

EDF-IGES Policy Workshop on Oil and Gas Methane Mitigation
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Policy Practices on Oil and Gas Methane Mitigation in Japan and ASEAN

Xianbing Liu

Research Leader

Climate and Energy Area, IGES

E-mail: liu@iges.or.jp

Yosuke Arino

Policy Researcher

Research and Publications, SMO, IGES

E-mail: arino@iges.or.jp

Why focuses on methane mitigation of oil and gas industry



Significance

- Large responsibility of methane from human activities for global warming (at least a quarter).
- A key opportunity to effectively slow down global warming by swift methane reduction.



Potential

- Huge emissions of oil and gas sector (about 70 Mt methane in 2020, over 5% of energy-related GHG).
- IEA SDS: Over 70% methane reduction from oil and gas sector by 2030 from the 2020 level.
- IEA NZE: To decline by around 75% by 2030 from fossil fuel operations^[1].



Feasibility

- Technology solutions available for around 70% of methane reduction from oil and gas sector.
- Achievable reduction with the measures at the lowest cost (about 40% of the reductions can be realized at even zero net cost)^[2].

Policy options for oil and gas methane mitigation^[3]



Work practices

- Mandatory leak detection and repair (LDAR): A primary measure
- Limit on routine venting and flaring: Another key measure
- Technical standards of key equipment



Basis for the policy

- Robust monitoring, reporting and verification (MRV)



Options by countries

- For producing countries:
Methane fee;
Emission trading scheme (ETS);
Performance standard
- **For importing countries:**
Methane border adjustment;
Procurement standard

Methane emissions in Japan and the mitigation target

Fig.1: Methane emissions in Japan and FY2030 target^[4]

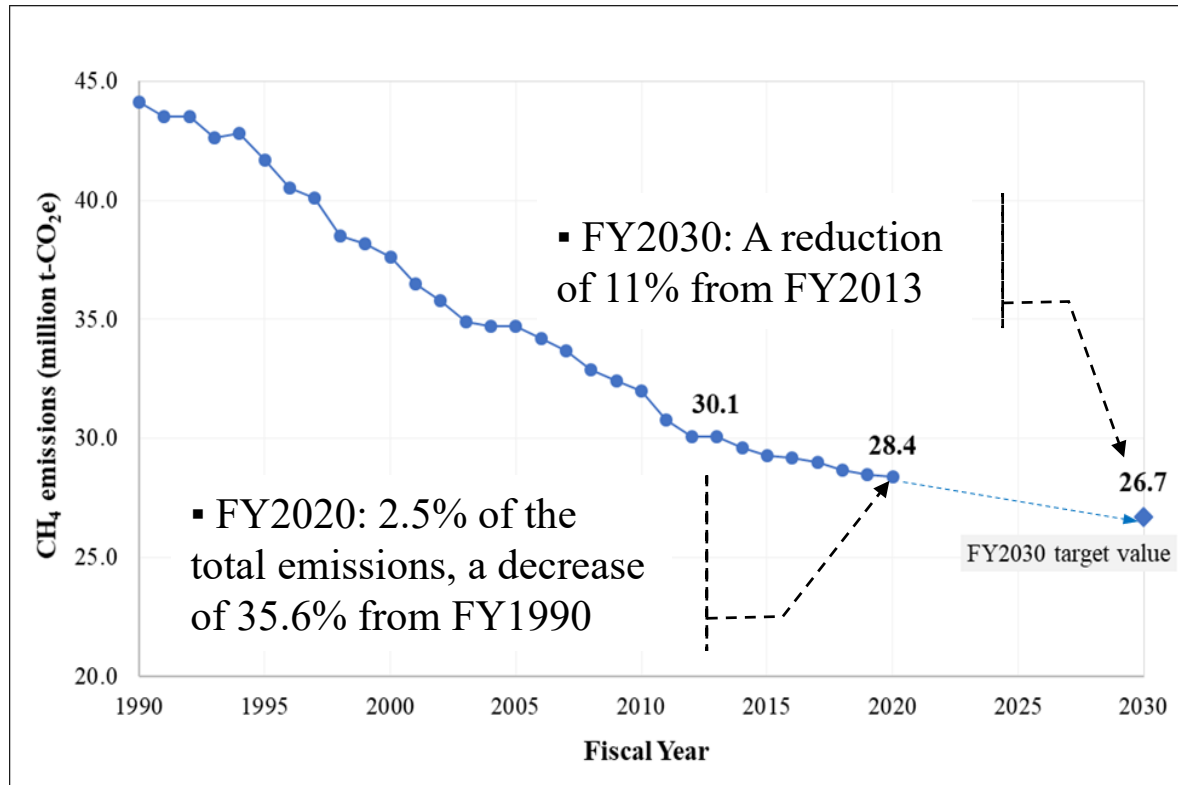
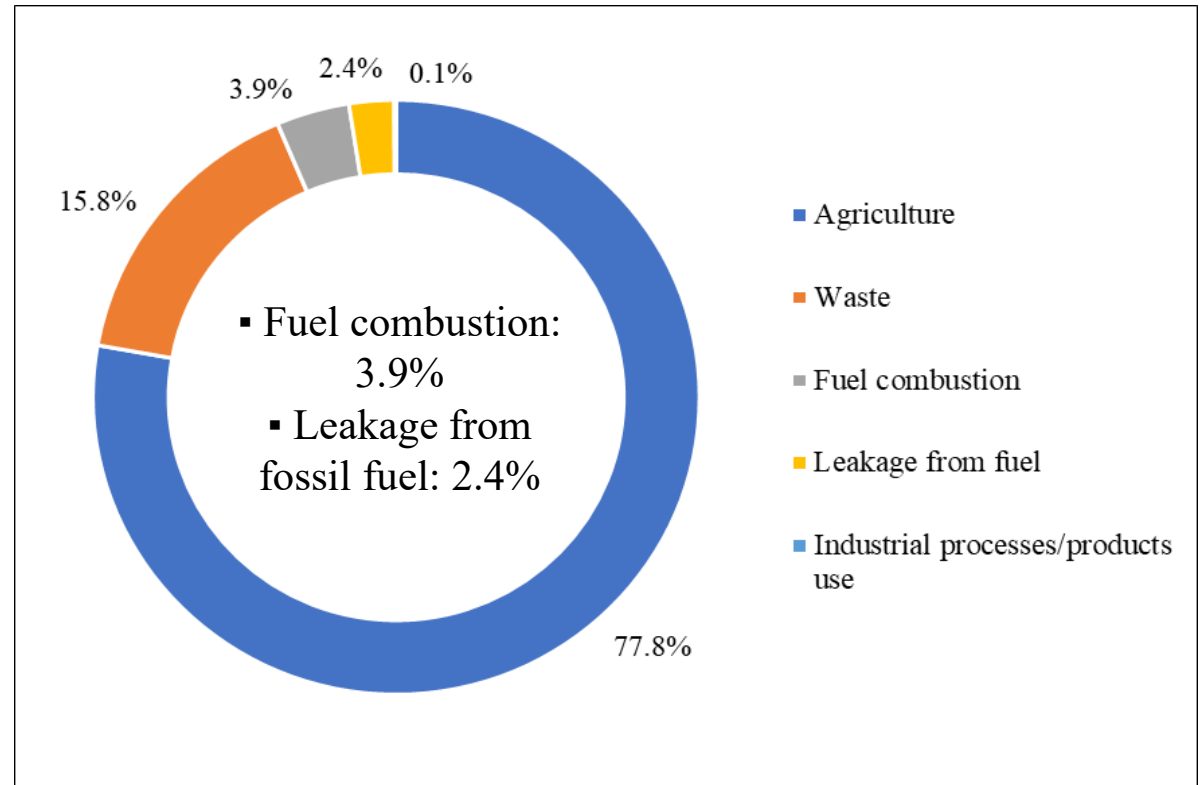


Fig.2: Methane emissions of Japan by sources (FY2020)



Methane mitigation countermeasures:

Waste management advancement; farming management improvement; and, livestock waste treatment improvement^[5].

Japan's oil and gas supply and the sources securing strategy

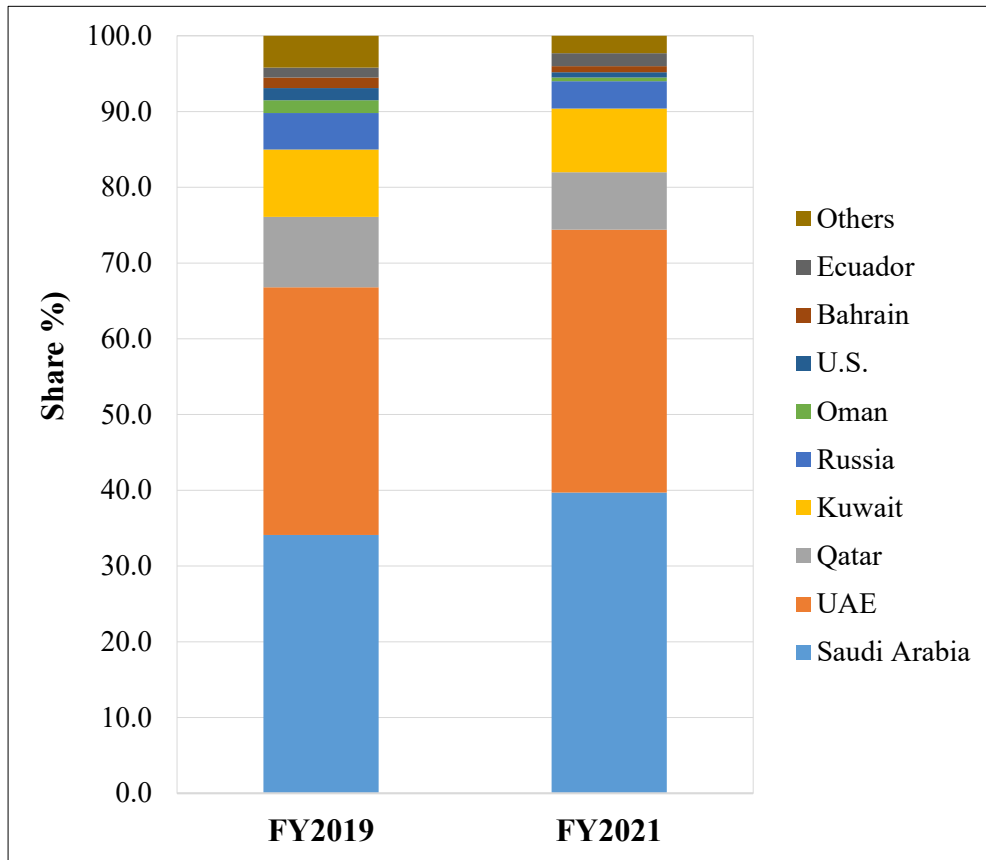


Fig.3: Share of crude oil suppliers of Japan

- Japan mainly imports oil from the Middle East.
- Japan's oil dependence on the Middle East is much higher than other developed countries.
- In 2019, Japan's LNG imports accounted for 22% of the world.
- Most of Japan's LNG is from the Asia-Pacific, Russia and the U.S.
- Australia has been the largest since FY2012.
- LNG imports from the U.S. began in 2017^[6].

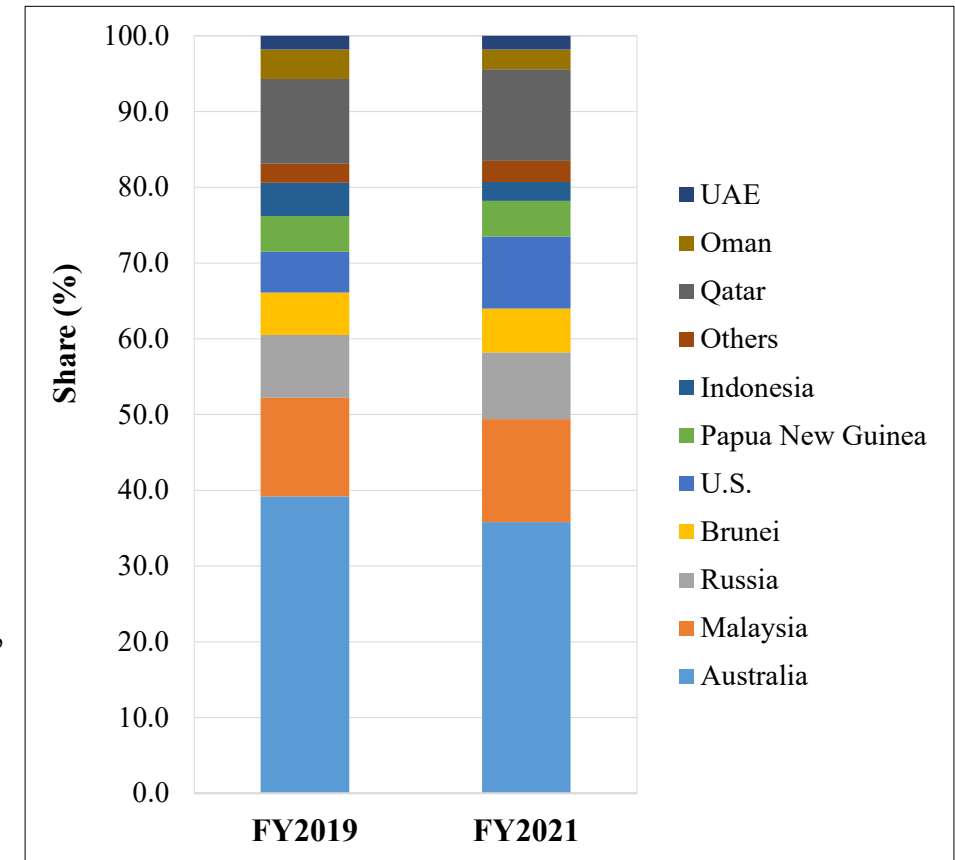


Fig.4: Share of LNG suppliers of Japan

Strategy securing oil and gas sources^[7]

- Diversify suppliers and secure new resources.
- Formulate a more flexible LNG market and take in the Asian demand.
- Lead consumer nations cooperation and enhance capacity building for other Asian countries.

Methane reporting via GHG accounting and reporting system in Japan^[8]

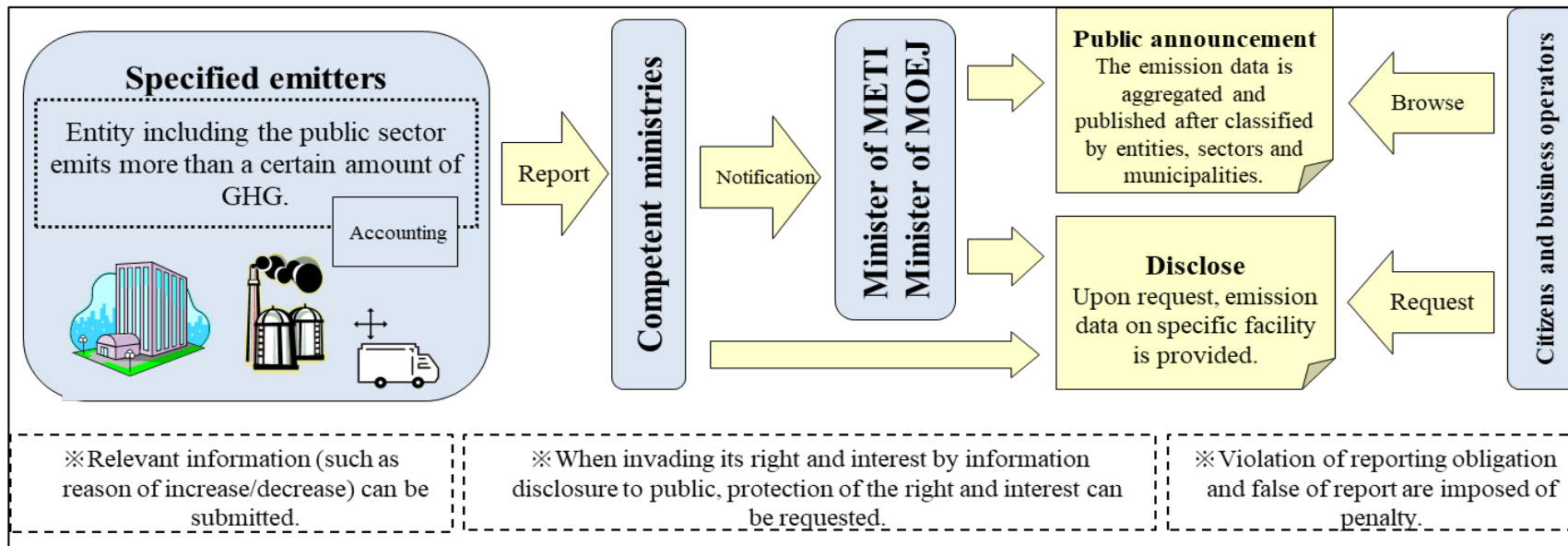


Fig.5: Workflow of mandatory GHG accounting and reporting system in Japan.

- Law basis: ‘Act on Promotion of Global Warming Countermeasures’ (revision enacted in 04/2006).
- Purpose: Promoting efforts of the public and business by visualizing and disclosing information.
- Coverage: 12,150 specified business entities and 1,314 specified transport providers in FY2018.
- 109 specified business entities reported methane emissions. The number from oil and gas sector was 11, in which, 4 are oil refinery, 5 are oil and gas exploration and production, and 2 are gas companies.
- The total methane emissions reported by oil and gas companies were 168,746 t-CO₂e.

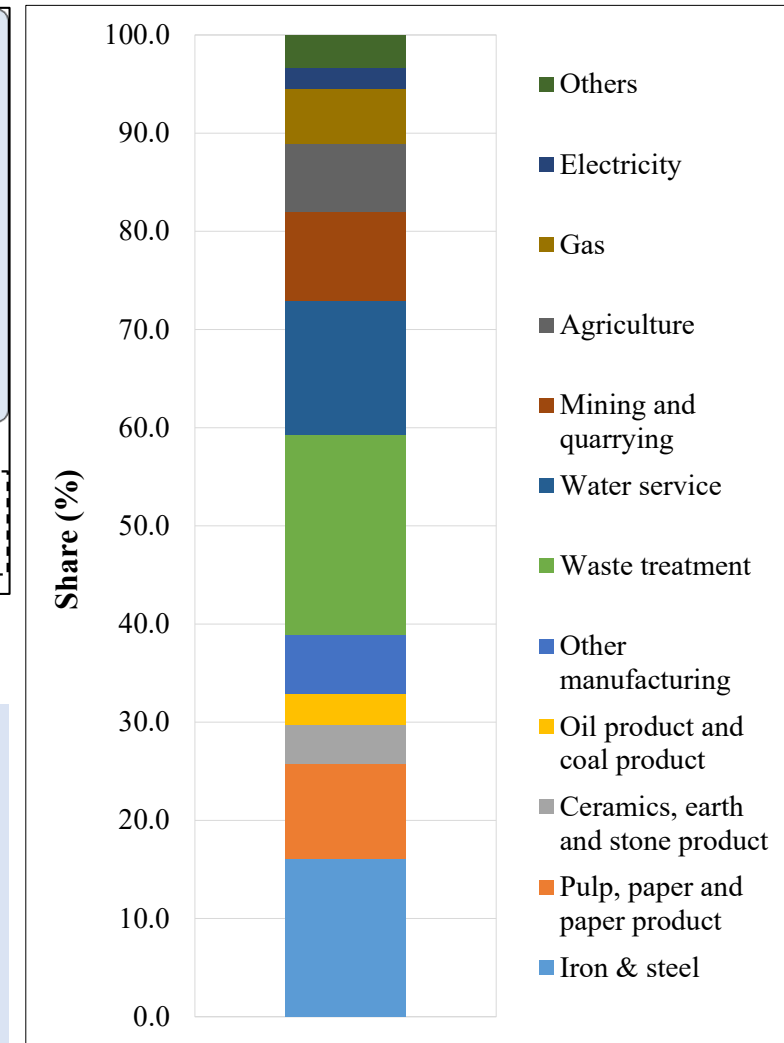


Fig.6: Share of methane reported by sector.

Practices of Japan's oil and gas industry for methane mitigation

JGA (gas)^[9-10]

- City gas companies: 193 (private: 175; public-owned: 18).
- Efforts in medium-term: Emissions reduction in domestic activities; advanced use of gas; international contribution; technology innovation.
- Stance toward carbon neutrality in 'Carbon Neutral Challenge 2050': A thorough shift to and advanced use of gas.
- To promote decarbonization of gas by technology innovation like hydrogen and methanation
- Good practices: CNL of Tokyo Gas Group; emission disclosure by Daigas Group, etc.

JPDA (oil & gas)^[11]

- Firstly work to reduce emissions from the oil and natural gas development business.
- Medium to long-term: Lead the construction of a hydrogen society by stably supplying hydrogen and ammonia, i.e., from gas with CCS.
- Actively work on various countermeasures: Renewables, forest conservation, and BECCS.
- Contribute to global carbon neutrality by cooperating with the shift to natural gas for energy transition in Asia.
- Good performance: Methane emissions intensity of INPEX (0.04% in FY2021).

PAJ (oil)^[12]

- Association of companies that import and refine crude oil, and sell petroleum products.
- 11 member companies.
- Toward carbon neutrality by 2050, work on innovative technology development utilizing CO₂-free hydrogen, sustainable biomass and recovered CO₂, and shift the products to carbon neutral ones.

Policy practices on oil and gas methane reduction in ASEAN^[13-14]



- Almost doubled methane emissions during 1990-2019 (share of energy sector: 19%).
- Major emitters: Indonesia, Malaysia, Thailand, Vietnam, Philippines, Brunei Darussalam.
- Long-term significance of methane reduction from oil and gas supply chain for ASEAN.
- High trade integration of oil within ASEAN, strong connection with Japan in gas supply.
- Importance of oil and gas operation in upstream and downstream for methane reduction.



- At the regional level, methane management in energy sector is not yet incorporated.
- 5 AMS (Indonesia, Malaysia, Philippines, Singapore, Vietnam) have participated in GMP.
- Indonesia participated in the WB-led Zero Routine Flaring by 2030 (ZRF) Initiative.
- Indonesia, Vietnam, Brunei Darussalam have regulations on oil and gas operation, i.e., limit of flaring and emissions reporting.



- Stronger policy framework for methane reduction is essential.
- Vital policies include promoting methane capture device introduction and utilization of vented gas, or a ban on regular venting and flaring.
- Barriers for taking full advantage of opportunities: Information gap; necessity of infrastructure development but lack of investment incentives.

Key messages from the policy review of Japan and ASEAN

- Quick actions to reduce methane emissions from oil and gas industry provides a key opportunity to effectively slow down global warming, considering its huge potential with technological and economic feasibility.
- In spite of a minor issue of methane emissions in energy sector of Japan domestically, the industrial associations and businesses have been practicing well toward clean energy transition.
- Japan has fruitful experiences in the development of a robust MRV of GHG emissions (including methane) due to long practices of the mandatory accounting and reporting system.
- There remains great potential for Japan to contribute to global methane reduction of oil and gas industry by fully playing the advantages in management and technology, and its influence in the supply chain as a major buyer.
- One focus may be given to deepen the cooperation between Japan and Asian developing countries like ASEAN member states under the context of clean energy transition toward carbon neutrality.



*Thank you very
much for the kind
attention!*