



May 2025

Terms of Reference

Consultancy (Organization) to support Siemens Stiftung with conducting a short-term training on Battery Technology in the Kenyan E-Mobility Sector

About Siemens Stiftung

As a non-profit foundation, Siemens Stiftung is committed to sustainable social development. We focus on three thematic areas: Secured Essential Services, Climate & Sustainability, and Connect-ed Societies. We proactively shape the necessary transformations required to address these challenges. By working with partners from the fields of Education, Social Entrepreneurship, and Arts & Culture, we strengthen collective learning and locally based, sustainable structures. Our projects and networks focus on Africa, Europe, and Latin America.

Siemens Stiftung supports entrepreneurs and professionals from the social entrepreneurship scene that are changing society for the better through innovative ideas and technical solutions. This includes assistance in conducting research projects on sustainable energy, e-*mobility* and *water* & *hygiene* as well as capacity-building for entrepreneurs and professionals with trainings, coaching, and mentoring programs. You can find more information on Siemens Stiftung's social entrepreneurship program here.

Siemens Stiftung's '*Piloting and Preparing to Scale E-Mobility in Kenya*' project, implemented under Gesellschaft für Internationale Zusammenarbeit's (GIZ) "*Promotion of E-Mobility in Kenya*" program, supports companies in Kenya's e-mobility sector to conduct Research & Development (R&D) activities that enhance the social, economic, and environmental impact of e-mobility. The project further aims to accelerate the development and scaling of e-mobility solutions in Kenya by providing targeted support to enterprises, strengthening their capacity through training, and fostering ecosystem development efforts. Learn more here.

Context

Kenya's e-mobility sector is gaining momentum, driven by national climate goals, policy support, and increased investment in clean transport solutions. Local innovators are



advancing electric two- and three-wheeler adoption, particularly in urban delivery, public transport, and fleet applications.

However, a critical technical gap persists; limited in-country expertise on battery technology — the most complex, expensive, and safety-sensitive component of any electric vehicle. While many companies are innovating in business models and hardware integration, few possess deep knowledge in areas such as battery chemistry, module and pack design, battery management systems (BMS), safety protocols, testing, or end-of-life strategies. This knowledge gap undermines the sector's ability to optimise battery performance, troubleshoot issues, manage lifecycle costs, or explore second life and recycling opportunities. It also weakens the ability to critically assess supplier specifications or adapt global technologies to local contexts — leading to potential technical, operational, and financial inefficiencies.

As battery performance and reliability become increasingly central to business success, targeted capacity building is needed to strengthen local understanding and technical decision-making around battery technology.

In response, Siemens Stiftung is commissioning a consultant to design and deliver a technical training programme focused on battery technology. The aim is to build foundational and advanced knowledge across core battery domains, supporting more informed product development, supplier engagement, and operational decision-making within Kenya's e-mobility ecosystem.

Scope of Assignment

The consultant will be expected to design and deliver a two-tiered training program on battery technology, tailored to professionals working in Kenya's growing e-mobility sector. The training should build both foundational and advanced understanding of battery systems, grounded in the Kenyan context while integrating relevant global standards, trends, and innovations that influence product development and system integration locally.

The scope of work will include:

 Design a two-level curriculum — one basic or foundational and one advanced — that addresses existing capacity gaps and aligns with the operational and technical needs of e-mobility companies in Kenya. The curriculum should integrate relevant



international developments in battery technology, ensuring contextual relevance without compromising global best practices.

- **Basic Track**: This should introduce core concepts in battery technology and electric mobility systems, targeted at professionals with limited technical backgrounds. Suggested thematic areas include:
 - Overview of battery types used in electric mobility, including global trends
 - Fundamentals of battery pack design, safety, and integration
 - Introduction to Battery Management Systems (BMS) and their role in system reliability
 - Battery performance, lifecycle, and degradation.
 - Introduction to battery safety principles, safe handling practices, and basic end-of-life considerations.
 - Overview of regulatory and certification frameworks applicable to battery technologies.
- Advanced Track: This level is intended to deepen participants' technical understanding and strengthen their ability to apply battery knowledge in realworld operational contexts. It targets professionals involved in system design, technical oversight, or product integration. The content should build on foundational concepts, suggested thematic areas may include:
 - Chemistry of battery active materials and evolving battery architectures globally.
 - Electrical testing methods, aging diagnostics, and performance optimization.
 - Advanced BMS features and integration with data systems.
 - Advanced safety topics, including abuse testing, failure modes, and risk management frameworks.
 - Circularity and innovation in end-of-life management: second-life applications, recycling, and reuse models.
 - Opportunities and limitations of localization in the context of global supply chains and OEM dependencies.
- Propose a delivery methodology that includes learning objectives, training structure, delivery format, interactive components (e.g., case studies, demos). Hybrid training is preferred.



- 3. Contextualize content for Kenya's ecosystem while drawing on international best practices and real-world case studies from other regions (e.g., Asia, Europe, Latin America) to highlight what lessons or models might be transferable or cautionary.
- 4. Incorporate practical application and critical thinking the training should not only inform but also challenge assumptions and equip participants to critically evaluate technologies they are purchasing, adapting, or integrating.
- 5. Develop and administer pre- and post-training assessments to measure learning outcomes and adapt future iterations.
- Deliver all training materials and documentation in formats suitable for reuse and adaptation by Siemens Stiftung and its ecosystem partners, including for e-learning purposes.
- **7.** Submit a comprehensive training report covering delivery, feedback, learning outcomes, insights on knowledge gaps, and recommendations for follow-up capacity-building.
- 8. The consultant is encouraged to propose additional topics or delivery formats that align with their expertise and contribute meaningfully to advancing Kenya's e-mobility capabilities. While a proposed training structure is outlined, consultants with existing curricula that meet the same learning objectives are also welcome to propose alternative concepts. Safety must be a clear priority, with training content addressing safe handling, storage, testing, and relevant technologies.

Methodology

Proposers are expected to outline a detailed methodology that clearly demonstrates their approach to delivering both the Basic and Advanced training sessions. The two sessions will be conducted separately, with adequate time between them to allow participants to absorb and apply knowledge gained from the first session before advancing to the next.

The methodology should include:

- **Training Structure and Scheduling**: Specify the proposed structure and duration of each training session (e.g., three days per tier). Indicate your preferred scheduling including the spacing between Basic and Advanced sessions. At least 60% of each training should consist of practical, hands-on components.
- **Mode of Delivery**: The consultant should specify the delivery format in-person, virtual, or hybrid. A hybrid model is preferred to balance accessibility and hands-on



engagement. Virtual components or demos can be proposed if feasible, especially through partnerships with relevant labs or institutions (local or international).

- Content and Training Approach: Present an outline of the content to be covered under each training tier and explain the instructional methods to be used—e.g., lectures, discussions, hands-on demos, group exercises, or case-based learning. The proposal should highlight how the delivery will be adapted for a technically diverse audience.
- Materials and Learning Resources: Indicate the materials and resources that will be made available to participants—such as slide decks, handouts, case studies, practical guides, or reference toolkits—and how these will support post-training retention and application.
- **Participant Engagement**: Describe methods for ensuring participant engagement across both tiers, especially in managing varied technical backgrounds. This may include breakout groups, Q&A segments, polling, live demonstrations, or scenario-based problem solving.
- Evaluation and Feedback: Propose a mechanism for assessing training effectiveness and knowledge uptake. This could include pre- and post-training assessments, feedback forms, or brief reflection sessions to track relevance and applicability.
- Workplan and Timeline: Provide a detailed workplan outlining the proposed schedule, key activities, deliverables, and timelines, including preparatory phases, training delivery, and follow-up.
- Follow-On Support (Optional): Proposers are encouraged to include suggestions for light-touch follow-on support to reinforce the application of knowledge post-training. The nature and scope of post-training support should be aligned with the consultant's capacity and clearly defined in the proposal, including any cost implications.
- **Digital Adaptation for E-Learning:** As part of the engagement, the consultant will be expected to tailor selected training content for onboarding onto our e-learning platform. This includes adapting materials into suitable digital formats (e.g. slide decks with narration, toolkits), aligned with the platform's standards. Proposers



should outline how this deliverable will be integrated into their work plan, including timelines and the support required.

Expected Outcomes

By the end of the training, participants will:

- Demonstrate solid understanding of core battery technologies, including chemistry, configuration, safety, lifecycle, and battery management systems, applicable across e-mobility contexts.
- Apply practical skills to operate, maintain, and troubleshoot battery systems effectively, anticipating common issues and adapting solutions to varying real-world conditions.
- Implement and uphold robust safety protocols in daily battery handling, storage, and charging practices, minimizing risks and ensuring safe operations.
- Evaluate battery lifecycle and sustainability considerations, including options for reuse, second-life applications, and end-of-life management aligned with evolving standards.
- Communicate technical battery concepts clearly across functions, facilitating collaboration between technical and non-technical stakeholders within their organizations.
- Cultivate a culture of peer learning and knowledge sharing that extends beyond the training, enabling ongoing exchange of experiences, challenges, and best practices.

Profile

Siemens Stiftung seeks a qualified individual consultant, firm, or consortium to design and deliver a two-tiered battery technology training programme, tailored for professionals and entrepreneurs in Kenya's e-mobility ecosystem.

The ideal consultant will demonstrate:

- A strong record of delivering technical training that clearly explains complex battery technologies — including cell chemistry, BMS, safety, and lifecycle management to diverse professional audiences.
- Experience conducting practical training in controlled environments with documented safety standards, and the capacity to deliver at least 60% hands-on content.
- Expertise across various battery technologies, including cell and pack design, battery management systems, safety, lifecycle analysis, second-life use, and end-of-life



strategies. The consultants should have or demonstrate access to at least two experts covering both hardware and software applications of battery technology.

- A grounded understanding of the opportunities and constraints faced by e-mobility companies in Kenya and the need to adapt technologies to local conditions.
- Ability to structure and deliver content for both basic and advanced learning levels, with a clear progression between the two.
- Use of relevant case studies, group work, demos, and real-world scenarios to ensure participants can apply the knowledge to their businesses or roles.
- Ability to engage professionals from a range of technical backgrounds including entrepreneurs, product teams, and operations leads with clarity and relevance.
- Access to broader learning resources such as access to labs, case studies, or other reference points that can enrich the training — without disconnecting from Kenya's operating context.

Budget

The budget for this consultancy is **EUR 20,000** to **EUR 30,000**. Siemens Stiftung will cover all venue and participant-related costs separately; consultants should exclude these expenses from their financial proposals.

Application Process

Please send your application in PDF format maximum of 10 pages (*this limitation excludes CVs and supporting documents*).

The submission should include a cover letter, CVs, proposed approach for training modalities and work packages, relevant certifications or trainings received (if available), proposed budget with man-days, and list of relevant work experiences with references to winnie.njogo.ext@siemens-stiftung.org

We are offering a Q&A session for interested bidders on **Thursday**, **12**th **June 2025**, **11am EAT**. Please register for the session using the following link <u>HERE</u>.

Deadline for submission: 30th June 2025 11:59 PM EAT