



D2.4 REGIONAL TRAINING ACTIVITY REPORT -FINAL

AAMUSTED

03.03.2025



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement No. 101037141. This material reflect only the views of the Consortium, and the EC cannot be held responsible for any use that may be made of the information in it.

Project partners



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101037141. This material reflects only the views of the Consortium, and the EC cannot be held responsible for any use that may be made of the information in it.

Legal Disclaimer

SESA (Grant Agreement No 101037141) is an Innovation Action project funded by the EU Framework Programme Horizon 2020. This document contains information about SESA core activities, findings, and outcomes. The content of this publication is the sole responsibility of the SESA consortium and cannot be considered to reflect the views of the European Commission.

Deliverable Number	D2.4
Deliverable Name	Regional Training Activity Report
Full Project Title	SESA – Smart Energy Solutions for Africa
Responsible Author(s)	Albert Awopone, Isaac Boateng, Kingsley Agyapong, Frederick Kwaku Sarfo (AAMUSTED)
Contributing Partner(s)	ICLEI Africa
Peer Review	Edmund Teko (TUB); Stefanie Holzwarth (UN-Habitat), Claudia Schroder (ICLEI AS), Silvia Assalini and Magdalena Sikorowska (ICLEI ES), Wisam Mansour (BIF)
Contractual Delivery Date	30.09.2024
Actual Delivery Date	03.03.2025
Status	Final
Dissemination level	Public
Version	V 2.0
No. of Pages	29
WP/Task responsible	WP 2
Document ID	
Abstract	The D2.4 Regional Training Activity Report under the SESA (Smart Energy Solutions for Africa) project documents capacity-building efforts aimed at accelerating the adoption of renewable energy and sustainable mobility solutions across Africa. The training activities targeted key stakeholders, including policymakers, industry professionals, SMEs, and students, equipping them with the technical, financial, and entrepreneurial skills necessary for clean energy transition. The report covers training sessions across West, East, North, and Southern Africa, each tailored to regional energy challenges. West Africa (Ghana) focused on climate finance and hands-on renewable energy training, engaging local government representatives and SMEs. East Africa (Rwanda) emphasized clean cooking technologies and carbon credit markets, particularly empowering women engineers through technical and entrepreneurial training. North Africa (Morocco) explored e-mobility adoption, battery recycling, and business opportunities in sustainable transportation. Southern Africa (South Africa and Malawi) addressed microgrid integration, second-life battery applications, and public-private partnerships, fostering collaboration in renewable energy deployment. Key outcomes include enhanced technical skills, increased gender inclusivity, strengthened policy awareness, and expanded stakeholder collaboration. Participants gained hands-on experience in solar PV installation, battery repurpose, clean cooking technology, and energy project financing, ensuring practical application of training knowledge. The initiative also facilitated networking, cross-sector partnerships, and access to policy and business insights crucial for long-term clean energy transitions. The report highlights the need for expanded hands-on training, structured follow-up mentorship, and stronger policy alignment to maximize the impact of regional capacity-building efforts. These training programs contribute to Africa's energy transition by building local expertise, fostering innovation, and promoting inclusive participation in the renewable energy sector, aligning with SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action).

Contents

Contents.....	3
List of Figures	4
List of Abbreviations	4
1. Executive Summary	6
2. Introduction	8
2.1 Overview of the SESA Project.....	8
2.2 Regional Training and Energy Solutions in Africa.....	8
2.3 Goals and Objectives of Regional Training Activities	9
2.4 Importance of Capacity Building in SESA	9
3. Regional Training Activities	9
3.1 Overview of Events.....	9
3.2 West Africa Regional Trainings	10
3.2.1 Training overview: location agenda and key details	10
3.2.2 Learnings and outcomes.....	13
3.3 East Africa Regional Training.....	14
3.3.1 Training overview: local, agenda and key details.....	15
3.3.2 Learnings and outcomes	18
3.4 North Africa Regional Training	18
3.4.1 Training overview: local, agenda and key details.....	18
3.4.2 Learnings and outcomes.....	21
3.5 Southern Africa Regional Training.....	22
3.5.1 Training overview: Location, agenda and key details	22
3.5.2 Learnings and outcomes.....	26
4. Conclusion and Recommendations	27
4.1 Conclusion	27
4.2 Recommendations	28
4.2.1 Improving Future Regional Training Activities	28
4.2.2 Integrating Training Outcomes into Broader Project Goals	29

List of Figures

Figure 1 Officials from Ga North and Ashaiman Municipal Assemblies, in Ghana, co-developing a waste-to-energy project concept.....	10
Figure 2 Section of participants at the Kumasi training Solar PV and clean cooking capacity building workshop.....	12
Figure 3 Section of participants at Capacity building on energy decarbonization	13
Figure 4 Trainees learning to use CNC plasma cutting machine	16
Figure 5 Training in front of pellet marking machine	16
Figure 6 A section of trainees	17
Figure 7 Morocco capacity building	19
Figure 8 Sectional view of South African training.....	24
Figure 9 A site visit to Dziwani cook stove facilities	26
Figure 10 Cookstoves	26

List of Abbreviations

Abbreviation	Definition description
AAMUSTED	Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development
AAU	Aalborg University
BIF	Basic Internet Foundation
BTH	Blekinge Institute of Technology
CENEX NL	Stichting Cenex Nederland
ELICO	ELICO Foundation
EV	Electric vehicles
F6S	F6S Network Ireland
GEP	Green Energy Park
GG	Going Green
GHG	Green House Gas
ICLEI AS	ICLEI Local Governments for Sustainability (African Secretariat)
ICLEI ES	ICLEI Local Governments for Sustainability (European Secretariat)
ICLEI WS	ICLEI Local Governments for Sustainability (World Secretariat)
KPI	Key Performance Indicator
KWh	Kilowatt hour
LEITAT	Leitat Technological Center
NDC	Nationally Determined Contributions
NMU	Nelson Mandela University
NUST	Namibia University of Science and Technology
PV	Photovoltaic
RE	Renewable Energy

RISE	Research Institutes of Sweden AB
SDG	Sustainable Development Goal
SEI	Stockholm Environment Institute (Africa Center)
SIEMENS	Siemens Stiftung (Foundation)
SIN	Smart Innovation Norway As
SME	Small medium enterprise
TEC	TECNALIA
TUB	Technische Universität Berlin
UEMI	Urban Electric Mobility Initiative
UNA	User needs assessment
UNEP	UN Environment Programme
UNH	UN-Habitat
UR	University of Rwanda
WeTu	WE! Hub Victoria Limited
WI	Wuppertal Institute for Climate, Environment and Energy
WP	Work Package (as defined per the project Grant Agreement)

1. Executive Summary

The regional training activities under the SESA project were organized to enhance capacity, foster collaboration, and accelerate the adoption of renewable energy and sustainable mobility solutions across Africa. The sessions provided theoretical knowledge and hands-on training to equip participants with the skills and strategies to implement energy transition projects at different levels.

The training sessions targeted government officials, industry stakeholders, SMEs, policymakers, students, and academic institutions to strengthen local expertise in renewable energy systems, climate finance, energy storage, and smart mobility solutions. A key priority was gender inclusion, particularly through initiatives that empowered women in clean energy entrepreneurship.

Key Highlights of the Events

The training was held across four regions, each focusing on critical themes relevant to their energy landscape:

West Africa

Accra (Ghana) [10th October 2023]:

Hosted 28 participants, including 10 government officials (policy and regulatory bodies), 8 private sector representatives (SMEs, renewable energy companies), and 10 academic researchers and energy specialists. The training focused on climate finance, project development, and policy frameworks.

Kumasi (Ghana) [13th October 2023]:

Engaged 110 participants, comprising 40 local government officials, 30 engineers and technical professionals, 20 SMEs, 10 certified solar PV installers, and 10 community representatives. The sessions provided hands-on training in solar PV installation, cookstove technologies, and biofuel adoption strategies.

Kumasi (Ghana) [13 March 2024]

Engaged 51 participants, comprising policymakers from the Ghana Energy Commission, certified wiring professionals, SMEs, and engineering students. The workshop focused on energy decarbonization, providing training on efficiency and conservation methods in PV installation while integrating education, practical application, and policy engagement.

East Africa

Kigali (Rwanda) [20th -21st and 26th – 27th February 2024]:

Clean cooking training: 19 female engineers and university students were trained in cookstove manufacturing, biomass pellet production, and entrepreneurship.

Kigali (Rwanda) [26th April 2024]:

Solar PV & Sustainable Energy Training: 30 participants, including 15 master's students in renewable energy, 10 local energy developers, and 5 policymakers, focused on solar PV mini-grids, second-life EV batteries, and carbon credit markets.

North Africa

Marrakech (Morocco) [14 October 2024]:

E-Mobility training: engaged 103 participants, consisting of 60 master's students (future professionals in e-mobility), 15 transport and energy industry practitioners, 10 policy advisors,

10 private-sector entrepreneurs, and 8 representatives from international organizations and local governments.

Topics: E-mobility innovations, battery recycling, ICE motorbike conversion, and financing models for electric transportation solutions.

Southern Africa

Gqeberha (South Africa) [11 February 2025]:

85 people attended, including 25 industry experts (clean energy, e-mobility, microgrids), 20 academic researchers and engineers, 15 policymakers, 15 private-sector representatives (renewable energy companies), and 10 international organizations (partners, funders, and advocacy groups).

Topics: microgrid integration, public-private partnerships, second-life battery storage, and policy alignment for renewable energy infrastructure.

Lilongwe (Malawi), [10th September 2024]:

12 participants were present, including selected SESA partners, various national government representatives, local government representatives, and other non-government organizations involved in the clean cooking sector in Malawi. In addition, two representatives from the Uganda Ministry of Energy and Mineral Development and the Uganda Climate Change Department in the Ministry of Water & Environment join the event.

Topics: clean cooking, carbon financing, and Nationally Determined Contributions (NDCs).

All sessions featured interactive workshops, hands-on demonstrations, panel discussions, and business networking to ensure a balanced mix of policy discussions, technical training, and project development.

Main Outcomes and Impact

The regional training contributed significantly to:

1. Capacity building and skills development – Over 438 participants across four regions were directly trained in renewable energy, energy storage, climate finance, and smart mobility solutions.
2. Climate finance and project development – Stakeholders learned how to unlock funding, develop sustainable business models, and align projects with climate action goals.
3. Hands-on technical training – Practical sessions enhanced skills in solar PV maintenance, biofuel cookstove technologies, e-mobility, and microgrid deployment.
4. Gender inclusion and entrepreneurship – More than 50 women engineers and students were trained in clean cooking technologies, solar PV systems, and business strategies.
5. Networking and collaboration – Over 120 industry stakeholders and policymakers established partnerships to scale renewable energy and e-mobility projects.
6. Policy and regulatory insights – 50+ government representatives engaged in discussions on energy policies, financing strategies, and cross-sector collaborations.
7. SESA Toolbox leverage– leverage the open-access to the project digital repository to support ongoing training, project implementation, and policy development.

2. Introduction

2.1 Overview of the SESA Project

The Smart Energy Solutions for Africa (SESA) project addresses critical energy challenges across Africa, including access to affordable, reliable electricity and clean cooking solutions. This initiative promotes a sustainable energy transition by leveraging Africa's abundant renewable resources, such as solar energy. It fosters collaboration between European and African partners to develop scalable, innovative energy solutions tailored to diverse socio-economic and geographic contexts.

The project's main objective is to provide innovative, replicable energy technologies and business models that promote economic development, social cohesion, and environmental sustainability. SESA integrates technical and financial innovations to address local energy needs, focusing on renewable energy, energy efficiency, storage solutions, and sectoral linkages in rural and urban contexts across Africa. The initiative also prioritizes the development of local capacity to ensure the sustainability of solutions, fostering cross-regional knowledge transfer and building resilience against energy-related challenges.

2.2 Regional Training and Energy Solutions in Africa

The training activities under Task 2.4 span diverse regions across Africa, ensuring broad applicability and replicability of solutions. Each region's activities are tailored to its specific energy needs, socio-economic conditions, and available resources:

1. Kenya (Demo site): Training focuses on establishing solar hubs, waste-to-energy solutions, and innovative energy storage systems. These hubs provide clean energy for productive uses, such as agriculture and mobility, and include solutions for water purification and e-mobility.
2. Ghana: Capacity building includes demonstrations of waste-to-biogas systems for clean cooking and solar off-grid lighting systems in educational institutions. This training aims to reduce reliance on firewood and charcoal while improving energy access and security in schools. The activities also include the dissemination of capacity building materials using (Information Spots) InfoSpot to disseminate energy-related knowledge and promote community engagement.
3. South Africa: Training supports the deployment of off-grid solar energy systems integrated with second-life EV batteries for energy storage. The activities also include the establishment of (Information Spots) InfoSpot to disseminate energy-related knowledge and promote community engagement.
4. Malawi: Focused on the deployment of improved cooking stoves (Bio Cooker), the training emphasizes the use of sustainable biomass, biochar production, and circular business models. It aims to address clean cooking and energy storage challenges while promoting health and environmental benefits.
5. Morocco: Training centers on the implementation of solar energy solutions and the repurposing of second-life EV batteries. Activities also include promoting electric mobility and developing end-of-life management systems for batteries, fostering a circular economy.
6. Replication Sites (Namibia, Nigeria, Rwanda, and Tanzania): Training expands validated technologies to additional contexts. Key areas of focus include off-grid systems, solar irrigation, and renewable energy business models tailored to local socio-economic and environmental conditions.

2.3 Goals and Objectives of Regional Training Activities

Through the SESA through, the aim is to establish and implement a robust regional training program to enhance the capabilities of stakeholders in adopting sustainable energy solutions, particularly in Africa. The program is designed to address key challenges and opportunities in the energy transition by focusing on:

1. Equip stakeholders with the knowledge and skills necessary to implement and replicate innovative energy technologies. Training sessions are tailored to address challenges faced by local communities, businesses, and policymakers.
2. Facilitating knowledge sharing: Facilitate peer-to-peer learning among national and subnational authorities, businesses, and communities to share the best practices and lessons learned. These exchanges aim to create a network of informed actors capable of fostering regional development across Africa and Europe.
3. Skills development: Provide specialized training on technical, financial, and operational aspects of renewable energy solutions, ensuring participants can design, implement, and maintain these systems effectively.
4. Policy integration: Support national and subnational authorities in integrating sustainable energy solutions into policy frameworks and development plans. This objective ensures long-term adoption and scalability of the project's innovations.
5. Awareness raising: Highlighting the socio-economic and environmental benefits of renewable energy to foster community engagement and accelerate the widespread adoption of clean energy technologies.

2.4 Importance of Capacity Building in SESA

Capacity building is pivotal to ensuring the sustainability and scalability of the innovative solutions developed and tested under the SESA project. By empowering stakeholders with the necessary expertise, the project seeks to:

1. Enhance adoption: Increase the uptake and effective utilization of renewable energy technologies by equipping stakeholders with essential knowledge and skills.
2. Foster local innovation: Encourage local entrepreneurship by providing tools, resources, and training to support innovative solutions tailored to community needs.
3. Build resilience: Strengthen the ability of communities and institutions to adapt to climate change impacts through knowledge dissemination and skill enhancement.
4. Policy strengthening: Aid policymakers in creating robust frameworks that support the integration and replication of sustainable energy solutions, ensuring alignment with broader development goals.
5. Create economic opportunities: Enable local job creation by developing technical and entrepreneurial capacities linked to renewable energy initiatives.

3. Regional Training Activities

3.1 Overview of Events

The regional training events were conducted across West, East, North, and Southern Africa, focusing on renewable energy, climate finance, and sustainable mobility solutions. The topics for the various regions were selected based on the capacity build needs assessment under the SESA capacity building plan which (developed under SESA Task 2.1) identified key energy challenges and training gaps across regions. The findings informed the SESA projects regional training activities (lead under Task 2.4), ensuring training activities are evidence-based, demand-driven, and tailored to local priorities. Thus, each of the training sessions were tailored to regional priorities, engaging over 438 participants, including government officials, industry experts, engineers, SMEs, students, and community representatives.

3.2 West Africa Regional Trainings

3.2.1 Training overview: location agenda and key details

West Africa is at a crucial juncture in its energy transition, grappling with challenges such as heavy reliance on fossil fuels, limited access to reliable energy, and the urgent need for sustainable energy solutions. Ghana, recognized as a regional leader in renewable energy adoption, is pivotal in driving innovative energy solutions and capacity building to address these pressing challenges.

In this context, the SESA regional training activities in West Africa took place in two key cities in Ghana – one in Accra (on 10 October 2023) and the other in Kumasi (on 13 October 2023). The agendas for both capacity building events were meticulously planned to cater to diverse needs, focusing on both theoretical frameworks and practical applications of renewable energy and smart energy solutions. The details around the two capacity building activities in Ghana are outlined below.

Climate finance and project development workshop – Accra, Ghana (10 October 2023)

A total of 28 participants were present for this in-person workshop in Accra. These participants included national and local government officials from Ghana, private sector representatives involved in Ghana's energy sector, SESA consortium partners and selected SESA project SMEs from Kenya, South Africa, Malawi and Ghana.

Through the SESA project, ICLEI Africa's Sustainable Finance Centre lead this climate finance workshop for municipal assemblies and SMEs in Ghana focusing on project development to unlock climate finance at the local level. Notable, during the interactive component of the workshop, officials from Ga North and Ashaiman Municipal Assemblies, in Ghana, began co-developing a waste-to-energy project.

Addressing the critical need for climate finance, the session was designed to build the capacity of stakeholders to develop projects that unlock funding opportunities. These efforts support Ghana's NDCs by strengthening local expertise in climate finance mobilization, a key enabler of Ghana's emissions reduction and resilience-building targets. Additionally, the sessions align with the African Union's Agenda 2063 by advancing sustainable energy transitions, fostering inclusive economic growth, and positioning Ghana as a leader in global climate action.



Figure 1 Officials from Ga North and Ashaiman Municipal Assemblies, in Ghana, co-developing a waste-to-energy project concept.

Solar PV and clean cooking capacity building workshop, Kumasi, Ghana (13 October 2023)

The capacity building event in Kumasi focused on clean cooking (particularly biofuel) and solar energy technology installation and maintenance. A total of 110 participants joined this event, with 100 participants joining in-person and 10 participants joining virtually (via Zoom). The in-person attendees included a wide range of professionals, such as policymakers, local government officials, engineering students, academics, SMEs, and certified wiring professionals. This diverse representation allowed for a multifaceted discussion on renewable energy applications, technical training, and policy considerations. The virtual component of the event ensured international participation, with experts from various regions joining remotely to contribute their expertise on project implementation, renewable energy innovations, and monitoring and evaluation strategies.

The first segment introduced cookstove technologies, with two sessions dedicated to understanding the benefits and implementation strategies for biofuel-based cooking solutions. The session on “How to Use Bricket Cookstoves” featured a practical demonstration, allowing participants to engage with the functionality of brickette cookstoves and understand their efficiency in reducing fuel consumption and emissions. This hands-on approach provided attendees with firsthand experience in operating and maintaining these devices.

The subsequent session, “Implementing Biofuel Cookers in Ghana,” explored the broader adoption of biofuel cooking technologies within Ghanaian households. The discussion addressed the barriers to adoption, potential incentives for users, and policy considerations necessary for large-scale implementation. Participants analyzed case studies on the successful integration of biofuel cookers in different regions, gaining insights into how to tailor these solutions to local needs.

The workshop then transitioned to solar installation and maintenance, focusing on the critical aspects of maintaining solar energy systems. Participants were introduced to predictive, preventive, and corrective maintenance strategies, equipping them with essential skills to ensure the long-term reliability of solar installations. The session also covered key safety protocols and handling procedures, emphasizing best practices for minimizing hazards associated with solar energy systems.

The audience then broke into three groups and headed to different rooms to discuss various topics: Breakout group 1 focused on **Cookstoves** (led by the SESA partners Going Green and Econexus Ventures, one of the SMEs selected by SESA to receive seed funds); Breakout group 2 focused on **Solar energy** (lead AAMUSTED and Nastech Power Solutions, another of the SESA SMEs that granted seed funds) and Breakout group 3 focused on **Impact and evaluation** (lead by the two SESA partners ICLEI World Secretariat and ICLEI Africa)

Breakout Group 1 explored the functionality, adoption strategies, and real-world applications of cookstove technologies. Participants analyzed the efficiency, environmental benefits, and potential challenges associated with implementing these technologies in different regions.

Breakout Group 2 provided hands-on training in the installation and maintenance of solar energy systems. Attendees actively participated in demonstrations of solar panel setups, wiring techniques, and troubleshooting common issues, enhancing their technical expertise in renewable energy infrastructure development.

Participants in Breakout Group 3's session, which also functioned as a peer-to-peer exchange (another key activity required under SESA Task 2.3), included local government representatives from Kumasi, Alba Iulia (Romania), and Pune (India). During this interactive session, an overview of monitoring and evaluation was discussed, including impact assessments. This included a snapshot of the SMART and PESTEL monitoring and evaluation methodologies used under the SESA project, followed by discussion with the participants to understand monitoring & evaluation in their local government contexts. Representatives from Kumasi noted the following challenges in relation to monitoring and evaluation at the local government level:

- Resource constraints, such as not having sufficient vehicles to do site visits.
- Financial constraints
- Limited human capacity to do monitoring and evaluation

However, it was also noted that monitoring and evaluation is taking place (where possible) under various departments at the local government level, which then gets efficiently filtered into national government processes. This shows that collaborations and multi-level government aspects are being practiced in terms of monitoring and evaluation, which is not often experienced in many African countries.



Figure 2 Section of participants at the Kumasi training Solar PV and clean cooking capacity building workshop

Energy decarbonization workshop focusing on efficiency and conservation methods, Kumasi Ghana (13 March 2024)

The third training in West Africa was an energy decarbonization workshop which focused on efficiency and conservation methods in PV installation. Attended by 51 participants, including policymakers from the Ghana Energy Commission, certified wiring professionals, SMEs, and engineering students, the workshop aimed to address energy challenges through education, practical application, and policy engagement. This initiative supports the project's goal of promoting sustainable energy solutions and strengthening educational infrastructure for renewable energy training.



Figure 3 Section of participants at Capacity building on energy decarbonization

By the end of the capacity building workshops, participants had acquired practical skills and hands-on experience in sustainable energy technologies. These sessions not only strengthened their technical proficiency but also equipped them to actively contribute to the adoption and advocacy of clean energy solutions in Ghana.

3.2.2 Learnings and outcomes

The interactive components of the training were carefully designed to maximize engagement and promote hands-on learning, ensuring that participants gained practical experience and in-depth knowledge in key areas of clean energy technology. A combination of group discussions, breakout sessions, interactive demonstrations, and virtual participation allowed for a dynamic learning environment that catered to diverse learning needs.

- Hybrid participation in Kumasi: While in-person participation was the preferred format, remote attendees joined via live-streamed sessions and real-time question and answer interactions, ensuring broader accessibility and knowledge-sharing across regions.
- Group discussions and breakout sessions: One of the most engaging aspects of both the training courses was the group discussions and breakout sessions. These sessions facilitated deep diving into the topics under discussion. While the breakout sessions were effective, participants in Kumasi suggested extending their duration to allow for more immersive and hands-on learning experiences.

- The training on climate finance and project development in Accra equipped participants with financial and analytical skills necessary for scaling renewable energy solutions.
- Theoretical knowledge paired with practical training increases impact: Participants highlighted the relevance of the training, particularly the solar installation sessions and climate finance discussions, which provided both technical expertise and financial planning insights. This combination allowed them to immediately apply their learnings to real-world projects.
- Understanding emerging technologies strengthens deployment capabilities: Exposure to cutting-edge renewable energy solutions, including biofuel cookers and smart energy technologies, helped participants grasp the operational challenges of implementation, maintenance, and scaling. This insight is critical for ensuring long-term success in clean energy initiatives.
- Cross-cultural exchanges enhance learning and collaboration; The diversity of participants at the including representatives from Romania, India, and multiple Ghanaian local governments, including Kumasi fostered rich cross-cultural exchanges. This interaction provided global perspectives on clean energy adoption, policy implementation, and technological advancements, broadening participants' understanding of regional approaches. The presence of international participants also facilitated the exchange of best practices, enabling attendees to compare energy strategies identify common challenges, and explore opportunities for future collaboration in sustainable energy development.

3.3 East Africa Regional Training

East Africa is rapidly advancing in its sustainable energy agenda, with a strong focus on expanding clean energy access, enhancing technical expertise, and promoting inclusive participation in the energy sector. Rwanda, a landlocked country in East Africa, has emerged as a leader in promoting renewable energy and sustainable development. With its ambitious National Electrification Strategy, Rwanda aims to achieve universal access to electricity by 2024. A significant component of this strategy involves leveraging off-grid and decentralized energy solutions such as solar mini-grids, clean cooking technologies, and innovative energy storage systems.

The regional training activities in Kigali addressed key priorities within this strategy, including:

- **Building local expertise:** Empowering local energy developers, engineers, and students with the technical and entrepreneurial skills needed to implement and maintain sustainable energy systems.
- **Gender inclusion:** Recognizing the underrepresentation of women in the energy sector, the sessions actively involved women engineers and graduates, ensuring equitable access to knowledge and opportunities.
- **Knowledge sharing and collaboration:** By hosting experts and participants from diverse backgrounds, the sessions facilitated the exchange of best practices and innovations in clean energy technologies across East Africa and beyond.

Additionally, the focus on solar PV systems, second-life EV batteries, and carbon credit markets aligns with Rwanda's goals to enhance energy efficiency, reduce carbon emissions, and improve access to affordable, reliable energy. These initiatives contribute to the broader objectives of the Sustainable Development Goals (SDGs), particularly SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action).

Through the SESA project, three capacity-building activities were held in Kigali (Rwanda) bringing together participants from diverse backgrounds to engage in hands-on training and knowledge exchange. These training courses are outlined below.

3.3.1 Training overview: local, agenda and key details

Women's training on clean cooking technology, Kigali, Rwanda (February 2024)

The first two capacity building sessions, held on 20-21 February and 27-28 February 2024, focused on training female students and graduate engineers on clean cooking technology. The sessions were organized by the University of Rwanda in collaboration with EcoGreen Solutions. By targeting women students and engineers, the training fostered gender inclusivity in the renewable energy sector. A total of 19 women - 10 in the first session and 9 in the second session - attended the training sessions. Participants hailed from various regions in Rwanda, with most pursuing or holding degrees in electrical, mechanical, or renewable energy engineering.

The training was specifically designed to equip women engineering students and graduates with practical skills and entrepreneurial knowledge in the field of clean cooking technologies. It aimed to provide participants with hands-on experience in cookstove manufacturing, biomass pellet production, and business entrepreneurship, ensuring they had the necessary expertise to pursue careers or establish businesses in the sustainable energy sector.

The first day of training focused on the technical aspects of cookstove manufacturing, where participants were introduced to the design principles and efficiency considerations of modern clean cooking technologies. Facilitators from the University of Rwanda and EcoGreen Solutions guided them through the cookstove manufacturing process, providing live demonstrations and step-by-step breakdowns of assembly and operational requirements. A hands-on session allowed participants to apply their knowledge by assembling cookstove components, emphasizing precision, efficiency, and material selection in the manufacturing process.

On the second day, the training expanded to include biomass pellet production, a critical component of sustainable clean cooking solutions. Participants gained hands-on experience in processing raw materials, understanding quality control measures, and assessing the technical and environmental benefits of biomass pellets.

Beyond technical skills, the training incorporated a business entrepreneurship module, equipping participants with fundamental knowledge of market analysis, business planning, and ethical considerations for establishing a business in the clean cooking technology sector. Facilitators guided attendees through strategies for identifying business opportunities, structuring sustainable business models, and navigating industry challenges.

In addition to business planning, participants were introduced to engineering ethics and professional codes of conduct, ensuring that they understood ethical responsibilities, safety considerations, and regulatory compliance in the renewable energy and engineering fields.

The final session of the training featured practical evaluations, where participants demonstrated their acquired skills in pellet production, cookstove assembly, and business planning. These evaluations ensured that knowledge transfer had taken place effectively and that participants were confident in applying their skills in professional settings.



Figure 4 Trainees learning to use CNC plasma cutting machine



Figure 5 Training in front of pellet marking machine

The third capacity building event in Kigali took place on 26 April 2024, focusing on solar installation, second-life EV batteries, and carbon credit markets at the University of Rwanda. A total of 30 participants joined this event, comprising of renewable energy Master students from the University of Rwanda and energy developers from Kigali.

Following an introduction by the University of Rwanda, ICLEI Europe (the SESA project coordinator from ICLEI Europe), gave an overview of the SESA project and ICLEI Africa gave an overview of the capacity building components under the SESA project. Thereafter, three targeted sessions took place on solar installation, second-life EV batteries, and carbon credit markets, tailored to the expressed needs of Rwanda-based partners to maximize the capacity building session's value and impact.

This training provided renewable energy students and developers with in-depth knowledge and practical insights into solar PV systems, second-life EV batteries, and carbon credit markets. The training aimed to enhance technical expertise, policy awareness, and business opportunities in the renewable energy sector, particularly within the Rwandan context.

The training began with a session on solar PV mini-grid systems, delivered by Nastech Power Solutions. This session provided a technical and operational overview of solar PV mini grids, with a particular focus on their implementation in Ghana and lessons that could be applied to Rwanda. Participants explored the design, installation, and operational management of mini-grid systems, gaining insights into hybrid solar inverters, battery technology, and integration challenges.

A key aspect of this session was the discussion on hybrid solar inverters, which are crucial for optimizing energy efficiency and grid stability. Facilitators also addressed the technical challenges of integrating mini-grid solutions into existing energy infrastructures, emphasizing

the importance of policy support and financing mechanisms. The session concluded with a Question-and-Answer segment, where participants engaged in a dynamic discussion on the feasibility of adapting similar mini-grid systems in Rwanda, particularly for solar irrigation projects that support agriculture and rural electrification.



Figure 6 A section of trainees

The second session, led by SLS Energy, focused on the repurposing of second-life EV batteries for energy storage applications. As electric vehicles continue to expand globally, the question of battery reuse and recycling has become increasingly relevant. This session provided an in-depth analysis of the lifecycle of EV batteries, covering their initial usage, degradation processes, and potential for secondary applications in renewable energy storage.

Participants were introduced to the salvage and refurbishment processes that allow retired EV batteries to be repurposed, extending their lifespan and reducing electronic waste. The session also explored technical challenges in battery integration, including performance optimization, safety considerations, and cost-effectiveness. The interactive discussion that followed examined the potential of second-life EV batteries in Rwanda, assessing their viability in off-grid energy storage solutions, mini-grid applications, and backup power systems for businesses and households.

The final session, facilitated by Nigerian Power Stove explored the carbon credit markets, an emerging financial mechanism for monetizing carbon reduction initiatives. The session provided an overview of the processes, benefits, and challenges of carbon trading, with a particular focus on the African market. Participants learned about the key components of carbon credit mechanisms, including voluntary carbon markets, carbon standard bodies, and regulatory frameworks governing emissions trading.

A significant part of the discussion centered on the opportunities and challenges of implementing carbon credit systems in Rwanda. Experts outlined the steps required to develop effective carbon credit mechanisms, including accurate emissions measurement, certification processes, and market access strategies. The session concluded with an interactive dialogue, where participants explored real-world case studies of carbon trading projects and discussed how local businesses and renewable energy initiatives could benefit from participating in carbon markets.

3.1.2 Learnings and outcomes

- Showcasing and/or demonstrations of emerging renewable energy technologies, including second-life EV batteries for energy storage, provided participants with firsthand exposure to innovations. These sessions helped attendees assess the feasibility, benefits, and integration potential of these technologies within their local energy systems.
- Networking and cross-sector collaboration: Beyond structured learning, the training fostered valuable networking opportunities, bringing together participants from academia, private sector, and energy development fields. Informal discussions with industry experts and peers encouraged knowledge sharing and potential collaborations, strengthening Rwanda's renewable energy community.
- Inclusive and targeted capacity building: The program actively promoted gender-inclusive participation, particularly through Women's Training on Clean Cooking Technologies, which engaged university students and recent graduates in engineering. Additionally, the training content was customized to accommodate both technical and non-technical participants, ensuring accessibility across diverse professional backgrounds.
- Hands-on training significantly enhances learning outcomes: Practical sessions in cookstove manufacturing and biomass pellet production allowed participants to apply theoretical knowledge, reinforcing their understanding of clean cooking technologies.
- Entrepreneurial skills are essential for sustainable sector growth: Equipping participants with business ethics and entrepreneurship training empowered them to explore opportunities for startups and employment in the clean cooking sector.
- Targeted capacity-building efforts can bridge gender gaps in the renewable energy sector: By specifically engaging women engineers and students, the training fostered greater inclusivity and representation in a traditionally male-dominated field.
- Integrating engineering ethics into technical training strengthens professionalism: Discussions on engineering ethics and regulatory compliance prepared participants for responsible and ethical engagement in the clean energy sector.

Overall Impact

- Enhanced Technical and Business Skills: Participants gained hands-on expertise and market insights.
- Increased Policy and Market Awareness: Training emphasized financing, regulation, and investment opportunities.
- Gender Inclusivity: Strengthened female participation in renewable energy.
- Regional Collaboration: Facilitated knowledge exchange and networking among energy experts, students, and developers

3.4 North Africa Regional Training

3.4.1 Training overview: local, agenda and key details

Accelerating e-mobility: Capacity building for sustainable transport solutions in Africa, Marrakech, Morocco (14 October)

The capacity building session took place in Marrakech (Morocco) at the Cité d'Innovation, a state-of-the-art facility under Université Cadi Ayyad. This venue is a renowned hub for innovation and research, offering a conducive environment for discussions on cutting-edge topics like e-mobility. The training event attracted a diverse group of 103 participants, predominantly engineering master's students from Université Cadi Ayyad. This group

represented the future generation of professionals in sustainable mobility solutions. Other participants included:

- Practitioners from the transport and energy sectors.
- Policy advisors focused on Sustainable Development Goals.
- Representatives from international organizations and local government agencies.
- Private-sector stakeholders with an interest in electric mobility technologies and business opportunities.
- SESA living lab representatives from South Africa and Kenya, where e-mobility solutions are being explored through the SESA project

The diverse backgrounds of participants ensured a dynamic exchange of ideas, allowing for a holistic perspective on the challenges and opportunities in e-mobility adoption across Africa.

The capacity building event was structured into four key sessions, each addressing critical aspects of sustainable mobility, technological advancements, business opportunities, and policy implementation. The sessions combined expert presentations, networking opportunities, interactive discussions, and working group activities, ensuring a comprehensive learning experience for participants.



Figure 7 Morocco capacity building

The training began with an overview of the SESA project, presented by ICLEI Europe and ICLEI Africa, outlining its role in promoting smart energy solutions and sustainable mobility and the role of capacity building therein. This was followed by a presentation on the BOOST project, led by UEMI, which explored innovative approaches to accelerating e-mobility adoption in Africa.

A welcome address from the Director of the Cité d'Innovation emphasized Morocco's commitment to advancing e-mobility and fostering a culture of innovation in sustainable

transportation. The address highlighted Morocco's strategic initiatives in integrating renewable energy with mobility solutions, setting the stage for regional collaboration and investment in clean transport infrastructure.

The first session, **Perspectives on E-Mobility**, provided a broad perspective on e-mobility's role in sustainable development, with a series of expert presentations on current progress, challenges, and future opportunities.

A key presentation on E-Mobility in Morocco, delivered by Green Energy Park, detailed Morocco's advancements in electric transportation, emphasizing the integration of renewable energy and infrastructure expansion. The discussion underscored Morocco's policy landscape, investment trends, and potential pathways for scaling e-mobility.

Following this, a representative from the City of Barcelona shared European best practices in sustainable mobility. Drawing from Barcelona's experience, the session explored policy frameworks, infrastructure deployment, and public-private partnerships that have successfully promoted e-mobility adoption in urban settings. Mr. Rodríguez also provided insights into how African cities can adapt these lessons to their unique mobility ecosystems.

To encourage informal interactions and professional networking,

The second session, **E-Mobility Concepts, Batteries, and Charging**, focused on technical discussions related to vehicle electrification, battery technologies, and business prospects in the e-mobility ecosystem.

A presentation on the Lifecycle Perspective on E-Mobility examined the environmental and economic impacts of electric vehicles from production to recycling, emphasizing sustainability across the value chain. This discussion helped participants understand the long-term benefits and challenges associated with EV adoption, battery waste management, and circular economy strategies.

The **Conversion of ICE Motorbikes** session provided a case study from WeTu Kenya's ongoing efforts to transition internal combustion engine (ICE) motorbikes to electric alternatives. The discussion explored challenges in rural and urban adoption, technical barriers, infrastructure gaps, and potential policy interventions to facilitate the shift.

A segment on Battery Technologies and Recycling examined the repurposing of second-life EV batteries for energy storage and micro-mobility applications. This session offered insights into battery management, safety concerns, and economic viability, highlighting the role of recycling and reuse in Africa's clean energy transition.

The session also explored E-Mobility Business Opportunities, emphasizing how African entrepreneurs and businesses can capitalize on the shift to electric transportation. Presenters discussed potential markets, funding mechanisms, and regulatory frameworks supporting the growth of e-mobility enterprises in urban areas.

An interactive Q&A session allowed participants to engage directly with speakers, raising questions about technological innovations, financial models, and policy challenges. The discussions provided valuable insights into region-specific barriers and potential solutions for advancing e-mobility in Africa.

During session 3, **Working Groups on Innovation and Implementation** Participants were divided into two breakout groups, each focusing on a specific aspect of e-mobility deployment to foster collaborative problem-solving, namely Innovation and Implementation

The Innovation group explored technical challenges and sector coupling opportunities, discussing how e-mobility solutions can be integrated into urban and rural transportation systems. Participants examined the implications of e-mobility on grid stability, smart energy management, and infrastructure planning but also discussed behavioral change and the social aspects of mobility

Meanwhile, the Implementation group focused on bridging technology with business viability, identifying funding gaps, capacity-building needs, and policy enablers required to scale e-mobility solutions. Discussions centered on investment strategies, regulatory frameworks, and the economic sustainability of electric transport models in Africa.

At the end of the session, each group compiled actionable recommendations, outlining key priorities for future policy development, infrastructure planning, and business support programs. These recommendations aimed to inform future programming and decision-making processes within the SESA project and its partner organizations.

In the final session, the SESA Toolbox was launched, an open-access resource platform designed to provide technical knowledge, tools, and best practices for stakeholders interested in implementing e-mobility solutions. The toolbox serves as a comprehensive knowledge hub, offering case studies, policy frameworks, business models, and technological guidelines to support scalable and replicable e-mobility initiatives across Africa. Participants provided valuable feedback on the toolbox, highlighting its practical applications in various African contexts. Many expressed interests in leveraging the platform for project development, policy guidance, and skills enhancement, reinforcing its potential to accelerate the adoption of e-mobility solutions in the region.

3.4.2 Learnings and outcomes

The training equipped participants with a multidimensional understanding of e-mobility, emphasizing practical skills and knowledge to address challenges in sustainable transport.

Key outcomes included:

Technical Knowledge

- Lifecycle approach: Participants gained insights into the lifecycle of e-mobility technologies, covering the production, use, and disposal phases of batteries and vehicles.
- Battery technologies and recycling: Understanding advanced concepts in battery recycling, repurposing, and second-life applications, including practical examples from South Africa and Morocco.

Policy and Strategic Planning

- Policy frameworks: Participants learned how to design and evaluate policies promoting e-mobility adoption. This included knowledge of funding strategies, regulatory frameworks, and sector coupling opportunities.
- Innovation and Implementation: Practical approaches to overcoming technical and policy barriers in various urban and rural contexts.

Collaboration and Networking

- Exposure to a diverse set of stakeholders, including policymakers, industry experts, and academic researchers, creating opportunities for future partnerships.
- Access to the SESA Toolbox, fostering continued collaboration and implementation beyond the event.

Practical Applications

- Insights into converting internal combustion engine (ICE) motorbikes to electric vehicles, including Kenya's practical case study and steps for implementation.

- Understanding urban and rural transport dynamics and their implications for technology adoption.

Deliverables

1. Policy Recommendations

Breakout sessions yielded actionable policy recommendations aimed at overcoming challenges in e-mobility adoption. These included:

- Incentives for e-mobility investments.
 - Enhanced regulatory frameworks for the use of electric vehicles.
- ### **2. Solutions for funding and financing capacity-building activities.**
- ### **3. Collaborative Networks**
- Establishment of a collaborative network among attendees, fostering partnerships for regional and international projects.
 - Identification of potential research and internship opportunities, leveraging the expertise of stakeholders such as Siemens Stiftung, uYilo, and WeTu.
- ### **4. Enhanced Understanding of Regional Challenges and Solutions**
- Real-world case studies from Morocco, Kenya, and South Africa provided a localized understanding of e-mobility adoption challenges, including battery recycling, motorbike conversion, and business opportunities.
 - Cross-regional learning emphasized the importance of tailoring solutions to specific contexts.
- ### **5. Documentation and Dissemination**
- Comprehensive session materials, including presentations and recorded discussions, were made available for participants.
 - A summary report with outcomes and policy recommendations will serve as a reference for stakeholders to drive future initiatives.
- ### **6. Future Action Plan**
- Participants committed to using the knowledge and tools gained to initiate or scale up e-mobility projects in their respective regions.
 - Plans for follow-up workshops and collaborative efforts to monitor the impact of recommendations and resources provided during the event.

3.5 Southern Africa Regional Training

3.5.1 Training overview: Location, agenda and key details

Sustainable energy and e-mobility technology solutions to support Africa's low-carbon transition. Gqeberha, South Africa (11 February 2024)

The fourth regional SESA Capacity Building Event took place at Nelson Mandela University Business School, located in Summerstrand, Gqeberha, South Africa. The event was conducted in a hybrid format, allowing participation from both in-person and virtual attendees.

The South Africa training focused on enhancing knowledge and skills in electric mobility, renewable energy integration, and sustainable energy infrastructure. The event provided a platform for stakeholders from academia, industry, and government to discuss pressing challenges in the clean energy sector and explore practical solutions that can be adapted and scaled across African countries. Given South Africa's ongoing energy challenges, including power reliability issues and carbon emissions, this training was particularly relevant in

fostering discussions on energy resilience, smart microgrids, and innovative electric mobility solutions

The capacity building event was structured into five thematic sessions, each addressing critical aspects of clean energy and mobility solutions. The opening session set the tone for the event, with a welcome address delivered by the Director of eNtsa at Nelson Mandela University. He highlighted the university's contribution to clean energy research and innovation and its role as a SESA project consortium partner. This was followed by an overview of the SESA project presented by ICLEI Europe, who outlined the project's objectives, key focus areas, and ongoing initiatives in partner countries. ICLEI Africa introduced the capacity-building component of SESA, emphasizing how such training initiatives can support the deployment of scalable energy access technologies across the continent.

A keynote presentation was delivered by the Project Manager & Tesla Business Development Specialist at Rubicon, who provided insights into emerging trends in sustainable technologies and e-mobility. He detailed Rubicon's role in promoting electric vehicle (EV) infrastructure in South Africa, offering real-world examples of how clean technology companies are driving the transition to low-carbon transportation systems. This session resonated particularly with students and young professionals, who expressed strong interest in career pathways and skill development opportunities in the clean energy sector.

The first session focused on the integration of microgrids into rural African communities. Experts from the uYilo e-Mobility Programme presented the South Africa Living Lab case study, examining the potential for microgrid solutions to address energy access challenges in underserved regions. The discussion highlighted key lessons learned, including strategies for community engagement, financing mechanisms for microgrids, and overcoming technical and regulatory barriers.

The second session explored clean technology solutions and e-mobility, featuring presentations from SESA Living Lab representatives from Ghana, Kenya, Morocco, and South Africa. A partner from AAMUSTED, Ghana discussed the development of artisanal skills in clean energy technologies, while a representative of WeTu, Kenya showcased Kenya's advancements in deploying electric mobility solutions in peri-urban and rural areas. Again, a representative from Green Energy Park, Morocco provided insights into Morocco's progress in digitalizing clean energy infrastructure. A panel discussion, moderated by a representative from Blekinge Institute of Technology (BTH), Sweden, facilitated cross-country dialogue on best practices and challenges associated with implementing clean energy solutions in different African contexts.

The third session focused on renewable energy and e-mobility infrastructure, with discussions led by a representative from uYilo, who explored the utilization of second-life EV batteries for renewable energy storage. An expert from PV Insight followed with a presentation on solar PV quality standards, testing protocols, and failure mitigation strategies. This session emphasized the importance of quality assurance and system reliability in renewable energy deployment, sparking discussions on energy policy, independent power producers (IPPs), and grid integration challenges.

The fourth session examined Public-Private Partnerships (PPPs) and smart energy access solutions. A representative from the Automotive Industry Development Centre Eastern Cape and another expert from Coega Development Corporation shared case studies on successful collaborations between government and private enterprises to expand e-mobility infrastructure

in South Africa. Another representative from uYilo moderated the session, facilitating discussions on investment models, policy incentives, and regional cooperation strategies.

The final session centered on micromobility and energy storage applications. Again, an expert from uYilo led discussions on battery repurposing and the potential for second-life EV batteries, while another representative from uYilo emphasized the role of compliance with industry standards and testing protocols in ensuring the reliability of electric mobility solutions. A concluding panel discussion examined policy gaps and emerging opportunities in micro-mobility technology deployment.



Figure 8 Sectional view of South African training

Malawi-Uganda Clean cooking exchange capacity building session (Lilongwe – Malawi, 10 September 2024)

This workshop, facilitated by ICLEI Africa (and organized together with the Malawi Ministry of Energy), was a suitable topic following the Policy dialogue that took place on 10 September 2024. A total of 12 participants were present at the Exchange held at the Sunbird Capital Hotel in Lilongwe Malawi. These participants included selected SESA partners (such as Going Green, ICLEI Africa), various national government representatives, local government representatives and other non-government organizations involved in the clean cooking sector in Malawi. In addition, two representatives from the Uganda Ministry of Energy and Mineral Development and the Uganda Climate change department in the Ministry of Water & Environment join the exchange. Uganda is part of the Enabling African Cities for

Transformative Energy Access (ENACT) project. The ENACT project, funded with UK Aid from the UK government. It is managed by The Carbon Trust and delivered by ICLEI Africa, with support from Energy 4 Impact. The ENACT project works with local (and national) governments to create an enabling environment to provide adequate, safe, reliable, clean and affordable forms of energy to the urban poor residing in informal settlements and slums, with a particular focus on the clean cooking industry.

The exchange opened with remarks from Malawi's Ministry of Energy and Uganda's Ministry of Energy and Mineral Development. The session began with a review of the SESA project, followed by a presentation of the objectives of the exchange. ICLEI Africa then proceeded to give an overview of Nationally Determined Contributions (NDCs) and carbon financing to enhance capacity on these topics where needed and ensure a sound foundation for the discussions that followed. Representatives from Up-Energy further unpacked the carbon financing topic, with the use of examples to further enhance participants' understanding on this emerging topic before the discussion. Following this, the goal of the Exchange was to then foster dialogue on how both countries of Malawi and Uganda can better integrate clean cooking into their NDCs and access carbon financing opportunities.

In summary, the following key topics were discussed:

- **NDC integration:** Both Malawi and Uganda recognized the importance of integrating clean cooking into their NDCs. The exchange revealed that while both countries already include clean cooking in their NDCs, further work is needed to strengthen coordination and ensure effective implementation. The exchange also touched on other emerging issues that need to be incorporated into future NDC revisions, including the expanding role of carbon markets. Both countries agreed on the importance of involving the private sector in NDC implementation, particularly in the clean cooking industry. The private sector's role in driving innovation, scaling solutions, and attracting investments was recognized as critical to achieving national clean cooking goals.
- **Coordination mechanisms:** Uganda shared their experience with establishing a dedicated clean cooking unit to enhance national coordination. Malawi expressed interest in adopting a similar structure to improve internal collaboration around clean cooking initiatives.
- **Carbon financing:** A major focus was placed on the role of carbon markets in financing NDC implementation. Participants discussed how carbon finance could support clean cooking interventions by providing sustainable and scalable funding. Uganda shared examples of their efforts to access climate finance to support their NDC targets related to clean cooking.

A site visit to Dziwani cook stove facilities (Lilongwe) took place as part of the Uganda-Malawi Exchange. Following a comprehensive facility tour of the Dziwani cook stove facilities in Lilongwe, the participants engaged in reflective discussions. This site visits thus functioned as a knowledge exchange (linking to task 2.3. of the SESA project) enabled peers to exchange knowledge and learn about the clean cooking solution and their business model (amongst other things) being implemented in Malawi.

While this exchange incorporated capacity building components (linking to task 2.4) There are clear links to the activities under Task 2.3. focusing on peer-to-peer exchanges. In particular, the Clean Cooking Exchange between Malawi and Uganda representatives provided an opportunity to delve deeper into national strategies and lessons learned between Malawi and Uganda.



Figure 9 A site visit to Dziwani cook stove facilities



Figure 10 Cookstoves

3.5.2 Learnings and outcomes

The training program incorporated breakout discussions, where participants engaged in collaborative problem-solving to develop practical recommendations on key aspects of e-mobility and sustainable energy implementation. These discussions focused on three primary areas: financing mechanisms, policy gaps, and technical innovation. Participants explored strategies for securing funding for e-mobility projects, identified regulatory challenges that hinder adoption, and proposed innovative technical solutions to enhance the effectiveness of electric vehicle infrastructure and renewable energy integration. These sessions fostered critical thinking and cross-disciplinary dialogue, ensuring that attendees could apply their knowledge in real-world policy and business environments.

The program also provided valuable networking opportunities, allowing participants to build meaningful connections across academia, industry, and government. By bringing together researchers, policymakers, entrepreneurs, and energy experts, the training facilitated collaborative discussions that extended beyond the event itself. These interactions enabled participants to exchange knowledge, explore potential partnerships, and establish professional relationships that could contribute to the advancement of e-mobility initiatives in their respective regions.

Participant feedback highlighted strong interest in business models for microgrid implementation, reflecting a growing recognition of the role of decentralized energy systems

in supporting e-mobility infrastructure. Many attendees expressed enthusiasm for exploring financially viable and scalable approaches to integrating solar-powered charging stations and battery storage solutions into urban and rural settings.

Another key theme that emerged from participant discussions was the need for policy alignment between different regulatory bodies to support e-mobility adoption. Attendees emphasized that inconsistencies in energy, transportation, and environmental policies create significant barriers to investment and project deployment. There was widespread agreement that a more coordinated approach between regulatory agencies, government institutions, and private-sector stakeholders is essential to streamline implementation, create a favorable investment climate, and accelerate the transition to sustainable transportation systems.

Outcomes

The South African training on sustainable energy and e-mobility successfully provided participants with practical knowledge, technical skills, and strategic insights to advance the adoption of renewable energy and electric mobility solutions. The program facilitated knowledge sharing, industry collaboration, and policy discussions, ensuring that attendees gained actionable knowledge to implement in their respective fields.

One of the primary outcomes of the training was enhanced understanding of energy policy and financing mechanisms. Participants engaged in in-depth discussions on public-private partnerships (PPPs), investment strategies, and regulatory frameworks that support clean energy and e-mobility adoption. The training provided valuable insights into market-driven solutions and ways to align policy frameworks to facilitate large-scale implementation.

Another significant outcome was the strengthening of technical knowledge in areas such as solar PV systems, microgrid integration, second-life battery applications, and EV infrastructure development. Through expert-led sessions and practical demonstrations, participants gained critical insights into energy storage solutions, grid stability challenges, and the economic feasibility of renewable energy integration.

The training also fostered strong networking opportunities, bringing together academics, industry professionals, government officials, and entrepreneurs. These interactions laid the foundation for future collaborations, enabling stakeholders to exchange knowledge, discuss project ideas, and explore business opportunities in the clean energy and e-mobility sectors.

Additionally, the training emphasized the need for workforce development and capacity building. Many participants expressed interest in further technical training and skill development programs to bridge the gap between policy goals and practical implementation. The discussions highlighted the demand for specialized training programs to equip professionals with the necessary expertise in renewable energy systems and e-mobility technologies adoption.

4. Conclusion and Recommendations

4.1 Conclusion

The regional training activities conducted across West, East, North, and Southern Africa were highly effective in building technical capacity, strengthening policy understanding, and

fostering cross-sector collaboration to advance clean energy adoption and sustainable mobility solutions. Over 438 participants, including government policymakers, industry experts, engineers, SMEs, academic researchers, and community representatives, actively engaged in these sessions, gaining theoretical knowledge and hands-on experience in critical areas such as climate finance, solar PV systems, energy storage, biofuel cookstoves, and e-mobility innovations.

Each regional training was designed to address specific energy challenges relevant to the local context. West Africa (Ghana) focused on climate finance and hands-on renewable energy training, East Africa (Rwanda) emphasized clean cooking technologies and carbon credit mechanisms, North Africa (Morocco) explored e-mobility adoption and battery recycling, while Southern Africa (South Africa and Malawi) concentrated on microgrid integration, second-life battery applications, and public-private partnerships. The inclusion of practical workshops, policy discussions, business networking, and technical demonstrations ensured that participants not only gained theoretical insights but also developed actionable strategies to implement clean energy solutions in their respective fields.

A significant outcome of these training programs was the increased participation of women in clean energy entrepreneurship and technology development, particularly through dedicated sessions on clean cooking technologies, solar PV systems, and business development strategies. The events also facilitated cross-sector engagement, allowing stakeholders from government, academia, and industry to collaborate on innovative energy solutions.

Despite these successes, challenges persist in areas such as long-term sustainability of capacity-building efforts. Participants expressed the need for longer training durations, increased hands-on sessions, structured follow-up programs, and greater access to funding opportunities. Addressing these concerns will be crucial in ensuring that the knowledge and skills imparted translate into tangible, scalable, and sustainable clean energy solutions across Africa.

4.2 Recommendations

4.2.1 Improving Future Regional Training Activities

To maximize the impact and effectiveness of future training programs, the following enhancements are recommended:

a. Expanding Practical and Technical Training

- Increase the duration of hands-on training sessions to allow participants to gain deeper technical proficiency in solar PV installation, biofuel cookstoves, microgrid development, battery management, and climate finance modelling.
- Introduce immersive field visits and site-based training at operational renewable energy projects to provide real-world exposure and reinforce learning.
- Enhance the Toolbox and online learning platforms with interactive modules, recorded sessions, simulation exercises, and virtual mentoring, ensuring that training continues beyond the physical workshops.

b. Strengthening Post-Training Follow-up

- Develop structured post-training mentorship programs where industry experts guide participants on implementing renewable energy projects, accessing funding, and overcoming regulatory barriers.
- Implement a long-term tracking system to assess how participants apply their knowledge and contribute to clean energy projects.

4.2.2 Integrating Training Outcomes into Broader Project Goals

To ensure that the knowledge and skills gained through these training programs contribute to long-term energy transitions and sustainability, it is essential to integrate outcomes into broader energy and development projects:

a. Encouraging Participants to Apply Their Knowledge in Pilot Projects

- Provide support for trainees to apply their knowledge in real-world projects, such as solar microgrid installations, clean cooking technology dissemination, and e-mobility infrastructure development.
- Establish structured internship and incubation programs that allow graduates of training sessions to work directly with clean energy companies and research institutions.

b. Developing a Long-Term Mentorship and Knowledge Exchange Network

- Set up a regional mentorship network where past participants can receive ongoing technical, business, and policy guidance from clean energy experts.
- Organize annual networking forums to connect training alumni with funders, policymakers, and industry leaders, enabling them to scale their projects.
- Encourage continuous collaboration between training institutions, universities, and industry players to ensure the latest innovations in renewable energy are disseminated effectively.

Moving forward, continued mentorship, expanded hands-on training, and deeper policy alignment will be essential in maximizing the impact of these initiatives and driving Africa's transition to a sustainable energy future.



www.sesa-euafrica.eu

contact@sesa-euafrica.com