Circularity Knowledge Hub for Electric Vehicle Batteries

Terms of Reference

Position 1: Researcher/Technician – EV battery EOL investment attractiveness and readiness analyst and researcher

Position 2: Researcher/Technician – EV battery technician and researcher

Background

Electric vehicles (EVs) are increasing year by year in Jordan due to the government's push toward clean transportation and the economic benefits recognized by consumers. With this increasing popularity comes the challenge of handling spent EV batteries. Only considering EV imports from 2018 to 2022 shows that there are already 130,835 spent EV batteries that have entered or will soon enter the Jordanian waste stream. Hence Jordan must explore, plan for, and accelerate the adoption of sustainable handling and circularity of these spent batteries. For this to be possible the status quo life-cycle dynamics and routing of EV batteries from the start of their "life" in Jordan to the end of their "use" must be mapped. Meanwhile, policies and regulations to support the circular economy are needed. The circular economy promotes the recovery of a product's value at the end-of-life i.e. when no longer used or damaged. Thus, the product life cycle is extended and the circular economy permits to waste accumulation reduction, resource rarefaction, and boost economic growth. Lastly, to push for the realization of the circular economy paradigm investment is needed to take the lead in pushing the process.

Much interest and urgency have been recognized in Jordan. However, implementation by investors to process spent batteries through the various EOL strategies is lacking. Moreover, independent and scattered efforts to refurbish these batteries by individual mechanics and technicians are becoming more prevalent. Hence, there comes an urgency to promote policy development and knowledge transfer on this matter so as to support more safe, sustainable, and economically promoting of these batteries. Knowledge transfer and stakeholder engagement are pivotal for adopting circular economy models. Moreover, for EV battery circularity to be realized in Jordan, the following questions must be addressed:

- Where does Jordan currently stand?
- Who are the stakeholders and what are the stakeholder needs in the EV battery circular economy?
- What are the necessary “status quo” alleviation needs for Jordan’s EV battery End-of-life management?
• What are the necessary long-term support pillars and infrastructure needs for Jordan’s EV battery circular economy?
• How can Jordan attract investors to capitalize on spent batteries?

Accordingly, in this project, a Circularity Knowledge Hub for Electric Vehicle Batteries will be founded. The vision for the hubs is to “strengthen local value creation from spent EV batteries in a sustainable and economically feasible way”. Correspondingly, the mission of the hub is to guide and advise stakeholders to untap economic opportunities from spent EV batteries by developing sustainable EOL strategies’ for spent EV batteries in Jordan. The hub will be guided by a consortium of key technical experts and will operate based on the recommendation of an advisory board that consists of various stakeholders from the public and private sectors. Thus, warranting that available resources for testing and advisory are used efficiently. Finally, the hub will be stationed at the German Jordanian University.

**Scope of work:**

1. Enhancing Jordan’s attractiveness for investments in sustainable EOL strategies.
2. Improving operational and safety protocols related to EV batteries in Jordan for the current status quo operations related to EOL management in Jordan.
3. Initiating the creation of an EV battery circularity consortium in close cooperation with EDAMA Association to guide, inform, and advance EV battery circularity based on the dynamic and evolving Sociopolitical and Economic environment in Jordan.

The German Jordanian University and the EV battery Circularity Knowledge, in collaboration with the GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit), is dedicated to providing solutions for sustainable EOL management of EV batteries in Jordan through the aforementioned work.

Hence, the project is seeking 2 researchers/technicians to ensure the successful employability of the project. Position 1 is seeking a Researcher/Analyst to work on EV battery EOL investment attractiveness and readiness. Position 2 is seeking a Researcher/Technician to work on EV battery disassembly, assembly, and testing. The project commenced in the summer of 2024.

**Timeframe:**
ASAP to July 1st 2025

**Note:** These assignments are part of a research & development project funded by The Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH, (GIZ), and coordinated by the German Jordanian University (GJU). Thus, the selected applicants will not be considered official employees of the German Jordanian University.

**For submission of applications, questions, and inquiries please contact:**
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Position 1: Researcher/Analyst – EV battery EOL investment attractiveness and readiness

Type: in-person and remote (50% in-person 50 % remote-flexible start and end hours)

Responsibilities:

- Data collection and analysis on battery waste accumulation and end-of-life processing methods in Jordan
- Tracking and traceability analysis and design
- Operational and Safety Manual development
- Field visits to mechanic shops and waste sites
- Mathematical and simulation modelling
- Studying the feasibility of different investment options

Qualifications:

The Researcher shall provide his/her resume, and should have the following qualifications:

- Experience in related field (e.g., industrial engineering, business, investment feasibility assessment methods, economic development);
- Knowledge on EVs or EV batteries
- Commitment to sustainable development
- Strong networking skills to build relationships with potential employers
- Excellent technical writing skills
- Excellent communication and interpersonal skills
- Understanding of the local EV and EV battery market
- Strong communication and mentoring skills
- Have financial literacy skills
Position 2: Researcher/Technician – EV battery EOL technician

Type: in-person and remote (70% in-person 30% remote; flexible start and end hours)

Responsibilities:

- Data collection and analysis on battery waste accumulation and end-of-life processing methods in Jordan
- Experimental test bed setup for battery assembly, disassembly, and testing.
- Operational and Safety Manual Development
- Field visits to mechanic shops and waste sites
- Mathematical and simulation modelling
- Material selection and specification defining
- Research and execution of various battery inspection and testing methods

Qualifications:

The Researcher shall provide his/her resume, and should have the following qualifications:

- Experience in related field (e.g., mechanical engineering, electrical engineering, electric vehicles)
- Knowledge of the repair, refurbishment, or remanufacturing of EV or EV batteries
- Technical hands-on disassembly, inspection, diagnostic, and reassembly experience
- Excellent technical writing skills
- Excellent communication and interpersonal skills
- Understanding of the local EV and EV battery market
- Strong communication and mentoring skills