

SUMMARY OF THE PROJECT IN DESIGN * (*)

Lithium Battery reuse and servicing facility

PITCH ELIGIBILITY DATE		COUNTRY(IES)
10/06/2022		Barbados
ALIGNED WITH COUNTRY STRATEGY?		
Yes		
PARTNER(S)		
Aceleron Limited		
PRELIMINARY CLASSIFICATION ENVIRONMENTAL AND SOCIAL IMPACT		
B (**)		
TOTAL BUDGET	IDB Lab	LOCAL COUNTERPART AND COFINANCING
US 500,000	US 250,000	US 250,000
DESCRIPTION		

The problem Within Barbados the transition to renewable energy is critical, particularly given that the national grid relies on electricity generated predominantly by fossil fuels and the cost of fuel is increasing significantly from already one of the comparatively highest rates in the Caribbean. Advancing local solar systems is a core solution however without the addition of a storage component this energy supply is also limited to times of good weather and provides no value in a post hurricane/natural disaster context. Battery technology to this point has proven to be an expensive solution rife with issues that are not able to be maintained making the batteries themselves consumable items that cannot be easily repaired or recycled. This has led to a situation in which only the wealthy are able to afford a constant supply of electricity to their homes and businesses – this hampers the development of poorer communities and limits the viability of businesses that are unable to afford expensive systems with high capital requirements.

Notwithstanding the economic implications of the consumable battery model, there are environmental costs that are mitigated with a reusable battery model. A major environmental concern lies in the improper dumping of waste lithium batteries in illegal dumping sites, where toxic heavy metals from the e-waste can readily leach out into waste streams with no route to local recycling. In the Caribbean, there is a large volume of battery-based e-waste products that is starting to accumulate, specifically from renewable energy storage and mobility. Current lithium-ion battery technology welds the cells within batteries together meaning that if one (sometimes out of thousands) malfunctions the entire battery is deemed 'end-of-life'. With the typical lithium battery designed to last 3-5 years in their primary application, more than 80% of batteries are net contributors to CO2 emissions. Further, with lithium being a limited resource only available in a few countries and its extraction already requiring large quantities of water and energy, the disposable battery model is a highly inefficient use of the resource with a high impact on the environment.

The solution For this project, Aceleron proposes creating an e-waste testing, battery building and servicing facility in Barbados through a phased approach. The first phase (24 months) to be covered

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**The IDB categorizes all projects into one of six E/S impact categories. Category A projects are those with the most significant and mostly permanent E/S impacts, category B those that cause mostly local and short-term impacts, and category C those with minimal or no negative impacts. A fourth category, FI-1 (high risk) Financial Intermediary (FI)'s portfolio includes exposure to business activities with potential significant adverse environmental or social risks or impacts that are diverse, mostly irreversible or unprecedented, FI-2 (medium risk) FI's portfolio consists of business activities that have potential limited adverse environmental or social risks or impacts, FI-3 (low risk) FI's portfolio consists of financial exposure to business activities that predominantly have minimal or no adverse environmental and social impacts.

in this project will encompass (i) market and feasibility analysis as well as legal institutional guidance – including requirements for waste-stream management (including end-of-life Electric Vehicle batteries) in Barbados and wider Caribbean, environmental and regulatory compliance; (ii) business plan development and institutional strengthening – develop financial projections, operational guidelines towards the establishment of a battery servicing facility that is capable of servicing initially the Barbados market, scaling to service the wider Caribbean in the medium term, engage with key stakeholders, develop regional partnerships, build institutional capacity and strengthen arrangements for upscaling service area; (iii) capacity building – onboard a first cohort of battery servicing engineers building technical skills of local talent to enable efficient launch of the local facility; and (iv) a pilot deployment of a battery servicing/repurposing facility for the local market.

The second phase will be delivered through a follow-on project based on the findings of phase 1, focused on scaling the battery reuse and servicing facility to serve a wider local and regional market. This facility will process waste lithium-ion batteries and build new battery products from the viable cells. This would in turn provide an in-region testing and assembly site for Aceleron's patented lithium-ion batteries, some of which are already in use in the region.

The beneficiaries The batteries built by the pilot facility combined with an ESaaS model will offer a viable opportunity for a clean and robust electricity supply that will benefit businesses and consumers in the country's rapidly-expanding renewable energy market. The direct and indirect beneficiaries will include users of lithium batteries in Barbados, estimates of which will be determined during the market feasibility study at the onset of this project.

By end 2022 Aceleron will install lithium batteries at 7 small hotels (<25 employees) and 3 small and medium sized businesses (10-15 employees) in Barbados, through the implementation of the Better Batteries project (BA-T1077, B1-G1003). Waste batteries from these hotels and SMEs will be reused and serviced locally at the pilot facility, reducing operating costs in energy generation and improving efficiency in unit maintenance at these sites.

Aceleron will first retain two local staff (1 technical lead, 1 junior technician), in alignment with Aceleron's diversity principles for equal opportunity employment. Aceleron will create further employment opportunities in Barbados, complemented by training and enhancement of installer skills on the island. The capacity building and transfer of technical and project management skills to the local market allows local battery storage systems that can better facilitate the emerging PV market in Barbados and the wider Caribbean region.

The partner Aceleron U.K., the sole applicant for this project, is a clean tech company with a proven track record in technical project delivery, including in Barbados. Aceleron has also had experience of successfully setting up a similar facility in Kenya which remains operational, and training of personnel on the specialized battery technology.

Aceleron will seek the services of an in-country electrician and solar installer for the Barbados facility. The company has already worked with several viable sub-contractors that would be appropriate for the project. As part of the project, Aceleron will also explore the options and viability of partnering with an in-country manufacturing supplier for some of the battery parts.

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The IDB Lab's contribution Recommended financing in the form of a non-reimbursable technical co-operation (NRTC) of up to \$250,000 to be financed through GEF resources allocated to the BlueTech for Waste Challenge.

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