

Session Title: Energy System Integration

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Abstract title: Power to Methane: Prospects and Challenges in Japan

Synthetic methane is an attractive option for decarbonizing industry and building heat use in Japan, because of its technical compatibility with existing city gas infrastructure. This presentation discusses the preconditions for boosting the deployment of synthetic methane. Low-cost renewable electricity and high-capacity factors of “Power-to-Methane” facilities, as well as strong carbon policies, are critical for methane synthesis to be competitive against imported natural gas. Even when recycled, CO₂ captured from fossil fuels will eventually be emitted into the atmosphere. Therefore, in a net-zero world, biomass or the atmosphere (direct air capture) will be prospective sources from a system-wide perspective.