



NEWSLETTER

Issue 3

Message from the Project Coordinator - Dr. Raluca Dumitrescu

As we approach the end of the year, I would like to take a moment to reflect on what has been an intensive, formative, and highly rewarding period for the SWARM-E project.

The first 18 months of SWARM-E have been dedicated to building strong foundations.

Across Rwanda and Tanzania, our consortium has worked closely with communities, local authorities, researchers, and private-sector partners to understand local realities, co-design solutions, and translate evidence into robust technical and socio-economic system designs. More than 600 households, enterprises, and institutions have contributed their time, knowledge, and trust, enabling us to ground every engineering, governance, and business decision in real demand, real behaviour, and real opportunity.

This work has culminated in the completion and validation of five SWARM Grid+ designs, the establishment of inclusive community governance structures, and the development of rigorous monitoring, impact-assessment, and financial frameworks. Importantly, we are already seeing the first systems deployed in Rwanda, alongside early productive-use pilots that confirm the relevance of our approach and the strong demand for energy-enabled services.

None of this would have been possible without the exceptional collaboration within the SWARM-E consortium. The integration of engineering, social sciences and humanities, behavioural modelling, financial analysis, and policy dialogue has been a defining strength of the project. It has allowed us to move beyond technology alone and to design energy systems

that are socially embedded, gender-responsive, economically viable, and scalable across diverse contexts.

As we look ahead to 2026, SWARM-E enters its most transformative phase. The coming year will see full system installations, commissioning, intensive capacity building, and the operational demonstration of peer-to-peer energy trading, productive uses of energy, clean water, e-mobility, and hydrogen-based solutions. These activities will turn models and simulations into tangible improvements in livelihoods, resilience, and access to clean energy for last-mile communities.

On behalf of the coordination team, I would like to thank all our partners, stakeholders, and community members for their commitment, openness, and shared ambition. We look forward to continuing this journey together and to demonstrating what bottom-up, inclusive energy systems can achieve.



Highlighting progress from the first 18 Months (May 2024 – October 2025)

As we close the first 18 months of SWARM-E, the consortium is proud to report significant achievements across Rwanda and Tanzania in preparing, designing and initiating an integrated, multi-layered clean energy system for rural and humanitarian contexts. Our work is delivering strong empirical foundations, validated technical designs, strengthened community governance, and the first steps toward system installation and demonstration.

Strong foundations: baseline data, site selection & community engagement

Over 600 households, MSMEs, institutions, and local actors were surveyed using harmonized tools. This extensive baseline now guides all technical, socio-economic, and governance decisions.

Key achievements:

- Five pilot sites selected: Mahama 1 & 2, Gakoma, Kanombe (Rwanda), and Kwale Island (Tanzania).
- Koma Island (Tanzania) identified as the control group for rigorous impact evaluation.
- 12 Focus Group Discussions, including dedicated sessions for women and youth, completed across all sites.
- Full socio-economic, geospatial, and behavioural characterisation completed (WP2).
- Value-chain and Productive Use of Energy (PUE) pathways mapped for each site, covering milling, cold storage, water services, EV mobility, hydrogen cooking, and more (WP3).
- Community governance structures established with 40–50% women and youth representation.



Engineering complete: 5 SWARM grids designed and validated

WP4 successfully completed detailed technical designs for all five SWARM grids—combining P2P DC networks, AC systems, and productive-use hubs.

Highlights:

- Full engineering simulations and feasibility analyses completed for P2P + AC hybrid systems.
- Four of five sites achieving zero load shedding in simulations; mitigation strategies developed for the remaining site.
- SWARM controller upgraded to TRL6, including national compliance, mobile-money integration, and remote diagnostics.
- Two energy systems already deployed in Rwanda (Gakoma and Kanombe) with initial PUE installations.

The project is now transitioning into full installation and commissioning under WP5 - Pilots operations and SWARM-E legacy - in 2026.



Laying the groundwork for income generation & improved livelihoods

While most installations will occur in the next period, SWARM-E has already generated strong evidence of economic potential and community readiness.

Progress includes:

- PUE opportunity identification supported by behavioural modelling and Focus Group Discussion results.
- Two OffGridBoxes installed in Rwanda; hydrogen-for-cooking R&D underway with technical partners.
- Preliminary e-mobility modelling completed for both countries, with strong demand identified for cargo bikes, boda-bodas, tricycles, and e-boats.
- Cross-sector insights show clear demand for clean water services, agricultural mechanization, and local charging solutions.

These findings prepare the ground for impactful demonstrations in 2026–2027.



Impact, monitoring and sustainability: frameworks in place

A robust impact-measurement architecture has been established, enabling future tracking of economic, social, environmental, and technical outcomes.

What is now in place:

- A complete multi-dimensional baseline, including a control site (Koma Island).
- Monitoring and evaluation framework, grounded in theory of change, with KPIs covering technical performance, income generation, gender participation, environmental impacts, and affordability.
- Regulatory mapping and stakeholder dialogues completed in both Rwanda and Tanzania.
- Initial tariff modelling aligned with national ceilings and community affordability data.

These foundations ensure SWARM-E can evaluate both short-term and long-term impacts up to five years post-project.



Building local capacity for long-term operation

WP3 'Stakeholder engagement, value chain development and capacity Building' delivered substantial progress toward preparing communities and institutions to operate the SWARM Grid+ systems.

Results include:

- Capacity-building strategy developed, covering P2P users, kiosk operators, mini-grid users, and hybrid system operators.
 - Local operator groups identified in each site, including strong participation by women's associations and youth groups.
 - Technical training exchanges conducted between SOLshare, OGB Rwanda, and ELICO.
- Full-scale training will intensify during installation and commissioning phases.



Preparing for scale-up across Sub-Saharan Africa

WP7 'Financial modelling, commercialisation and private sector activation' completed the analytical backbone for replication beyond the pilot sites.

Achievements:

- Revenue models for key PUE applications including water kiosks, milling, cold storage, e-mobility, and hydrogen micro-hubs.
- Preliminary calculations and tariff scenarios based on affordability modelling.
- Replicable technical templates and grid topologies developed for rural, humanitarian, and island contexts.
- Investment pathways designed for mini-grid developers, humanitarian actors, and public-private partnerships.

These outputs significantly strengthen SWARM-E's potential for regional scale-up.



Looking ahead to 2026

With all designs complete, community governance in place, and evidence-backed PUE plans finalized, SWARM-E is now ready to enter its most transformative phase:

- Procurement and deployment of full SWARM Grid+ systems.
- Commissioning of P2P, AC, PUE, hydrogen, and e-mobility solutions.
- Full-scale training and co-management with local communities.
- Impact monitoring and refinement of business models for scale-up.

The next phase will turn insights and simulations into tangible improvements in livelihoods, resilience, and clean-energy access for last-mile communities.



Season`s Greetings

As the year draws to a close, we are reminded that meaningful energy transitions are built not only on technology, but on people, partnerships and shared commitment. We thank all our partners and stakeholders for their dedication to SWARM-E and wish you a joyful holiday season and a new year marked by progress, resilience, and lasting impact for communities across Sub-Saharan Africa.



Happy Holidays



Partners



[VISIT OUR WEBSITE](#)

[FOLLOW SWARM-E ON SOCIAL MEDIA](#)



Co-funded by
the European Union

Co-funded by the European Union, project number 101146291. Views and opinions expressed within the current document are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor CINEA can be held responsible for them.

Copyright (C) 2025 SWARM-E All rights reserved.

Our mailing address is

Want to change how you receive these emails?

You can [update your preferences](#) or [unsubscribe](#)

