

Global Trends on Hydrogen Economy Market

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At a global level, there are four key reasons that hydrogen energy technologies are now emerging as a viable energy technology for the sustainable energy transition: (1) urgency to stop climate change, (2) decreasing renewable energy costs, (3) significant advancement in hydrogen and fuel cell technologies, and (4) electrification of the transportation sector.

Hydrogen produced from renewable energy resources, green hydrogen, can and will provide both developed and developing countries with a zero-carbon energy carrier to support both national and global sustainable energy objectives by decarbonize numerous sectors including heavy industry, buildings, and transport. The global market for electrolyzers and fuel cell technologies are experiencing significant improvements in cost, efficiency, and product quality. Green-hydrogen technologies are closing the cost gap with hydrogen produced from fossil fuels in some cases. However, additional cost reductions are needed for green hydrogen to scale up to provide sustainable energy systems with long-term energy storage capable of mitigating the variability of renewable resources, thus increasing the pace and penetration of renewable energy. The deployment of green-hydrogen technologies can facilitate “sector coupling” among different economic sectors, thus minimizing the cost of meeting sectors’ decarbonized energy needs. The energy technologies necessary to provide a systemic-transition pathway for supplying hydrogen-based low-emissions heat, seasonal energy storage, firm power, and heavy-duty mobility solutions already exist today. Fuel cells may have immediate applications in developing countries by providing decentralized-energy solutions for critical systems, powering equipment in emergency responses, and allowing for an increase of energy access in remote areas. Let us be clear, strong support from financial and government institutions will play an important role in deploying many of the “first-of-a-kind” green hydrogen projects,

thus accelerating the approval of green hydrogen technologies in developing countries, while increasing capacity and fostering an enabling policy and regulatory environment. It is also paramount to recognize that significant safety and technical risks still need to be understood and addressed before countries can leverage all the opportunities that green hydrogen has to offer. One the most significant barriers to the deployment of green hydrogen, particularly in developing countries, is a lack of awareness. Few business and energy utilities in developing countries have a clear understanding of the potential applications for green hydrogen technologies inside their businesses, and thus they have not sought to engage with suppliers, financiers, or the government to promote its use. In summary, green hydrogen, produced using electrolysis powered by renewable electricity, is emerging globally as an energy solution for a diverse array of challenges, including climate change mitigation and adaptation and energy security.