

MISSION INNOVATION

Accelerating the Clean Energy Revolution

Off-grid Access to Electricity Innovation Challenge – Progress Summary

Issue

Access to affordable fossil-free electricity for rural and urban households is a major challenge at the global level and is identified as one of the UN sustainable development goals. According to the World Bank's Global Tracking Framework, an estimated 1.06 billion people – 15% of the global population – did not have access to electricity in 2014.

For isolated household or communities, research and development (R&D) is needed to bring down the cost of reliable low carbon off-grid solutions, either to equip people with no access or to modernize existing systems by switching to renewable energy. In the short term, innovation on components, efficient appliances and systems optimization may reduce the cost of delivered electricity for essential needs, such as lighting and communication. In the longer term, breakthrough technologies could be incorporated to provide greater services. Beyond greenhouse gas emissions reductions, the outcome is an energy system in which uninterrupted supply becomes the expectation rather than the exception. This will translate into increased productivity and a major boost to economic activity.

Objective

The objective for the Off-grid Access to Electricity Innovation Challenge is to develop renewable systems that are cheaper than fossil fuel alternatives for affordable access to electricity by off grid households and communities.

For individual homes, the objective is to support the significant reduction in price and increase performance of renewable power systems by 2020.

For remote communities, the objective is, by 2020, to demonstrate in diverse geographic and climate conditions, the robust, reliable, autonomous operation of renewable power systems up to around 100 kW at a significant lower cost than today.

Organization

The Off-Grid Access to Electricity Innovation Challenge is co-led by France and India.

Other participating members include: Australia, Brazil, Canada, China, European Commission, Finland, Indonesia, Italy, Mexico, Norway, Saudi Arabia, Republic of Korea, Sweden, the Netherlands, the United Kingdom, and the United States.

Approach

To address this Challenge, innovation needed on technologies includes renewable sources integration, storage and smart mini-grids management technologies (systems safety, reliability, interoperability and scalability, etc.) but also efficient appliances design. Beyond technology, local implementation conditions

should also be able to cope with limited access to skilled labour and infrastructure financing, and include innovation on installation, operation and maintenance, standardization issues and business models allowing a sustainable deployment.

The Off-grid Access to Electricity Innovation Challenge will focus on R&D at the mid- to high- Technology Readiness Levels, and advance three areas of work:

1. Develop in 2017 a common understanding of the state of the art solutions, gaps and opportunities, to define precise and measurable targets and inform further national and multi-national efforts.
2. Mobilize stakeholders for the challenge and boost engagement from the R&D community but also from companies, foundations and nongovernmental organizations, who can identify critical needs on the ground and work with local communities to accompany innovation.
3. Launch prize(s) and/or call(s) for demonstration projects, to support the experimentation of innovative solutions between now and 2020.

Progress

As a first action, the Innovation Challenge co-leads have gathered information from members about ongoing national activities linked to the challenge (to get a consolidated view and to enable potential match making for new collaborations), existing international initiatives linked to the challenge (to build a list of potential partners, maximise leverage and focus on critical gaps) and ideas about real bottlenecks and precise measurable targets for the challenge within the MI timeframe (to share a common understanding of what success looks like).

Based on the results of the survey and of a stakeholders' workshop organized in Delhi in May 2017, a synthesis state-of-play document has been drafted and is being shared at the Mission Innovation Ministerial meeting in Beijing in June 2017.

Next Steps

An international workshop will be held in Paris on July 12, 2017 in collaboration with the International Energy Agency. More than 100 participants (researchers, companies, development banks, international organizations, and NGOs) will be invited. The expected outcome is the identification of gaps for innovation and definition of more precise targets and milestones for the challenge. A report will be published in the following months on the basis of the workshop discussions and on members' inputs.

In the second half of 2017 and in 2018, interested members will launch, individually or together, a series of calls for projects and prizes to attract innovators. The supported demonstration projects should include local experiments and cover various conditions (size, climate, renewable resources, services provided, etc.).

A new state of the art report summarising the progress made, lessons learned, breakthroughs, and the remaining innovation needs and barriers to uptake will be published in 2020.