Solar Energy Corporation of India Limited

(A Government of India Enterprise)

EU-INDIA
CLEAN ENERGY & CLIMATE PARTNERSHIP

Closed door webinar between the EU, EU Member States, European companies and SECI on (a) possible green hydrogen pilot(s) in India

Friday, 9th October 2020 from 11:00 AM to 1:00 PM CET (2:30 PM to 4:30 PM IST)

1. Introduction: Need for Hydrogen Energy in India

India's demand for energy is set to double by 2040, and its electricity demand may triple, estimated in the recent report launched by IEA[1]. The country's oil consumption is expected to grow faster than that of any other major economy, making energy security an even bigger priority for policy makers. Hydrogen based energy can play a substantial role in overcoming a variety of challenges linked to the required energy transition to increase energy security and ensure reliable, affordable and clean energy, including the grid integration of renewables and the decarbonization of hard-to-abate sectors. Ministry of New & Renewable Energy (MNRE) has launched Hydrogen Road Map, with an aim to prepare Action Plans and Programs on different components of the hydrogen energy system, to realize the Vision of Hydrogen energy for India in the coming decades.

2. About Solar Energy Corporation of India (SECI)

SECI is a public sector enterprise under the administrative control of Ministry of New and Renewable Energy (MNRE) with primary objective to facilitate renewable energy projects in India. Right from the inception in 2011, SECI has played a key role in fostering renewable energy growth in India facilitating more than 50 GW of solar and wind energy.
The company is responsible for implementation of a number of schemes of MNRE, major ones being development of solar parks (40 GW), VGF (Viability Gap Funding) schemes for large-scale grid-connected projects, Inter-state based solar and wind projects, grid-connected solar rooftop scheme, solar wind hybrid, manufacturing linked solar, solar with energy storage, along with a host of other specialized schemes such as defense scheme, canal-top scheme, etc. In addition, SECI has its own portfolio of projects and has been developing projects on turnkey basis for several companies. The company also has a power trading license and is active in this domain through trading of solar and wind power from projects set up under the schemes being implemented by it. In Feb 2020, SECI also concluded the reverse auction for the world's largest renewable-cum-energy storage power tender for a contracted capacity of 1200 MW, with assured supply for 6 hours daily during peak demand hours.

[1] https://www.iea.org/reports/india-2020?utm_campaign=IEA%20newsletters&utm_source=SendGrid&utm_medium=Email

Hydrogen energy in India is poised to grow at exponential phase across various applications including storage for renewable energy grid integration, automotive mobility, industrial (fertilizers, chemicals etc.). Although, the current traditional approach for hydrogen generation are energy intensive with high carbon footprint. Realizing the potential of Hydrogen energy in India, SECI is considering to develop a pilot Project of Green Hydrogen with a capacity up to 2000 tonnes per annum for fertilizer application, prior to launching it in a pan-India mission Mode, to integrate hydrogen across various applications.
More information about SECI may be obtained on the website: https://www.seci.co.in/

3. Hydrogen Ecosystem in Europe:

Investment in hydrogen will foster sustainable growth and jobs, which will be critical in the context of recovery from the COVID-19 crisis. Europe is highly competitive in clean hydrogen technologies manufacturing and is well positioned to benefit from a global development of clean hydrogen as an energy carrier. Cumulative investments in renewable hydrogen in Europe could be up to EUR 180-470 billion by 2050, and in the range of €3-18 billion for low-carbon fossil-based hydrogen.
Combined with EU's renewables technologies objectives, the emergence of a hydrogen value chain serving a multitude of industrial sectors and other end uses could employ up to 1 million people, directly or indirectly. Analysts estimate that clean hydrogen could meet 24% of energy world demand by 2050, with annual sales in the range of €630 billion.
The hydrogen ecosystem in Europe is likely to develop through a gradual trajectory, at different speeds across sectors and possibly across regions and requiring different policy solutions. In the first phase, from 2020 up to 2024, the strategic objective is to install at least 6 GW of renewable hydrogen electrolysers in the EU and the production of up to 1 million tonnes of renewable hydrogen, to decarbonize existing hydrogen production, e.g. in the chemical sector and facilitating take up of hydrogen consumption in new end-use applications such as other industrial processes and possibly in heavy-duty transport.
On 8 July the EU hydrogen strategy was adopted. This strategy will explore how clean hydrogen can help reduce the EU economy's carbon emissions, and make the EU climate-neutral by 2050. To support the emergence of a whole hydrogen eco-system in the EU, the EU Commission recently also launched the European Clean Hydrogen Alliance. It brings together the industry, national, regional and local public authorities and the civil society to one single platform. Through interlinked, sector-based CEO round tables and a policy-makers' platform, the Alliance provides a broad forum to coordinate investment by all stakeholders and engage civil society.
The closed webinar can also leverage the alliance connect and encourage key players in EU MS to participate and utilize the potential opportunity in India.

4. Objective: Webinar on Adopting Hydrogen Energy in India from EU MS experience and technologies:

With an exponential growth in Solar & Wind based RE generation plant in recent past, SECI intends to take a path breaking effort in the field of Hydrogen in power generation and industrial

application. Agriculture being one of the major commercial activities being pursued by majority of the population, there is a huge consumption of Fertilizers in the country. Total annual Urea consumption in India is around 32 Million Metric Tonnes (MMT) which requires around 2.13 MMT of Hydrogen. The other potential area for Hydrogen energy is the stationary storage segment for grid integration of renewables for maintaining grid stability and managing intermittency of renewables. The CEA estimated around 136 GWh of stationary storage requirement by 2030 to integrate 450 GW of renewables in India. Most of this Hydrogen is produced from steam reforming of Natural Gas or Naphtha, which are energy intensive with a high carbon footprint. Fuel costs are the largest cost component, accounting for between 45% and 75% of the production costs[2], with reducing tariffs for renewables in India the cost of H2 production will reduce and the adoption will increase across the different sectors. SECI aims to establish a carbon neutral ecosystem to produce Green hydrogen. It may be in stages also, depending upon viability.

In this context, a virtual meeting will be organized by EU under the Clean Energy Climate Partnership (CECP) to connect European companies with SECI in order to explore possible cooperation in the area of Green hydrogen.
The objectives and outcomes of the proposed webinar:

- Understanding Hydrogen Economy and Strategy in Europe
- Proposed possible hydrogen pilot project(s) by SECI and key expectations from EU players
- Key applications/generation of hydrogen (low carbon and green approach) in EU and highlighting successful case studies by EU technology suppliers
- EU hydrogen (technology) businesses from different EU Member States - Introduction and key offerings
- Initiating discussions between SECI and EU technology providers to implement pilot project in India

Participants: European commission, SECI, Fertilizer businesses from EU, EU, Member States, EU MS Technology players, Hydrogen Europe, other key stakeholders

5. Format for webinar:

The webinar shall be for a duration of 2 hours, comprising of presentations, panel discussion, opening/closing remarks and Q&A from participants.

Agenda

Time Duration	Agenda
11:00 am to 11:05 am	**Introduction and welcome of participants -** Edwin Koekkoek, Counsellor Energy and Climate Action, EU Delegation to India

[2] The Future of Hydrogen Report Seizing today's opportunities, June 2019, prepared by the IEA for the G20, Japan

11:05 am to 11:10 am	**Keynote address** - Sh. Jatindra Nath Swain, Chairman & Managing Director, Solar Energy Corporation of India Ltd
11:10 am to 11:15 am	**Introductory remarks -** Sh. Amitesh Kumar Sinha, Joint Secretary, Ministry of New and Renewable Energy (MNRE)
11:15 am to 11:30 am	**Introduction on the EU hydrogen strategy** Tudor Constantinescu, Principal Advisor, European Commission, DG Energy Ruud Kempener, Policy Officer, European Commission, DG Energy
11:30 am to 11:35 am	**Introductory remarks -** Dr. P.C. Maithani, Scientist G, Ministry of New and Renewable Energy (MNRE)
11:35 am to 11:45 am	**Presentation: Proposal on setting up of a Hydrogen pilot, key considerations -** A.K Sinha, AGM (Schemes) SECI
11:45 am to 11:55 am	**State-of-the-art green hydrogen research and innovation projects in the EU** Bart Biebuyck, Executive Director, Fuel Cells and Hydrogen Joint Undertaking
11:55 am to 12:05 pm	**Perspective on the deployment of green hydrogen production in the European fertilizer industry** David Herrero Fuentes, COO, Fertiberia, Spain
12:05 pm to 12:50 pm	**Panel discussion with hydrogen industry and utilities: replicating and upscaling green hydrogen production** R.K Malhotra, President, Hydrogen Association of India Millán García-Tola, Director Hydrogen, Iberdrola Florian Peter, Project Director Djewels, McPhy Tom Skoczyals , Business Director, Nel Hydrogen Gerd Deusser, CEO Energy Business, Siemens AG Giovanna Pozzi, Head of Renewables Development & Mr. Davide Cirelli, Country Manager – India, Snam Italy Patrick Clerens, Secretary General, European Association for Storage of Energy (EASE) Jorgo Chatzimarkakis, Secretary General, Hydrogen Europe
12:50 pm to 12:55 pm	**Recommendations/observations from participants** - Poul V. Jensen, Managing Director, European Business and Technology Centre
12:55 pm to 1:00 pm	**Closing Remarks/Vote of Thanks -** Matthieu Craye, European Commission