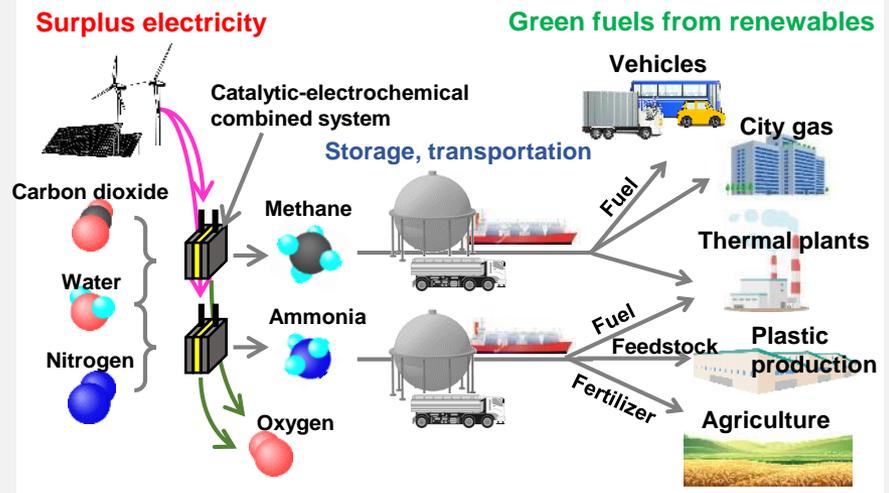


**Innovative developments of direct electrochemical synthesis of methane(CH<sub>4</sub>) and ammonia(NH<sub>3</sub>)**

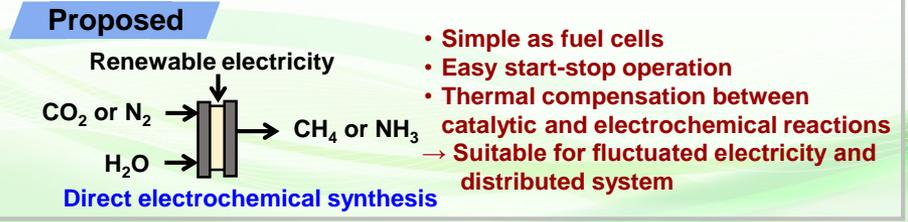
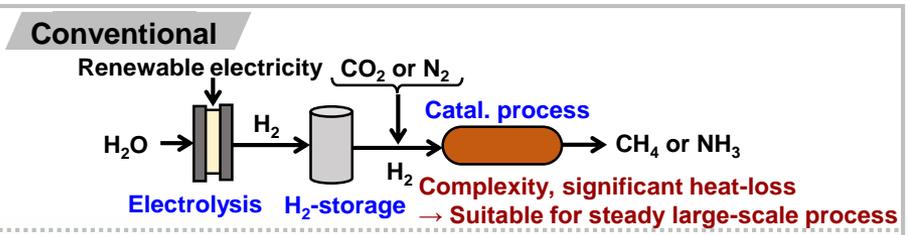
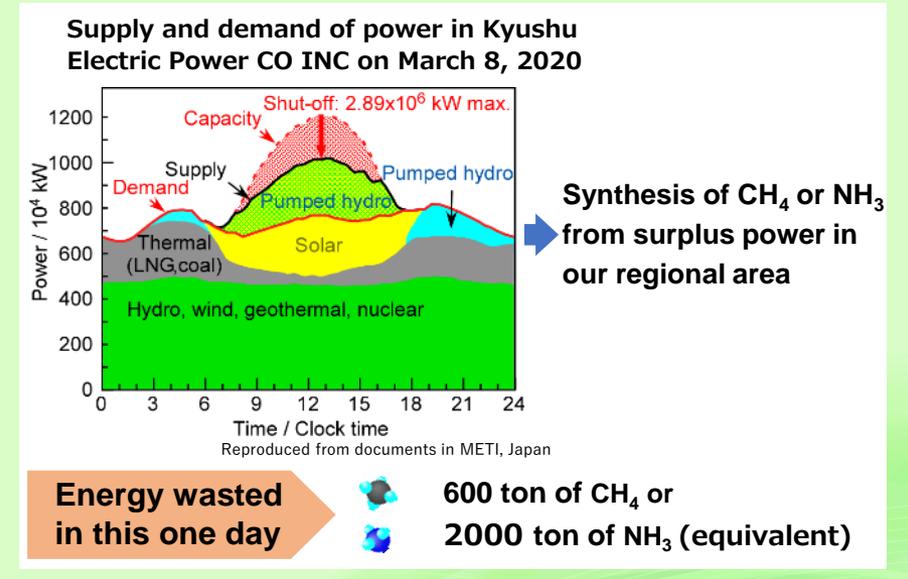
Developments of one-step catalytical-electrochemical synthesis systems with surplus renewable electricity from CO<sub>2</sub> and H<sub>2</sub>O to CH<sub>4</sub> and from N<sub>2</sub> and H<sub>2</sub>O to NH<sub>3</sub>

**Utilization of CH<sub>4</sub> and NH<sub>3</sub> synthesized by surplus renewable electricity**



- Key technologies of developments**
- Catalyst materials for activation of CO<sub>2</sub> or N<sub>2</sub> at low temperature
  - Electrode and electrolyte materials for lowering over-potential
  - Cell materials with corrosion resistance

**Surplus electricity in Kyushu area**



**Advantage of abundant renewable electricity in Kyushu**

⇒ **Creation of new industries in Kyushu**

**Innovative energy-technology developed from Fukuoka University**