

**The measurement of relative efficiency of R&D programs in the sector of hydrogen production, storage and utilization for the development of hydrogen energy technologies: Data envelopment analysis approach**

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Comparing to other energy technologies, hydrogen energy technology is more environmentally sound and friendly technology and can be one of the best key players cope with the UNFCCC and the hydrogen economy. Hydrogen energy technology has also great potential as an energy carrier. In this research, we applied the multi-criteria decision making method to assess the hydrogen R&D programs such as production, storage, and utilization. We established the criteria and made a hierarchy structure to assess the relative efficiency of the hydrogen R&D technology development programs by the data envelopment analysis. Seven criteria, such as paper, patent, technology transfer fee, technological accomplishment, cost, human resource, and R&D period, were used in the analysis. The relative efficiency score can be the fundamental data for hydrogen policymakers and decision makers as they establish a well focused plan.