

Review of hydrogen energy strategies in developing countries

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Abstract

The world faces two energy-related threats, that of not having adequate and secure supplies of energy at affordable prices and that of the environmental harm caused by the consumption of fossil fuels and subsequent release of greenhouse gases (GHG). The developed world has been the main consumer of energy and emitter of GHG, however, it is foreseen that by 2030, the developing world will overtake the developed world in terms of primary energy demand. Similarly, developing countries will account for over 3/4 of the increase in global CO₂ emissions in the period between 2004–2030.

Energy saving in combination with the exploitation of renewable energy sources is the only sustainable option to address the previous issues. Hydrogen energy technologies could play a significant role in storing energy from intermittent renewable energy sources and providing a clean fuel for the transport sector. Developing countries are thus faced with the option to follow the existing coal to oil to natural gas energy path, or to “leap frog” straight to renewable energy sources, complemented by hydrogen technologies.

Indeed, countries like India, China, Malaysia, and Brazil have identified the R&D and demonstration steps that will lead to the gradual introduction of hydrogen energy, will accelerate their commercialization and facilitate the creation of hydrogen energy infrastructures. This paper will present a review of hydrogen energy strategies of developing countries with established roadmaps or national plans or activities.