Preface

East Asian economies have experienced sustained concerns on the security of energy supply, especially regarding the reliance on the imports of oil and natural gas. Such is also true with ASEAN countries. The new era of renewable energy, in particular solar and wind, has the potential to relieve such concerns, since these can be harvested indigenously. However, the intermittency of these sources poses substantial challenges to the existing energy infrastructure, especially the power grid.

Hydrogen is a new energy pathway that complements the deep penetration of intermittently active renewables by providing unlimited storage potential, but it also presents itself as a zero-emissions energy source.

Importantly, as related technologies make continuous progress, together with substantial decreases in costs, hydrogen will approach commercial competitiveness to conventional energy systems. Information regarding the potential of cost reductions along the hydrogen supply chain by 2040 can be found in this report.

For the reasons above, policy makers in many countries will start giving more attention to hydrogen, keeping in mind its potential to support a new generation of energy infrastructure that could be truly zero-emission.

This timely study consists of comprehensive analyses of the hydrogen supply chain in the Asian context, highlighting its potential based on each country's energy resources, the forecasted demand and scale of production, and trading of hydrogen for energy use in each country, as well as the resulting costs and carbon emissions.

From its early stage of market development, EAS-region demand for hydrogen for energy use is estimated to reach up to 104.7 Mtoe per year by 2040. Such demand will be contributed by the power generation sector, the industry sector, and the transport sector, which uses hydrogen to replace the use of fossil fuels.

The hydrogen initiatives led by Australia, Japan, Republic of Korea, and New Zealand coincide with ASEAN's announced ambition to achieve 23% renewable energy integration into its energy system by 2025, with even more by 2030. It is thus hoped that ASEAN countries will join the global development of supply chains for hydrogen production and consumption. Some ASEAN countries have the prospects to become a prosumer of zero-emission hydrogen energy, while others to become net exporters of it.

Hidetoshi Nishimura
President of ERIA
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Shigeru Kimura
Special Advisor on Energy Affairs, ERIA