

Collation of India's hydrogen & fuel cells research status launched

A compilation of ongoing research activities in the country related to hydrogen being carried by several scientists, industry, utilities, and other stakeholders from R&D laboratories and academia was launched by Secretary, Department of Science and Technology Professor Ashutosh Sharma on October 6, 2020.

The compilation titled India Country Status Report on Hydrogen and Fuel Cells was an outcome of a brainstorming discussions and presentations on various issues for developing programmes and strategies to accelerate the ushering in of hydrogen economy as part of India's commitment as a participating country in Mission Innovation Renewable and Clean Hydrogen Challenge.

Greater utilization of renewable in our energy mix is our policy objective to achieve decarbonization. While there are several pathways for decarbonisation varying in time frames, Hydrogen produced from renewables is considered as the cleanest energy source. Hydrogen as an energy source will play a key role in transforming climate-neutral systems over the next few decades.

Hydrogen has high energy content per unit mass, which is three times higher than gasoline. Hydrogen is being used for energy applications with suitable fuel cells. However, in order to make renewable hydrogen a viable option, several key challenges related to materials, including new material development, electrolytes, storage, safety, and standards, need to be addressed. Since hydrogen technologies can help to reduce global warming, further acceleration of efforts is critical to ensuring a significant share of hydrogen in the energy system in the coming decades.

Two key developments have contributed to the growth of hydrogen in recent years-- the cost of hydrogen supply from renewables has come down and continues to fall, while the urgency of greenhouse gas emission mitigation has increased, and many countries have begun to take action to decarbonise their economies.

Hydrogen can help tackle various critical energy challenges, decarbonise a range of sectors including intensive and long-haul transport, chemicals, and iron and steel, where it is proving difficult to meaningfully reduce emissions and also help improve air quality and strengthen energy security. In addition, it increases flexibility in power systems. It is one of the best options for storing energy from renewables and looks poised to become the lowest-cost option for storing large quantities of electricity over days, weeks, or even months.

