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D1.3 Risk Management and Ethics plan

Organisation: MicroEnergy International

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Settings	Value
Milestone Title	D1.3 Risk Management and Ethics Plan
Work Package Title	WP1 – Project management and coordination
Description	Strategy on risk tracking, and mitigation procedures Definition of guidelines and procedures essential for compliance of SWARM-E project activities with ethical requirements related to the guidelines of the Horizon Europe projects
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Revision	Date	Name	Short Description of Changes
1	16/10/2024	V0.2	complemented risk section description, updated consent form
2	17/10/2024	v0.3	Spellcheck, clarification of risk matrix
3	18/10/2024	V0.4	Final formatting

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Nature of the deliverable		
R	Report	x
DEC	Websites, patents, filing, etc.	
DEM	Demonstrator	
O	Other	

Dissemination level		
PU	Public	x
CO	Confidential, only for members of the consortium (including the Commission Services)	

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SWARM-E is a trans- and multi-disciplinary approach for sustainable, affordable and modern energy access and well-being for Sub-Saharan Africa, aligned with the AU-EU Agenda 2063.

SWARM-E consists of several layers: 1) an innovative renewable electricity infrastructure, the SWARM grid, a circular and cyber-smart network where end-users exchange electricity of their solar home systems and form the nodes of a smart grid which can dynamically grow to meet demand; 2) unlocking unutilised renewable energy for productive uses in the water energy food nexus – cold storage, water purification, water pumping and irrigation, carpentry; 3) transfer and decentralisation of Global North energy transformation innovations – decentralised hydrogen production for cleaner cooking, bi-directional charging of light electric vehicles (two- and three-wheelers) to transport goods and people. SWARM-E builds on network effects generated through the inclusion of localised economies with strong producer-consumer linkages embedded within larger systems of trade and exchange for the creation of bottom-up energy communities.

SWARM-E will operate and replicate 5 pilots in Rwanda and Tanzania, under which 5 SWARM grids are installed, delivering 6.9 GWh of renewable electricity while generating income through the trading of electricity and avoiding the discard of 3,200 batteries; 5 water purification applications deliver 101.M L of clean water; 15 light electric vehicles deliver farmers' produce, power mobile productive uses and cold storage, increasing the yields of 1,000 farmers and reducing the food losses of more than 5,000; 700 kg of H2 blended with LPG for cleaner cooking, and more than 500 jobs for women and youth to be created. The balanced participation of EU and AU private, public and civil society organisations in the consortium will ensure the knowledge transfer North-South and South-South, and the sustainability of value chains based on local value creation and entrepreneurship.

More information on the project can be found at: www.swarm-e.eu

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Summary of the deliverable

This deliverable has two main sections:

- **Section 1**: **risk management approach and procedures**. This section outlines the SWARM-E project's risk management process. Specifically, it presents an overview of project-related risks, with excerpts from the master risk register, which guides risks through the four stages of the risk management process: risk identification, risk analysis, risk mitigation, and risk monitoring and control. Risks are identified and managed at two levels: at the overall project level and the work package level. For both levels (overall project and work package), registers have been designed as living documents, managed by the project coordinator and work package leaders, respectively. The work package risk register is updated regularly and reviewed at each work package meeting. At the same time, the overall project risk register is also updated regularly, with new updates reviewed during the monthly consortium meetings and reported quarterly as part of the technical and financial reporting.

- **Section 2**: **ethics plan**. This section provides the definition of guidelines, and procedures essential for compliance of activities of the SWARM-E project with ethical requirements related to the guidelines of Horizon Europe projects. This includes the general data protection requirements that will be considered while performing the pilot tests and consulting the stakeholders and the informed consent procedures for participation in surveys, interviews, meetings, and dissemination activities organized by the project. Furthermore, the ethical criteria for the involvement of non-EU countries are addressed in this deliverable. Reference is made to Horizon Europe Programme Guidance EU Grants: How to complete your ethics self-assessment: V2.0 – 13.07.2021, including the relevant parts for SWARM-E, Section 2: Human beings, Section 4: Personal data, Section 6: Non-EU countries. Other self-assessment sections are not considered relevant for the SWARM-E project and therefore out of scope of this deliverable. This in particular applies to Section 8 – Artificial intelligence, as no respective technologies will be developed or deployed directly or interlinked to the project.

The deliverable is a living document that will be updated throughout the project if needed by the project developments or due to legislative or policy changes by the European Commission. The SWARM-E consortium is aware of any content and assures to comply with corresponding rules to the best of its ability.

Section 1 – Risk management approach and procedures

This section of the deliverable outlines the SWARM-E risk management process, as part of WP1 – Project Management and Coordination. Risk management is a critical component of the overall SWARM-E project, extending across all work packages, tasks, sub-tasks, and partners. The purpose of this section is to define the processes and strategies employed to identify, analyse, mitigate, and monitor risks throughout the project lifecycle. This structured and iterative approach ensures that various risks — such as project management, commercial, political, health, and safety, regulatory, environmental, and technical—are managed promptly, allowing the project to adapt to evolving contexts and potential threats.

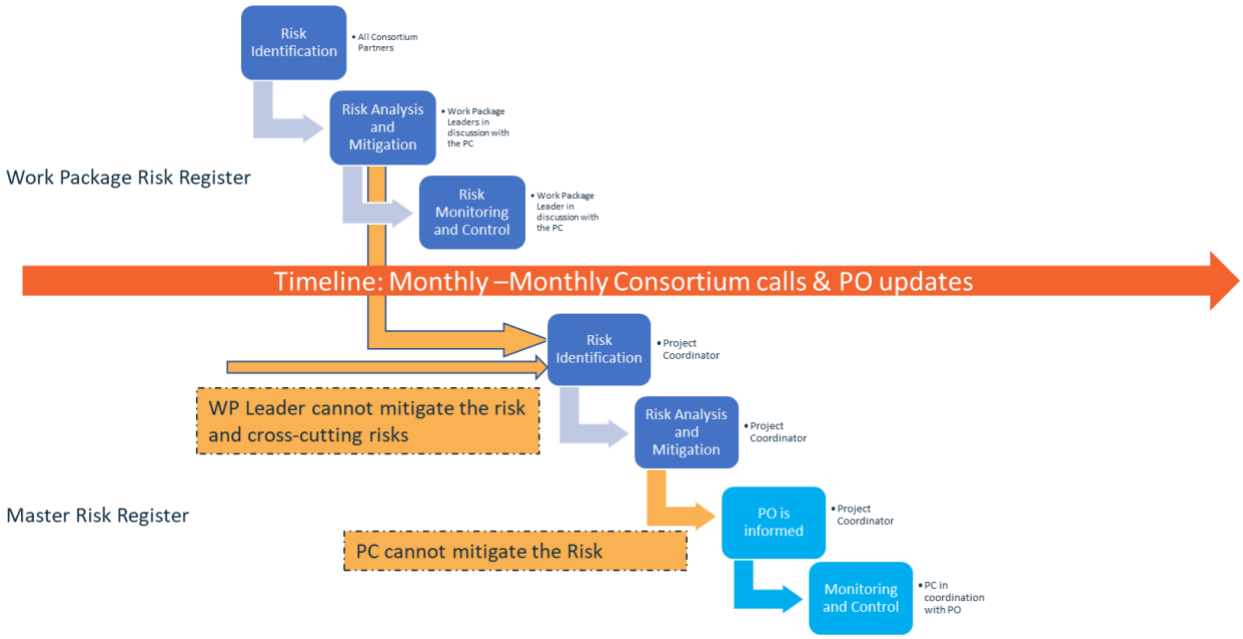
Building upon this structured approach, the risk management process addresses these specific risks related to the project's work packages and the activities carried out in the two pilot countries, Rwanda and Tanzania. Furthermore, it defines the detailed risk identification and review process, establishes expectations, procedures, and responsibilities, and outlines mitigation measures for identified risks.

1. Description of risk management process

SWARM-E project risks are managed using two risk registers. One for each of the eight Work Package Leaders and a master risk register for the Project Coordinator (Work Package Risk Register [1]and Master Risk Register[2]). The risk registers are a central tool in SWARM-E's risk management process. They serve as a repository for all identified risks, along with detailed information on their likelihood, impact, and associated mitigation strategies. The registers are continuously updated and serve as living documents throughout the project's lifecycle. The registers have a risk assessment basis as a tool to facilitate risk management. This tool aids in quantifying risks and determining the best course of action for mitigating them.

SWARM-E's risk management process begins with the identification of risks across various categories. This process involves the participation of all key stakeholders, including consortium partners, Work Package Leaders (WPL), and the Project Coordinator (PC). By involving a diverse group of stakeholders, SWARM-E ensures a broad perspective on risk identification and a robust framework for managing those risks.

Figure 1: Risk reporting and communication processes.



Source: MEI's own depiction.

Once identified, risks are categorized based on their nature and potential impact on the project's objectives. For instance, technical risks might pertain to the implementation of SWARM-E's technological solutions in the pilot countries, while political risks could involve changes in governmental policies that

[1] Work Package Risk Registers-https://drive.google.com/drive/folders/1e0NwNqiFg4rQSWiueEnACtTZ_6pxB-ix
[2] Master Risk Register- https://drive.google.com/drive/folders/1wchiiR2LHs8DZsBF__Z2NP2xbLZzUipv

affect the project's execution. Commercial risks, on the other hand, may relate to market acceptance of the technology or unforeseen economic challenges.

The risk management framework utilized by SWARM-E is guided by internationally recognized standards such as ISO 31000[3]. This ensures that the risk management process is systematic, transparent, and structured. The process includes the following stages:

- **Risk Identification**: Recognizing potential risks that could affect the project;
- **Risk Analysis**: Assessing the likelihood and potential impact of each risk;
- **Risk Mitigation**: Implementing strategies to reduce or eliminate risks;
- **Risk Monitoring and Control**: Evaluating the effectiveness of risk mitigation strategies throughout the lifecycle of a project.

1.1 Risk identification

Risk identification is conducted systematically at two distinct levels: the overall project level and the WP level. At the project level, the PC oversees a comprehensive risk register that documents all risks associated with the project's objectives and outcomes. This risk register is regularly updated and reviewed during monthly consortium meetings and is reported quarterly as part of the technical report. This ongoing monitoring ensures that emerging risks or changes in the project's environment are identified early and addressed promptly, supporting the project's overall goals.

Any member of the consortium can raise and communicate any risk they come across. However, these risks must be reviewed by the WPL and the PC before being documented in the risk register. The PC will have access to all the risk registers and will review them every month before the consortium meeting. This structure ensures that risks are thoroughly reviewed and contextualised within the relevant WP, with the PC overseeing the overall risk management process. The risk registers offer a standardised template for recording key details, including risk likelihood, impact, frequency, and overall weight, along with preliminary mitigation strategies. This structured approach ensures all risks are documented in sufficient detail, making them easier to assess and address.

[3] ISO 31000:2018 Risk management -- Guidelines, International Organization for standardization, https://www.iso.org/standard/65694.html

Figure 2: Snippet of risk identification matrix.

Risk identification							
Risk Category	Affected WP	Date Identified	Identifier	Activity at Risk	Hazard	Outcome	Risk Occurence timeline
	WP -ALL	20-Aug-2024	MicroEnergy International	General Project Workplan, Deliverables,Tasks and subtasks	Delays due to unexpected circumstances	Delay in timelines and Unstatfied partners and EC	Always
	WP -ALL	20-Aug-2024	MicroEnergy International	Deliverables,Tasks and subtasks	Financial over-expenditure or underexpenditure	Failure to execute the project to the quality expeceted	Always
	WP -ALL	20-Aug-2024	MicroEnergy International	Deliverables,Tasks and subtasks	Loss of critical competencies or key personnel in the project	Low morale, drop in performance and delay on targets	Always
Project Management Risks	WP -ALL	20-Aug-2024	MicroEnergy International	Deliverables,Tasks and subtasks	Coordination complexities due to high number of partners large consortium	Misprioritization of activities, delays in submissions, low quality deliverables, miscommunication especially externally.	Always
	WP-2		MicroEnergy International	Sub Task 2.1.1 Pre-selection of sites	Delay in delivering the task 2.1.1 . This activity was to be finalized in July. The delay was because desk research was not sufficient to pre-select sites, for instance in Tanzania the local partners had to visit sites, some quite remote. This activity will be completed by the 23rd of August.	which could affect interdependent tasks	Year-1 Q1-Q2

Source: MEI's own depiction.

1.2 Risk analysis

Risk analysis is conducted using qualitative techniques. At this stage, the severity and likelihood of the occurrence of the risk are categorised (e.g., Low, Medium, High, or Very High). The aim is to pinpoint the key risks in each work package or across the overall project, identifying critical risks that require further attention. This qualitative assessment provides a clear understanding of each risk and its potential impact on the project, enabling prioritisation and resource allocation for mitigation efforts[4].

Figure 3: Snippet of risk assessment bias.

Risk Assessment Basis								
Likelihood							Min score	Category
>75% - very likely	5	L	H	VH	VH	VH	0	L
<75% - probably	4	L	H	H	VH	VH	5	M
<50% - maybe	3	L	M	H	VH	VH	10	H
<25% - probably not	2	L	M	M	H	VH	20	VH
<5% - unlikely	1	L	L	L	M	H		
	Severity	1	2	3	4	5		
		1	3	5	10	20		

Source: MEI's own depiction.

1.3 Risk mitigation

Effective risk mitigation is paramount to ensure the successful progression and completion of project objectives. The process starts by assigning identified risks to specific risk owners during work package meetings for work package level risks and during consortium meetings for project wide risk or as guided by the PC. Each risk is evaluated, and a mitigation strategy proposed and described in detail. The risk

[4] P. Simon et al, 2000. Project Risk Analysis and Management. A guide by the Association of Risk Management.

mitigation strategy should be managed not only by designated Task leaders but also by the WPL. Cross-cutting risks, which may affect multiple work packages, fall under the purview of the PC. Each Task leader, identified as the risk owner in the risk register, must initiate and follow up on the designated mitigation actions. Coordination with the WPL and PC is essential to effectively implement risk management strategies. While most risks will be addressed at the task lead level, cross-cutting risks will be discussed during consortium meetings, as they may require the involvement of one or more WPL, with the PC taking the lead on this. This underscores the collaborative nature of risk mitigation in the SWARM-E project. This structured approach enables proactive management of risks, ensuring that they are addressed appropriately to minimise their potential impact on the project's success.

Figure 4: Snippet of risk mitigation matrix.

Risk mitigation						
Owner-Responsible for Mitigation	Mitigation Strategies/type	Description	Risk Likelihood After Mitigation	Severity	Risk Score	Priority
MicroEnergy International	Reduce	Buffer times are reserved at the end of main development tasks	3	1	3	L
MicroEnergy International	Reduce	Rigorous periodical monitoring process is part of the management structures which will allow for an early identification of over/under-expenditure	3	1	3	L
ALL	Reduce	High commitment of project participants. Whilst their project contribution is complementary, several share some similar capabilities.	2	1	2	L

Source: MEI's own depiction.

1.4 Risk monitoring and control

The Risk Monitoring and Control structure has been designed to ensure that the identified risks and the proposed mitigation measures are effectively tracked and managed throughout the project life. This involves continuous monitoring of residual risks, identification of new risks, preparation and execution of risk response plans, and evaluation of their effectiveness. The primary goal is to ensure that risk plans are being executed as intended, to keep an updated watch list of identified risks, and to monitor trigger conditions that may necessitate the activation of contingency plans. The contingency plan has been embedded in the registers to help reduce the impact of some risks that are unavoidable or those that may still occur despite preventive measures.

Risk monitoring requires a systematic approach to reassessing risks, which is facilitated through ongoing project risk reviews during work package meetings, monthly consortium calls, and during submission of quarterly reports. These reviews help determine whether risk responses are being implemented as planned and whether they are achieving the desired effects. Additionally, they assess the validity of project assumptions, analyse changes in risk exposure over time, and identify any new risks that may arise. As risk ratings and priorities may shift throughout the project, additional analyses may be needed to maintain an accurate risk profile. The WPL and the PC, as deemed fit, will regularly conduct risk audits to examine the effectiveness of risk response planning and the performance of designated risk owners.

Figure 5: Snippet risk monitoring structure.

	Risk monitoring and control	
Contigency	**Mitigation plan implementation status**	**Risk Review Notes**
In case some partners are underperforming, WP leaders will evaluate, including the possibility of a reallocation of tasks and resources.	Ongoing	
Upon significant under/overspending, a negotiation process will be started with the partner, potentially reallocating some of the activities and budget to other partners and in the worst case removing the partner from the consortium	Ongoing	
Identification of replacement among another team members/consortium.	Ongoing	

Source: MEI's own depiction.

Section 2 – Ethics plan

SWARM-E will develop and demonstrate the entire SWARM grid solution in communities in Rwanda and Tanzania with no or a low rate of electrification. The project will select sites for five pilot demonstrations where the electricity infrastructure (SWARM grid) will first be installed, followed by the PUE infrastructure (SWARM grid+). Each pilot will operate for 24 months, and all infrastructure will remain after the project's end to serve the community. The technical solutions will be accompanied by a thorough development of business models, financial support tools, entrepreneurial training, and capacity building for each energy community. In all the activities, and across all steps of the project lifecycle – including the proposal preparation – ethical compliance is an integral part and is seen as pivotal to achieving excellence in research and project implementation. Hence, the project fully adopts the ethical requirements developed by the European Union, which are addressed in the different sections of this report and include:

- Compliance with general ethical principles of the European Union;
- Procedures on staff recruitment, and recruitment of research personnel including informed consent procedures for participation of external stakeholders in surveys, interviews, focus group discussions, or other meetings;
- Data protection requirements to be considered while engaging with stakeholders, consultation process, and piloting;
- Participation/Involvement of non-EU countries in the project and their compliance with EU laws.

1. General compliance and approach

The SWARM-E project is committed to adhering to the ethical standards as outlined by the European Union and its Horizon Europe framework. The consortium members and any associated party recognize the importance of ethical considerations in research and innovation, particularly about human dignity, privacy, and the environment. The following points summarize the cornerstones of the approach to ensuring compliance with European ethical requirements:

- **Adherence to Legal and Ethical Standards**: All activities of the SWARM-E project will be conducted in alignment with the national and ethical requirements of the countries they take place in, including the demonstration sites (Rwanda and Tanzania) as well as the countries the various consortium partners are located in (Germany, Belgium, Spain, Italy, Bulgaria, Austria, Bangladesh, and Kenya). Hence, the project will comply with all relevant European and national legislation, including the General Data Protection Regulation[5] (GDPR) for data privacy and protection, the European Code of Conduct for Research Integrity[6], and any other applicable regulations. The consortium members, in each of the project's activities, also adhere to the ethical principles enshrined in the Charter of Fundamental Rights of the European Union[7]. Particularly for one of the pilot sites in Rwanda, which will be selected from among one of the displacement camps, the consortium partners will adhere to UNHCR's Handbook on Procedures and Criteria for Determining Refugee Status and Guidelines on International Protection[8], Rwanda's Country Refugee Response Plan[9].

- **Ethical Review and Approval**: Before the commencement of research activities, all project aspects involving human participants, personal data, or potentially sensitive content will undergo a thorough ethical review. This process will involve obtaining necessary approvals from relevant ethics committees and ensuring that all protocols meet the standards of Horizon Europe's and each pilot country's ethical guidelines.

- **Informed Consent and Participant Rights**: The project partners will ensure that all participants involved in any activities of the project (e.g., survey respondents and external stakeholders) are fully informed about the nature, purpose, and potential implications of the research. Informed consent will be obtained following the principles of voluntariness, transparency, and comprehension. Participants will be given the right to withdraw from the study at any point without penalty (See also Annex I – Universal consent form).

- **Data Protection and Privacy**: All personal data collected during the project will be handled in strict compliance with the GDPR. Data will be anonymized/pseudonymized whenever possible. Any data sharing between consortium partners or any external party will be done in a secure and controlled manner as detailed in the dedicated data management strategy initially agreed upon (Deliverable 1.1 Project Management Plan) and continuously updated throughout the project. The data management plan also ensures data integrity,

[5] https://gdpr-info.eu/

[6] https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/european-code-of-conduct-for-research-integrity_horizon_en.pdf

[7] https://www.europarl.europa.eu/charter/pdf/text_en.pdf

[8] https://www.unhcr.org/sites/default/files/legacy-pdf/5ddfcdc47.pdf

[9] https://reporting.unhcr.org/sites/default/files/2021%20Rwanda%20Country%20Refugee%20Response%20Plan.pdf

confidentiality, and secure storage. Most of the data and reports produced in the course of the project will be publicly available and can be freely used by interested stakeholders.

- **Environmental and Social Responsibility**: The project commits to minimizing its environmental impact through sustainable practices in all related activities, including shipping of hardware and travel of partners. Additionally, the project partners will also consider the social implications of any research and implementation and actively engage with local stakeholders to address any ethical concerns that may arise during the project.

- **Continuous Monitoring and Reporting**: The project will implement ongoing ethical monitoring to ensure that all activities remain compliant with ethical standards. Two ethical audits will be conducted (end of Year 1 and during Year 4 of the project), and any issues identified will be addressed promptly. The project partners are fully committed to providing transparent reporting to the European Commission and relevant stakeholders.

- **Commitment to Ethical Innovation**: SWARM-E is dedicated to fostering innovation that is socially responsible and ethically sound. The project partners aim to contribute positively to society while respecting human rights, promoting inclusivity, and ensuring that the research benefits all stakeholders involved.

- **Local Ethical Focal Point and Community Engagement**: As part of the project partners' commitment to ethical integrity and stakeholder engagement, the project partners will appoint a Local Ethical Focal Point (EFP) from local leaders for each region or community in Rwanda and Tanzania where the project is implemented. This individual will serve as the primary contact for local communities, participants, and stakeholders regarding any ethical concerns or questions about the project. The EFP will be available to address any concerns, inquiries, or complaints that may arise from participants or community members during the project. This ensures that local voices are heard, respected, and considered promptly. The EFP will actively engage with local communities to provide clear information about the project's ethical standards and practices. This will include explaining the project's objectives, participant rights, data handling procedures, and environmental impact, as applicable. Hence, the EFP will play a key role in ensuring that participants fully understand the nature of the research they are involved in. This includes explaining the consent process in a clear and culturally sensitive manner and ensuring transparency throughout the project's duration. Further, the EFP will be responsible for ensuring that the project is implemented in a manner that respects local cultural norms and practices. This includes facilitating dialogue between the project team and local communities to mitigate any potential ethical or social conflicts. The EFP will be accessible via telephone, e-mail, and in-person meetings.

2. Human Beings – "H-Requirement"

The following section details recruitment processes for new staff to the project partners and develops a thorough approach for how the procedures and criteria can be used to identify/recruit and inform participants.

2.1 New staff recruitment

Most of the personnel working on the SWARM-E project were already staff members of partners before the project started. When new staff must be recruited, the offers will be published on specialized job posting platforms and on the host institution's website, SWARM-E website[10], X[11], and LinkedIn[12].

The selection of new staff is based on:

- Relevance of the academic degree with the project;
- Coherence of the CV/background with the topics of the project;
- Motivation letter;
- Coherence of the publications and thesis with the research program (in case of recruitment of a PhD);
- Experience with similar projects and experience in the countries of implementation;
- Performance during the interview process.

Criteria of age, gender, and ethnicity cannot under any circumstances be considered.

Based on their CV and motivation letter, at least three candidates should be selected and interviewed. The "best candidate", which has the highest score, is then selected.

2.2 Recruitment of research participants

2.2.1 Procedures and criteria to be used to identify/recruit and inform research participants

Research participants are treated in WP2, WP3, WP5, and WP7. Data sets are gathered as new data through workshops, key informant interviews, focus group discussions, and surveys. All the data obtained in the process is going to be anonymized and/or pseudonymized as detailed in the Data Management Plan (Deliverable D1.2). The data, that is publicly available, will be registered as public, while the not publicly available material will be treated as confidential and in line with the below criteria for securing personal data. The below steps will be followed to identify the characteristics of a potential research participant and inform the latter:

- Before taking part in the SWARM-E activities, participants are verbally briefed on the SWARM-E project, as well as the scope and aims of the specific research activity (i.e., interview, questionnaire). The duty of the beneficiary conducting the research activity is to ensure that invitations to become a research participant contain transparent and easily understandable information about the purpose of the project, the purpose of the research and an informed consent procedure. Briefings and documentation are available both in English and local

[10] https://swarm-e.eu/
[11] https://x.com/project_SWARM_E
[12] https://www.linkedin.com/company/swarm-e-project/posts/?feedView=all

language and written with terminology each individual participant is comfortable with and can fully understand. Participants for whom this cannot be assured do not take part in the SWARM-E activities. All participants will be made aware of their right to withdraw from the study without providing any reason for their withdrawal. If the research they are participating in, involves audio recording or electronic note-taking, they will be notified that they can ask the interviewer to stop, start or delete all or a portion of the recorded material at any time. For further details see 3.2 Informed consent for data processing.

- All participation in project actions such as questionnaires, focus group discussions, impact monitoring, interviews, and workshops will be on a voluntary and informed basis. Informed consent will be sought for all research activities, normally by asking participants to read a project information sheet and sign a written consent form (Annex I – Universal consent form) – universal consent format. Research activities that involve the civic population will relinquish a signed or written consent form as there is a high risk of participants not being literate and written signatures may create a substantial barrier within the research process. These barriers of participation include potential forms of discrimination and resentment towards the researchers and authorities. Hence, in these cases, non-written consent must be formally documented and independently witnessed. To make sure all participants understand the implications of their participation, a local translator and facilitator will support the communication of this consent form.
- Questionnaires are disseminated by random sampling methods, and interviewees and workshop participants are recruited in a variety of different methods, such as being randomly approached in public spaces, by referral from consortium partners, through networks of local NGOs or initiatives, public announcements, social media, etc. It is ensured that any sensitive data, such as personal images found on social media platforms, are not in any way integrated into the research process and any information will be treated confidentially among the researchers. Research activities will include adult (above 18 years old) research participants only. The latter must be fully able and capable of providing explicit, voluntary, specific, and informed consent to take part in any SWARM-E event.

2.2.2 Human participants who are not involved

Reference is made to the document "EU Grants How to complete your ethics self-assessment" - checklist under Section 2: Human beings. The SWARM-E Project will not involve any participants listed below:

- No persons unable to give informed consent (including children/minors);
- No children/minors;
- No persons who are receiving medical care, or who are cared for by a particular doctor.

In contrast, vulnerable individuals or groups may be involved in research activities within migrant communities whose legal status in the European Union and African Union might not be clear. Extensive knowledge and information of the local context will be obtained before any contact with vulnerable groups to ensure that no individual or group will be harmed in any way. Anonymization or pseudonymization during the processing of all data will protect their privacy, as explained in an informed consent form (see 3.4 Anonymization and pseudonymization).

2.2.3 Copies of consent forms

Copies of consent forms must be kept on file from every SWARM-E partner (if required).

2.2.4 Details on incidental findings

The SWARM-E project is fully aligned with basic ethical principles to protect humans who participate by contributing time, effort, and personal data for researchers' use. These principles include respecting human dignity and integrity and protecting vulnerable individuals among others. Social science and humanities research relies on methods that may unintentionally produce findings outside the scope of the original research questions. Unintended /unexpected /incidental findings may include indications of criminal activity, human trafficking, abuse, domestic violence, or bullying. Fieldwork, observations, and interviews can yield information that goes beyond the scope of the research design, thus presenting the researcher with a dilemma: whether to preserve confidentiality or to disclose the information to relevant authorities or services. As a rule, criminal activity witnessed or uncovered in the course of research must be reported to the responsible and appropriate authorities, even if this means overriding commitments to participants to maintain confidentiality and anonymity. Researchers must inform the participants, or their guardians or other responsible people, of their intentions and reasons for disclosure, provided that doing so does not undermine the act of disclosure. A characteristic of incidental/unexpected findings is that they require the researcher to take some form of action.

Reference is made to the Commission's guidance entitled "how to complete your ethics self-assessment[13]". The Commission has published these guidelines to help all Horizon 2020 programme applicants to get their proposal ethics-ready for EU funding. Incidental findings policy is included in the ethics issues checklist published by the European Commission and in particular in its section 2 (humans). According to this guideline, the recommendations for dealing with incidental findings are:

- Plan by drafting a policy for dealing with unintended, unexpected, or incidental findings that are not harmless;
- Inform participants about the limits of the confidentiality that you can offer (the information sheet should cover incidental findings policy). Consider any unintended/unexpected/incidental findings and explain how you intend to deal with such findings in the Informed Consent form;
- Be aware of the legal context in which you conduct your research and consult your host institution's legal department;
- Include in your work plan a structure for discussing unexpected or incidental findings within your consortium.

In the case of unexpected or incidental findings occurring in SWARM-E, the damaged entity will be notified in written form of the unexpected or incidental findings occurred, where appropriate. All information will be passed on anonymized.

[13] https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/ethics/h2020_hi_ethics-self-assess_en.pdf

3. Personal data “POPD requirement”

Given the importance of data privacy in the European Union, particularly under the General Data Protection Regulation (GDPR), the following section details the approach and procedures towards the protection of personal data in the SWARM-E project. The section provides the following information about the collection, processing, and storage of data, while specifically focusing on the role of personal data, as the critical data to protect participants of the project.

3.1 Data collection justification

All data collected in the context of the project will serve the purpose of achieving one of the objectives of the project as defined in the Grant Agreement. Reference is made to the Data Management Plan (Deliverable D1.2) for a detailed description of the data to be collected throughout the different phases of the project. Aside from technical, economic, environmental, and socio-economic data, critical personal data will be collected from project participants to assess energy needs, monitor access to energy technologies, and measure the impact of sustainable energy solutions during the monitoring and evaluation phase. The primary objectives of collecting personal data are:

- **Understanding Energy Needs**: To accurately assess the energy needs of households, businesses, and communities, the project requires data on current energy consumption patterns, energy access levels, and demographic information (e.g., household size, and income levels). This information will allow designing solutions that are tailored to the specific energy needs of different groups, ensuring equitable access to the technologies being deployed;
- **Capacity Needs:** To establish the level of knowledge and skills of citizens so that technical assistance, specialized curricula, and training campaigns are carried out;
- **Monitoring and Evaluation of Impact**: Personal data will be collected during and after the implementation of the project to track its impact on the local population. This includes monitoring changes in behaviour and energy usage, improved livelihood, including economic benefits resulting from access to sustainable energy. This data is essential to assess whether the project’s goals of providing reliable, sustainable energy are being met, and it will contribute to lessons learned for future projects;
- **Technology Functionality and User Satisfaction**: As the project involves the introduction of new sustainable energy technologies, it is important to gather feedback from users to ensure that the technologies are functioning as intended and meeting the expectations of the local population. Data on user satisfaction, usability challenges, and maintenance issues will help optimize the deployment and adjust the solutions to better fit local contexts.
- **Socioeconomic and Cultural Considerations**: To ensure that the project does not unintentionally exacerbate inequalities or overlook specific needs, data on socioeconomic factors (e.g., income levels, education, gender roles) will be collected. This will help ensure that the energy solutions are inclusive and accessible to all segments of the population, particularly vulnerable groups and that any social or cultural considerations are respected in the project’s implementation;
- **Compliance with Regulatory and Ethical Standards**: Collecting personal data will comply with regulatory and ethical standards. This includes obtaining data for informed consent, ensuring participation is voluntary, and being able to contact participants for follow-up interviews or surveys. By doing so, the project ensures transparency and accountability in its operations.

3.2 Informed consent for data processing

The project is committed to ensuring that all personal data collection and processing activities are conducted following the principles of *informed consent*, which guarantees that participants completely understand and agree to the use of their data before any processing takes place. According to the informed consent process, participation in any of the project activities will be transparent and voluntary. Key elements of the approach are:

- **Communication of Purpose**: Participants will be thoroughly explained the purpose of the data collection. This includes explaining the goals of the project, the type of data being collected, and its use. Written consent forms and information sheets will be tailored to local languages, ensuring that participants fully understand the nature of the project and their role in it. The staff collecting the data will be thoroughly trained to ensure effective communication of the consent process to participants.
- **Voluntary participation**: Participation in the project will be entirely voluntary, and individuals will be informed that they have the right to decline participation or withdraw at any time without any negative consequences. This will be communicated to ensure that participants do not feel pressured to provide their data.
- **Right of the data subjects**: Participants will be clearly informed of their rights under the General Data Protection Regulation (GDPR), including their right to access the personal data collected about them (right to access), right to request corrections if any personal data is inaccurate (right to rectification), right to request that data is deleted (right to erasure) and right to object to the processing of their data at any time without facing any negative consequences (right to object).
- **Data Sharing and third-party access**: The informed consent process will explain who will have access to the collected data, including if data is made public and available to third parties such as academic institutions, local authorities, or partner organizations involved in the project. Data sharing will only occur under secure and ethical conditions, ensuring compliance with local laws and international regulations such as the GDPR.
- **Informed Consent for Different Activities**: In cases where multiple data collection activities (e.g., surveys, interviews, focus groups) are planned, consent will be sought separately for each activity. This ensures that participants can opt into specific types of data collection while opting out of others, giving them full control over how their data is used.

Reference is made to Annex I of the document, which holds a general consent form to be signed by any external volunteer participating in the project.

3.3 Data minimization

Under the **GDPR** principle of data minimization, the consortium partners will only collect personal data that is necessary, relevant, and proportionate to achieve the goals of the project as per Grant Agreement. This implies the following key principles are reflected:

- **Purpose-Driven Data**: The project partners will only gather essential data, directly related to project objectives.
- **Avoidance of Sensitive Data**: Sensitive information (e.g., health or religious data) will not be collected unless necessary.

- **Proportional Data Collection**: The minimum data needed to fulfil the objectives of the project as per the Grant Agreement will be collected only, avoiding unnecessary or repeated collection.
- **Ongoing Review**: Data needs will be reviewed periodically, and any unnecessary data collection will be discontinued to ensure continuous compliance with minimization principles.

3.4 Anonymization and pseudonymization

To protect participants' privacy, the project will use *anonymization* and *pseudonymization* techniques wherever possible.

Processes for **anonymization** of data include:

- **Removal of Identifiers**: Personal identifiers (e.g., names, and addresses) will be removed to ensure data cannot be traced back to individuals.
- **Data Aggregation**: Data will be aggregated (e.g., energy consumption at the community level) to further protect individual privacy, if possible.
- **Non-Reversibility**: Anonymized data will be processed so it cannot be reversed or linked back to any participant.

Processes for **pseudonymization** of data include:

- **Replacement of Identifiers**: Identifiers will be replaced with codes, and only authorized personnel will have access to the linking information.
- **Access Control**: Pseudonymized data will be stored securely, with access restricted to essential project staff.

3.5 Data access, sharing, storage, and security

The project partners respect the procedures and principles on data access, sharing, storage and security measures defined under the Data Management Plan (Deliverable 1.2). Specifically relevant for the use of personal data, access to personal data will be limited to authorized project consortium partner personnel who require it for their specific research activity. Considering data sharing, personal data will only be shared with project partners. If data will be shared with third parties this will only happen under strict conditions, such as data sharing agreements that outline the purpose and safeguards for data use. In any case, data will be shared only through secure channels and platforms to prevent unauthorized access or breaches. For this purpose, the consortium relies on Google Drive as a data storage and sharing platform, the terms and conditions of which can be accessed via https://support.google.com/drive/answer/2450387?hl=en. Any collected personal data will be deleted from the project's data storage five years after the end of the project. Upon the request of stakeholders, their personal data will be deleted from the project repositories.

4. Non-EU countries – "NEC requirement"

This section concerns the compliance of the SWARM-E project with ethical standards and guidelines given non-EU countries. It addresses ethical concerns arising from research activities conducted, partially or wholly, in non-EU countries, participants or resources from non-EU countries or material that is imported from or exported to non-EU countries.

4.1 Non-EU country activities

The SWARM-E project concerns research involving non-EU countries, namely Rwanda (OffgridBox Rwanda Limited (OGB Rwanda), Inkomoko Entrepreneur Development Limited (INKO), University of Rwanda (UR)), Tanzania (Ekoglobe Resources Limited (EKOGLOBE), E-Lico Foundation (ELICO), Tanzania Renewable Energy Association (TAREA)), Bangladesh (ME SOLshare Ltd. (SOLshare)), and Kenya (WE!HUB Victoria Limited (WETU)). Furthermore, Rwanda and Tanzania have been chosen as demonstration sites, which will involve local resources, as well as the import of material to these countries. Table 1 summarizes the activities of non-EU partners per WP and tasks that are related to ethical issues:

Table 1: Activities on NON-EU project partners.

Country	Partner	Description of activity	Related WP and task
Rwanda	OGB Rwanda	Sites preselection Engagement with public authorities on permitting and project awareness raising	WP2 – Site characterization and preparation
		Import and installation of SWARM grid components; training of local operators on the newly installed electricity infrastructure	WP4 – SWARM grid and PUE solutions development
		Monitoring of energy consumption patterns	WP5 – Pilots operations and SWARM-E legacy
	INKO	Data collection (surveys, interviews and FGDs) – demand and supply side, NGOs, community leaders, community entrepreneurs	WP2 – Site characterization and preparation
		Capacity needs assessment of community/local technicians, local entrepreneurs Implementation and impact monitoring of the capacity building programme	WP3 – Stakeholder engagement, value chain development and capacity building

Country	Partner	Description of activity	Related WP and task
	UR	Application of research permit Demand side analysis and coordination of data collection in the pre-selected communities Engagements with public stakeholders	WP2 – Site characterization and preparation
		Data analysis and research on energy trading, energy consumption, economic value creation	WP5 – Pilots operations and SWARM-E legacy
		Publication of scientific work on data analysis from pilot implementation	WP8 – Dissemination and communication
	WETU	Monitoring of energy consumption patterns	WP5 – Pilots operations and SWARM-E legacy
Tanzania	EKOGLOBE	Data collection on supply side for e-mobility (distributors of components, vehicles) Data collection on demand side for e-mobility (operators of electric and combustion engine 2 and 3-wheelers)	WP2 – Site characterization and preparation
		Capacity building implementation and monitoring for electric 2 and 3-wheeler drivers/operators	WP3 – Stakeholder engagement, value chain development and capacity building
		Import/relocation of electric 2 and 3-wheelers	WP4 – SWARM grid and PUE solutions development
	ELI	Data collection (surveys, interviews and FGDs) – demand and supply side, NGOs, community leaders, community entrepreneurs	WP2 – Site characterization and preparation
		Capacity needs assessment of community/local technicians, local entrepreneurs	WP3 – Stakeholder engagement, value chain development and capacity building

Country	Partner	Description of activity	Related WP and task
		Import and installation of SWARM grid components; training of local operators on the newly installed electricity infrastructure	WP4 – SWARM grid and PUE solutions development
		Monitoring of energy consumption patterns	WP5 – Pilots operations and SWARM-E legacy
	TAREA	Public stakeholder mapping and engagement, project awareness	WP2 – Site characterization and preparation

4.2 Adoption of ethical standards by local partners

All ethical principles and standards defined in this report (including e.g., informed consent, data protection, and treatment of personal data), will be fully adopted and implemented by local partners in Rwanda, Tanzania, and Kenya. As a reminder, these partners are obligated to:

- Ensure that any external research participant or stakeholder engaged with is fully informed and provides consent for any data collection or research activities;
- Uphold the principles of data minimization, anonymization, and pseudonymization practices to protect individual privacy;
- Uphold the principles and act according to GDPR-equivalent standards to ensure full alignment with EU privacy and ethical regulations;
- Engage with local communities respectfully and equitably, ensuring the ethical treatment of all participants, especially vulnerable groups.

4.3 Compliance with EU laws and standards

The entire demonstration phase of the project is being implemented outside of the EU. However, all activities related to the preparation of the demonstration, and the demonstration itself, as well as any collaborations will fully comply with relevant EU laws and ethical guidelines, including GDPR. This essentially implies:

- Data collection, storage, and sharing will follow the same stringent regulations required by EU law. Especially, personal data from participants in Rwanda and Tanzania is handled with outmost degree of care and protection (see 4.1 Non-EU country activities)

- Ethical approval, audit, and monitoring including from the EC will be obtained for all project activities in the same manner as for any activities within the EU. This ensures that the project respects local laws and is in full compliance with EU ethical frameworks

- All local partners are aware of and agree upon to adhere to EU requirements, particularly in relation to the ethical treatment of participants and the handling of personal data.

4.4 Import of goods, customs, and legal compliance

As the demonstration and implementation phase of the project will involve the purchase and import of goods to Rwanda and Tanzania, the SWARM-E project will ensure full compliance with customs and import/export regulations in Bangladesh, Rwanda and Tanzania, and the EU. This includes:

- Ensuring that the import of any hardware and other project-related goods into Rwanda and Tanzania complies with national or local laws, customs regulations, and international trade agreements;
- If relevant, acquire necessary permits, licenses, and certifications for the lawful transport of goods across borders;
- Adhering to any applicable EU export regulations, including compliance with EU sanctions, dual-use item regulations, or other trade restrictions relevant to the project;
- Working transparently with national and local authorities to ensure that the project's logistical operations are conducted in an ethical and legally compliant manner;
- Addressing potential challenges with import taxes or tariffs to ensure the cost-effectiveness of project implementation without compromising local regulations.

References

European Commission (2018). Ethics in Social Science and Humanities. Available at: https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020_ethics-soc-science-humanities_en.pdf (accessed on 19.08.2024)

European Commission (2021). EU Grants: How to complete your ethics self-assessment: V2.0 – 13.07.2021. Available at: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/how-to-complete-your-ethics-self-assessment_en.pdf (accessed on 19.08.2024)

ISO 31000:2018 Risk management -- Guidelines, International Organization for standardization, https://www.iso.org/standard/65694.html

P. Simon et al, 2000. Project Risk Analysis and Management. A guide by the Association of Risk Management.

Risk Registers

Master Risk Register- https://drive.google.com/drive/folders/1wchiiR2LHs8DZsBF__Z2NP2xbLZzUipv

Work Package Risk Registers-https://drive.google.com/drive/folders/1e0NwNqiFg4rQSWiueEnACtTZ_6pxB-ix

List of Acronyms and Abbreviations

Abbreviation	Definition
EFP	Ethical Focal Point
GDPR	General Data Protection Regulation
PC	Project Coordinator
PUE	Productive Use of Energy
PO	Project Officer
WP	Work Package
WPL	Work Package Leader

Annex I – Universal consent form

[SWARM-E LOGO]

Consent to participate and release information to the SWARM-E project

I hereby authorize [Name of the Organization] to use personal data from the following persons:

Name:_____

Phone:_____

Mail: _____

Age :_____

Gender :_____

[Name of the Organization] **Contact:**_____

I understand that my authorization will remain effective from the date of my signature until _____ and that the information will be handled confidentially in compliance with all applicable National laws and GDPR. I understand that I may see the information that is to be sent, and that I may revoke the authorization at any time by written, dated communication.

I have read and understand the nature of this release.

Benefits of participation:

- Insights on the status quo of research activities regarding sustainable energy access in Sub-Saharan Africa
- The opportunity to take current research on sustainable energy access to the next level

Confidentiality

- The records of this study will be kept strictly confidential. Research records will be kept in a locked file, and all electronic information will be coded and secured using a password protected file.
- Social science and humanities research relies on methods that may unintentionally produce findings outside the scope of the original research questions. Unintended/unexpected/incidental findings may include indications of criminal activity. As a rule, criminal activity witnessed or uncovered in the course of research must be reported to the responsible and appropriate

authorities, even if this means overriding commitments to participants to maintain confidentiality and anonymity.

- In the case of unexpected or incidental findings occurrence in SWARM-E, the damaged entity will be notified in written form of the unexpected or incidental findings occurred, where appropriate. All information will be passed on anonymized.

Consent

Your signature below indicates that you have decided to volunteer as a research participant for this project and that you have read and understood the information provided above. You will be given a signed and dated copy of this form to keep, along with any other printed materials deemed necessary by the SWARM-E project.

Subject's Name			
Subject's Signature		Date	
For SWARM-E Coordinator Signature		Date	