

## Preface

Decarbonisation means targeting zero net emissions of carbon dioxide (CO<sub>2</sub>) and follows the trend of new low-carbon energy technologies that will be widely available around 2040–2050. These also include carbon capture, utilisation, and storage (CCUS); hydrogen; and ammonia. These technologies are expensive compared to existing low-carbon fuels and technologies available in the East Asia Summit (EAS) region, such as natural gas and solar photovoltaic (PV) systems. However, CCUS, hydrogen, and ammonia are expected to become affordable around 2040–2050 due to innovation and technology development as well as market growth.

Hydrogen production is based on fossil fuels, such as coal and natural gas, using CCUS and water electrolysis technology. To produce hydrogen, unused energies should be explored, encompassing hydropower in isolated areas, flared gas at oil and natural gas production sites, and low-ranked coal. CCUS can be applied to flared gas and low-ranked coal, which will not affect existing energy supply due to unused energy.

In the case of transporting hydrogen, various factors must be addressed, including its form, distance, and amount, as hydrogen demand sites are usually not located at production sites. Therefore, an optimal hydrogen transport network is needed to connect these sites, applying hydrogen transport technologies.

The Economic Research Institute for ASEAN and East Asia (ERIA) continues to implement the hydrogen potential study in phase 3. This phase studies how hydrogen can contribute to decarbonisation and be produced from unused energy sources. ERIA also organised the hydrogen working group meetings, which discussed how hydrogen contributes to carbon-neutral targets for several EAS countries.



Professor Hidetoshi Nishimura  
President  
Economic Research Institute for ASEAN and East Asia

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On behalf of ERIA, I would like to acknowledge the members of the working group for their effective work and contribution to this successful research study.

Shigeru Kimura  
Special Adviser to the President on Energy Affairs  
Economic Research Institute for ASEAN and East Asia  
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