect, will however, be specified for each dataset using the INTERACT-Africa template. In case that any further documentation is required to understand or make data accessible it is also to be provided. Anonymous data sets will also be saved and stored in word, pdf or excel to facilitate its exploitation and guarantee their long-term accessibility
- in case of any particularities in sharing the data, those will be explained and justified

3.2.2. *Data*

Subject to ethical considerations and participant consent, data will be as accessible as possible. INTERACT-Africa will employ FIWARE Identity Management, which enables identification, authentication, and authorization of organizations and individuals. Different levels of dissemination will be applicable to INTERACT-Africa reports. Public reports will be disseminated via public platforms, whereas confidential reports will only be shared within the consortium. Scientific publications will be freely accessible and will be uploaded to public repositories. Partners will share data through a shared space. Some research data, especially those considered sensitive due to privacy and data protection concerns, will be kept confidential or anonymized before they are made accessible. Where possible data will be made available subject to Ethics and participant agreement. For the data resulting from the activities of the project, each WP leader will be responsible for depositing and securing the data.

3.3. Making data interoperable

INTERACT-Africa beneficiaries aim at generating interoperable datasets that will allow data exchange and reuse. In adherence to the principle of Data Interoperability that demands data to be machine-readable and the terminology to be consistent, INTERACT-Africa will employ an open-source, standardized, and domain-agnostic Open APIs, which facilitate seamless data interoperability across different systems. INTERACT-Africa will follow established European metadata vocabularies, standards and methodologies. The project will devise appropriate protocols for the creation of data and metadata, along with relevant vocabularies.

On a dataset basis, INTERACT-Africa partners will specify any methods or software that might be necessary to access and manipulate the data. Those include:
- Data formats of spreadsheets, documents, geographical data, image, videos, etc.
- Methods or software needed to access the data and make it operable in other systems

3.4. Increase data re-use

The possibility that a third person or entity makes use of a dataset will entirely depend on the licensing conditions, as well as other intellectual property rights or permissions. INTERACT-Africa partners will be supportive to other stakeholders to decide which licensing or protecting options are the most suitable at each case. INTERACT-Africa project will utilize open-source datasets and publications, which are licensed under Creative Commons Attribution 4.0 International License (CC BY 4.0)[5]. This will ensure that users understand the licensing terms not only for the datasets and publications used but also for the output of our project. Thus, the outputs of this project will be published in open-access journals and repositories.

The use of Creative Commons will be encouraged for digital creations (web page, contents of digital channels, etc.), other software might have specific (owner defined) terms of use. In the Creative Commons framework, a question-decision tree is provided in order to help choose the most appropriated license. The details of every license shall be consulted at the Creative Common web page. Copyright holders and creations will be protected in accordance with intellectual property rights. Access permissions and restrictions will be identified indicating the list of partners involved, their roles, as well as the limitations given to each specific use and user. All research data generated by the action will be published in open-access journals and repositories. Users accessing these outputs will be expected to comply with the Creative Commons attribution requirements, and therefore the license allowed to freely used, re-used and redistributed by anyone – subject only, at most, to the requirement to attribute and share alike[6].

4.0. Allocation of resources

4.1. FAIR Data costs

INTERACT-Africa does not envisage to support cost of development of new data management platforms; however, it supports the cost of the use of open data systems. It also supports the integration of the data systems and the management of information, understood in wide terms, that is, all types of datasets that include configuration of systems, methodologies, instrumentation, photos, videos, newsletters, etc. INTERACT-Africa partners will allocate a budget to make a consistent use and processing of data that supports FAIR principles.

4.2. Data Protection Officers and GDPR compliance

As coordinator and host institution of INTERACT-Africa project, the institution has an appointed Data Protection Officer (DPO) who is responsible for overseeing data protection activities, monitor and track new and on-going data protection risks and update the relevant risk register of the data controller, setting up frameworks to detect and deter data breaches, providing guidance, and acting as a point of contact for data subjects and regulatory authorities. The contact details of the DPO will be made available to all data subjects involved in INTERACT-Africa project. Respective partners will also follow their internal data protection and European General Data Protection Regulation (GDPR)[7] regulations.

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[5] https://creativecommons.org/licenses/by/4.0/
[6] http://opendatahandbook.org/guide/en/what-is-open-data/
[7] General Data Protection Regulation (GDPR, EU 2016/679): https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679

In line with GDPR, individual beneficiaries are responsible for their own data processing, so the respective beneficiaries are to involve their own DPOs, who will ensure the implementation and compliance of the procedures and protocols in line with internal processes and national regulations. This also includes options to withdraw consent and procedures that must be in place to deal with privacy violations in a timely manner. Processing of personal data will respect the Data Protection Principles as set out: Lawfulness, fairness and transparency; Purpose limitation; Data minimization; Accuracy; Storage limitation; Integrity and confidentiality; accountability. Each beneficiary is reminded that under the General Data Protection Regulation 2016/679, the data controllers and processors are fully accountable for the data processing operations, which means that every beneficiary is ultimately responsible for their data collection and processing.

4.3. Long-term preservation strategy

Data will be made accessible for verification and reuse to various stakeholders through appropriate channels and repositories. Limited access and availability will be indicated in the individual data descriptions (INTERACT-Africa data templates) and will be further developed within the project with the aim of achieving greater openness. Whenever a research dataset is made available, it will be made available always in Zenodo (as common research data archive/ online repository which helps researchers share research datasets in a wide variety of formats for all fields of science) and also (if appropriate) through any other thematic or institutional systems.

5.0. Data security

The beneficiaries will implement technical and organizational measures to ensure privacy and data protection rights in the project. A variety of security methods will be implemented, including but not limited to, decentralization, authentication, authorization, auditing, policy-based management, and data encryption. These methods will ensure the safeguard of collected data against unauthorized use and comply with all national and EU regulations. GDPR considerations, and respective guidelines and principles will be incorporated as well. In addition, data storage will fully comply with the national and EU legal and regulatory requirements. Partners will ensure and document that used cloud infrastructure complies with applicable regulations.

6.0. Ethics

In order to ensure that all ethical aspects are considered and that the INTERACT-Africa project is compliant with all legal requirements and ethical issues, a general strategy involving an ad hoc monitoring process of the project development will used.

Three ethical issues will be considered in the INTERACT-Africa project: 1) human participation, 2) personal data collection of data subjects, and 3) potential tracking or observation of participants. Within the INTERACT-Africa project, a range of protocols will be established to safeguard the privacy of participating end-users, should such a situation arise. The consortium managing the project will diligently regulate information access, implementing restrictions where necessary. Key provisions include:

- Adherence to fundamental ethical principles that will be underpinned by the principle and practice of Responsible Research and Innovation (RRI)[8], regardless of the country in which project activities will be carried out
- Provision of clear project descriptions and study objectives to all participants in an easily comprehensible manner.
- Emphasis on the voluntary nature of participation in any study
- Full disclosure of privacy rights, the potential impacts on participants' lives, and the measures implemented to protect privacy, such as anonymization and secure data storage processes.
- Explanation of the duration and effort required for participation in any activity.
- Clarification of withdrawal rights, with the ability to request the destruction of any personal data.
- Provision of contact information for project stakeholders. All data transfers will be permissible under all necessary legal and regulatory requirements.

All proposed tasks are expected to be permissible under the applicable laws and regulations, given proper observance of requirements. Where appropriate information and consent of all stakeholders and citizens is mandated, the consortium will ensure that all necessary procedures are followed, particularly with regard to the signing, collation, privacy, confidentiality, and storing of all necessary Informed Consent Forms prior to the collection of any data. All involved stakeholders and citizens will be informed in detail about the voluntary nature of participation, potential risks and benefits, and procedures for incidental findings, and the consortium will obtain free and fully informed consent.

For all applicable physical meetings and consortium events we will inform participants that pictures will be taken, and participants will have to actively consent to, with an option to opt out from pictures being used in project specific communication. It also concerns photographic evidence of events, demonstrations, etc. that is done throughout the project and may be needed for documentation of task and milestone completion. This will also be taken up within WP3: *Sustainability, dissemination and exploitation of results*, with regards to documentation of events.

All necessary actions will be taken within the project management and by all beneficiaries to ensure compliance with applicable European and national regulations and professional codes of conduct relating to personal data protection. This will include in particular Directive 95/46/EC[9] regarding data collection and processing, the General Data Protection Regulation (GDPR, 2016/679), and respective national requirements, ensuring legal and regulatory compliance. Ethics considerations will feed into research and data collection protocols used in the project. This will include collection and processing of personal data as well as surveys and interviews. For all identified issues, in line with the above standards, ethical approvals will be obtained from the relevant national data protection authorities and/or institutional boards.

Only anonymized or aggregated data, completely separated from individual identification and profiles, will be processed in relation to project workshops and events. During dissemination, the same types of data will be processed and made available in subsequent publication in project reports and scientific papers. If personal data processing is necessary under specific circumstances, the responsible partner will ensure GDPR compliance, so that no harm will be done to any participants, stakeholders, or any unknown third parties.

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[8] EU H2020 Responsible research & innovation https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation
[9] Directive 95/46/EC: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31995L0046&from=NL

Data minimization principles will be followed in line with applicable legislation. The relevance of data collected for tasks will be considered[10,11]. The responsible partners will also provide evidence of authorization to process personal data before such data is accessed or used.

If required by European and national legislative frameworks, the appropriate competent authority will have to grant this authorization in the partner's country. In the event of using specific platforms like Twitter ("X"), LinkedIn, Facebook, Google Cloud etc., that might involve personal data, a Data Processing Addendum/Agreement for data processing will be obtained by the responsible partner.

In addition to relevant national data protection authorities, the university partners have separate institutional ethics boards or respective national research boards, which will ensure the correct implementation of all human participation and data protection procedures and protocols.

7.0. Other issues

7.1. Data Management, Sharing and Open Access

The consortium will provide timely open access to research data presented in scientific papers, including associated metadata, in project-independent repositories and link to the respective publications to allow the scientific community to examine and validate the results based on the underlying data. The deposition of research data will depend on the type and channel of publication, ranging from associating data with a publication at the publisher, university or national research data repositories, or the use of the OpenAIRE infrastructure, following the H2020 best practice, with particular focus on peer-reviewed journal articles, conference papers, and datasets of various types.

Monitoring and evaluation data will specifically be captured to track key performance indicators (KPIs) of the project performance in WP3 and will be regularly reported in a clearly defined and open way. In addition, monitoring data will be available in the project's M&E system. All public Deliverables will be published on the project website[12] in Open Access with open licenses.

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[10] H2020 Ethics and Data Protection http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/ethics/h2020_hi_ethics-data-protection_en.pdf
[11] EU, Principles of the GDPR: What data can we process and under which conditions? https://ec.europa.eu/info/law/law-topic/data-protection/reform/rules-business-and-organisations/principles-gdpr/what-data-can-we-process-and-under-which-conditions_en
[12] www.interactafrica.mu.ac.ke

Annex
Annex 1: Draft of INTERACT-Africa Consent Form

MOBILITY IN INNOVATIVE GREEN TECHNOLOGIES FOR CLIMATE CHANGE MITIGATION AND SUSTAINABLE BIOECONOMY
(INTERACT-Africa)
Project No. 101144299

Declaration of consent for photographs, audio and video recording

In appending my signature to this document, I declare my consent to the fixation, reproduction, and use of my name, likeness, and image related to my person, in photographs and image or audio-visual recordings made by Mobility in Innovative Green Technologies for Climate Change Mitigation and Sustainable Bioeconomy (INTERACT-Africa).

I give my consent to the use of these materials for various purposes, including but not limited to posters, publications, websites, films, or videos, to promote INTERACT-Africa work, without any obligation on the part of INTERACT – Africa to seek any further authorization by me. I acknowledge not to be entitled to compensation in connection with the use of these images. I waive all rights I may have to inspect or approve the images or the final product in which they may be used. I understand that this consent will remain in effect until I withdraw it in writing. I also understand that withdrawing this consent may not affect any action taken before the withdrawal.

The list below collates the names of the participants and their respective signatures as an expression of full concurrence with the above-described information.

S/No.	Name	Institution	Signature