

# Facility for Low Carbon Technology Deployment

## BEE UNIDO GEF Initiative

### Terms of Reference

---

## Electrical Energy Storage Systems Innovation Challenge 2020

The **Facility for Low Carbon Technology Deployment (FLCTD)**, a project of the United Nations Industrial Development Organization (UNIDO) implemented in collaboration with the Bureau of Energy Efficiency (BEE) is launching the 2020 Innovation challenge in the “Electrical Energy Storage Devices & Systems” vertical.

Entries are invited to the 2020 FLCTD Innovation Challenge to identify promising innovative solutions in Electrical Energy Storage (EES), which can be deployed for various stationary and mobile end-applications in Micro, Small and Medium industries, urban mobility, to reduce usage of fossil fuel. The maximum award per entry is up to US\$50,000 (excluding GST) and the total award money earmarked for this particular vertical for 2020 Annual Innovation Challenge is US \$500,000.

Entries are now invited for EES innovations in the following area:

- a) **Electrochemical Battery:** Innovations that improve the energy storage capacity of rechargeable battery to withstand higher number of charging-discharging cycles suited for end-use grid-connect applications, off-grid stationary or mobile applications. Battery should demonstrate efficiency, energy density levels, higher than what is available in the market. Innovation may include improvement in design, materials for electrodes, electrolyte, to increase operational life and / or increasing the recyclability of various components.
- b) **Super Capacitors systems:** Innovations that demonstrate higher levels of energy storage capacity, quick charge/discharge cycle and the ability to consistently harvest energy in a short-time together with capacity to deliver high-power output to suit requirements of stationary and mobile end-applications. Innovation may include improvement in design, material of construction, to increase operational life and / or increasing the recyclability of various components.
- c) **Critical components for EES systems including Power Conversion Systems:** Innovations in design and construction of critical components of energy storage system and/or component materials and circuitry to enhance charge-discharge efficiency that result in enhancing the overall life of energy storage system. The design improvement should be targeted for a specific end-application of energy storage system comprising of batter and/or super capacitor or its combination in either grid-connect or off-grid or mobile application.

## Eligibility and Qualifiers

All innovative solutions should be based on proof-of-concept or early stage prototype and clearly indicate the technology gap being addressed.

Following are the indicative qualifiers:

- Emerging and novel technology applications
- Improvement in materials used,
- Innovation in overall system design in application ESS solution for delivery and maintain optimum energy access efficiency level for end-use application
- Design improvements

## Who Can Apply?

- The innovation challenge is open to Entrepreneurs, Startups, Indian Technical Institutes / Universities, Research Institutes, Micro, Small and Medium Enterprises, Industries, Public Sector Enterprises and Government Laboratories.
- Consortium of Indian companies, non-profit organization, associations, academic institution, R&D organization
- Indian Start-up companies and collaborations with Industry/Academia/research institutes/ are highly encouraged to apply
- Technologies funded under Department of Science and Technology (DST) and other government schemes, at pre-market phase (TRL 4 - TRL 6) and ready for field demonstration will be given preference
- Innovation teams with **women entrepreneurs** will be given preference.

## Incentives for Participation

- **Grant** up to USD 50,000 to the winners for technology demonstration and validation at multiple locations, wherever required;
- **Performance Verification** to establish the efficacy of innovative technology in the working conditions;
- Fund-raising support after successful completion of technology validation;
- Recognition from Bureau of Energy Efficiency and UNIDO;
- Grant disbursement will be linked to the progress. Indicative progress-based milestones are:
  - 30% of the award grant will be given to the innovator winning the innovation challenge upon submission of plan for technology demonstration after signing the contract
  - 50% after installation/commissioning of the innovation
  - 20% at the end of the deployment phase, upon completion of Technology Verification Reporting

## Parameters for Selection

*This is only an indicative list, and is not exhaustive, and is subject to change and modification.*

- Nature of innovation (Product design/ Process Innovation)
- Addresses a key issue/technology gap in the industry
- Replication potential
- Energy saving and greenhouse gas emission reduction potential
- Financials (pay-back period, Internal Rate of Return)
- Technology readiness stage (R&D/ Prototype/ Pilot demonstration/ Commercial)
- Intellectual Property Rights/ Patents (granted/ applied)
- Expertise of the project team

## General Guidelines, Terms, and Conditions

- Participant shall submit solutions/ product designs owned by them or to which they have right to claim and use as owned by them. Suitable documents to this effect must be submitted along with the entry.
- Participant shall ensure that any submission made in the Challenge does not violate any of theirs or any third party's intellectual property rights, confidentiality, trade secret and violate any statutory provisions.
- BEE, UNIDO, its employees, members of Expert Panel and organizers of this innovation challenge shall in no event be liable for any violation of IPR, or license or permits required from third party.
- Participant shall not assign any rights, obligations, or privileges hereunder without the prior written consent of Organizers of the Challenge.
- BEE, UNIDO, Organizers, members of Expert Panel, supporting organizations or any employee or agent shall not be liable for, any costs incurred or loss or liability or loss in expectation of profits or loss due to failure of understanding the terms and conditions of the Challenge or of any expected benefit of the participant in relation to entry and submission in the Challenge.
- By way of selecting the entries for evaluation at any Stage or for Final Award, Participants shall not be entitled to claim or have got endorsement from BEE and UNIDO of any sought whatsoever, or have earned approval of any sought whatsoever of BEE and UNIDO, for use in any form whatsoever anywhere in the Industry.
- At any Stage while evaluating the entries, organizers shall be free to contact the Participants and carry out discussions on the matter submitted by the Participants and seek clarifications. Any solicitation by participants in whatever form in respect of their entries shall not be entertained and entries of such participant shall be disqualified from the Innovation Challenge.
- BEE/UNIDO/Organizers may change the Terms and Conditions of participation at any time without prior notice. It shall be sole responsibility of the Participants to update themselves of information posted in the website from time to time.
- BEE/UNIDO/Organizers may disqualify a Participants from the Challenge for breach of any of the conditions of this Challenge, or discontinue this Challenge.