



Clean energy initiative accelerating innovations

The role of renewable energy has become critical as nations have to contend with the increasingly devastating impact of climate change, largely caused by rapid industrial developmental activities. A cleaner and more resilient future energy system with net-zero emissions requires a wide range of technologies, some of which are still at an early stage of development. Mission Innovation initiative was launched during Paris Climate Change Agreement in Nov 2015. It is a global initiative of 24 countries and the European Union working to accelerate clean energy innovation.

The programme aims at coordinating the activities of Mission Innovation (MI) with Clean Energy – Research, Development and Design (RD&D) initiatives in India, in close partnership with other partnering countries, and apex Mission Innovation Secretariat worldwide. The Department of Biotechnology (DBT) is the nodal agency for supporting and coordinating clean energy national efforts in collaboration with Department of Science and Technology (DST) and other line ministries of Government of India.



The clean energy initiatives have successfully stimulated global and national innovation efforts by increasing public investments, private sector & start-up engagement and becoming the main inter-governmental platform for collaboration around shared clean energy innovation interests.

The joint efforts of researchers, academicians, entrepreneurs, start-ups and private sector have reinvigorated and accelerated the achievement of public and private global innovation for clean energy, which would make it widely affordable.

A concerted effort is being made to enhance the pace of innovation and scale of transformation for clean energy revolution through -

- a) Increased international research, development & design collaborations
- b) Increased private sector engagement and investment



- c) Clean energy investment and technology innovations
- d) Delivering the mission innovation breakthroughs
- e) Raising awareness of the transformational potential of energy innovation
- f) Turning awareness into action
- g) Information sharing and outreach activity

Mission Innovation initiative has successfully stimulated global innovation efforts by increasing public investments. It is the main inter-governmental platform for collaboration around shared clean energy innovation interests. Strategic international collaborations on clean energy innovation are being promoted and catalyzed.

Technology innovation processes are complex, and can be challenging for decision makers. Many success stories have emerged relating to India's energy technology research and innovation systems. A Consultative and Collaborative approach has been followed since the inception of this Clean Energy initiative focusing on technological solution, technology improvement, product innovation and simultaneously supporting ideas and inspiration of various start-ups engaged in Clean Energy.

Sociopolitical support is essential for innovation activities to succeed. Targeted energy technologies need subscription and support from public-private partners and major industry incumbents. Unique research and innovation model platform(s) have been developed to provide support from "proof of concept" to "pre-commercialization stage" under Clean Energy Initiative. They cover breakthrough clean technology, innovative waste to energy, energy efficiency and energy access converge and offer transforming potential the way the world produces and consumes energy.

The proactive, curated and demand driven technology scouting under this "collaborative" initiative has helped identify cutting edge innovation and science & technology developments at a deployable stage. A few technologies are being taken forward to next level for implementation in collaboration with suitable stakeholders. The Clean energy initiative is making a concerted effort via bold ideas and breakthrough solutions to enhance the pace of innovation and scale of transformation to strengthen the Energy Innovation Ecosystem.

Funding opportunities in biofuels/ waste to energy have helped in focusing on key gap areas in biofuel research to make them more sustainable and cost-effective. It helps accelerate the innovation ecosystem and brings together the global biofuel research community. It encourages participation of local stakeholders for risk mitigation and takes forward the innovation from lab to pre-commercialization stage.

A recognition programme, "Mission Innovation Champions" has been instituted to celebrate and support innovative researchers, accelerating the clean energy revolution.

The Department of Biotechnology (DBT) and BIRAC (Biotechnology Industry Research Assistance Council, a public sector undertaking) BIRAC have joined hands with Tata Trusts, to set up the first "Clean Energy International Incubation Centre (CEIIC)" in Delhi under the mission to provide support to start ups and innovators at early stage of innovation.

The Clean energy initiative has helped in developing India centric innovations focused around user needs. It has forged strong collaborations between the public sector, private sector, industry, academia, research, start-ups and SMEs. The initiative has also helped in developing a critical mass of more than 500 researchers to meet requirements of R&D professionals and trained manpower for clean energy as also support upstream-end of research, where knowledge, more advanced than the current practice in the industry must have a space.

