

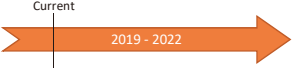



Country	Institute	Category	Related programs (with short summary)	Target / Goal Outcome	Lead person / Organization	Partnership (if any)	Related information
India	TERI	Hydrogen	Second generation hydrogen production from agriresidue biomass (2014-2019) 	Developed a bioprocess for second generation hydrogen production from agri-residue biomass (wheat starw, rice straw, sugarcane bagasse, Sugarcane trash) in 100 liter (0.1 m <sup>3</sup> scale) pre-pilot scale. <u>Benchmark target:</u> 1 mol of H <sub>2</sub> per mole of reduced sugar. <u>Outcome/Achievement:</u> 70% yield efficiency of the benchmark target Furtherplanned activity: Scale-up hydrogen production to pre-demonstration scale (10 m <sup>3</sup> scale) and Integration with downstream applications.	Dr. Sanjukta Subudhi/TERI	Looking for international partnership for further planned activities	
			Development of bioprocess for third generation hydrogen production from new 2nd and 3rd generation feedstock (under the Department of Biotechnology (DBT)-The Energy and Resources Institute (TERI) Centre of Excellence Biorefinery project 'Integrated production of advanced biofuels and bio-commodities' (2018-2021) 	To develop hydrogen production process from next generation non-edible feed stock (algae and aquatic macrophytes) in 1 m <sup>3</sup> scale. Benchmark: 1 mol of H <sub>2</sub> per mole of reduced sugar. Goal: To reduce the overall process cost through integration with value added biocommodity production	Dr. Sanjukta Subudhi/TERI	Domestic - Department of Biotechnology, Ministry of Science and Technology, Gov. of India	
		Cross-cutting	Energy Transition Commission India – Hard-to-abate (HTA) sectors (2019-2022) [with a focus on hydrogen and Carbon Capture, Utilization, and Storage (CCUS) technologies across heavy industry] 	Establish heavy industry sector roadmaps, detailing cost-effective pathways to decarbonisation using hydrogen and Carbon Capture, Utilization, and Storage (CCUS) technologies.	Mr. Girish Sethi/TERI	Analytical research being undertaken with support from Foundations	
India	TERI	Hydrogen	Solar driven Seawater Hydrogen Production and Producing Methane by Sequestering CO <sub>2</sub> . Proposal submitted to Ministry of New and Renewable Energy (MNRE) with a time duration of 4 years 	To develop an integrated prototype system for direct seawater electrolysis in combination with a standardized/ fixed bed reactor methanation process.	Dr. Poonam Sharma/TERI	Academic Partner: Dr T Pradeep, Chair Professor, Indian Institute of Technology, Chennai Dr Seeram Ramakrishna, Professor, NUS Singapore Industrial Partner: Mr Ireneusz Pyc, Siemens, Germany Chemfab Alkalis, Pondicherry	Proposal has been submitted to Ministry of New and Renewable Energy.