

## Green hydrogen supply network for hydrogen refueling stations in South Korea – An uncertainty analysis using Monte-Carlo approach

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To decarbonise the transportation sector, South Korea is looking forward in evaluation of the possible cross-regional and domestic hydrogen supply pathways to meet the future hydrogen demand. In this work, we have studied three different supply pathways for green hydrogen: case 1- hydrogen production by cracking of imported ammonia, case 2- hydrogen production in Korea and delivery to refueling stations as per requirement, and case 3- on-site hydrogen production on refueling station. Levelised cost of hydrogen production of each case calculated by using NREL method was \$9.08, \$15.62, and \$8.75 per kg for case 1, case 2, and case 3 respectively. A sensitivity and uncertainty analysis were done using Monte-Carlo technique to assess the future possibilities by incorporating the technology development and expected cost reduction. The results depict that capex related to provision of solar electricity and of the electrolyser itself were the main contributors of the hydrogen production cost which was reduced to \$5.84, \$4.95, \$3.01 for case 1, case 2, and case 3 respectively.