

6.1 APEC GHG emissions data

21st APEC workshop on energy statistics

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Outline

Background

Status of CO₂ emissions data collection

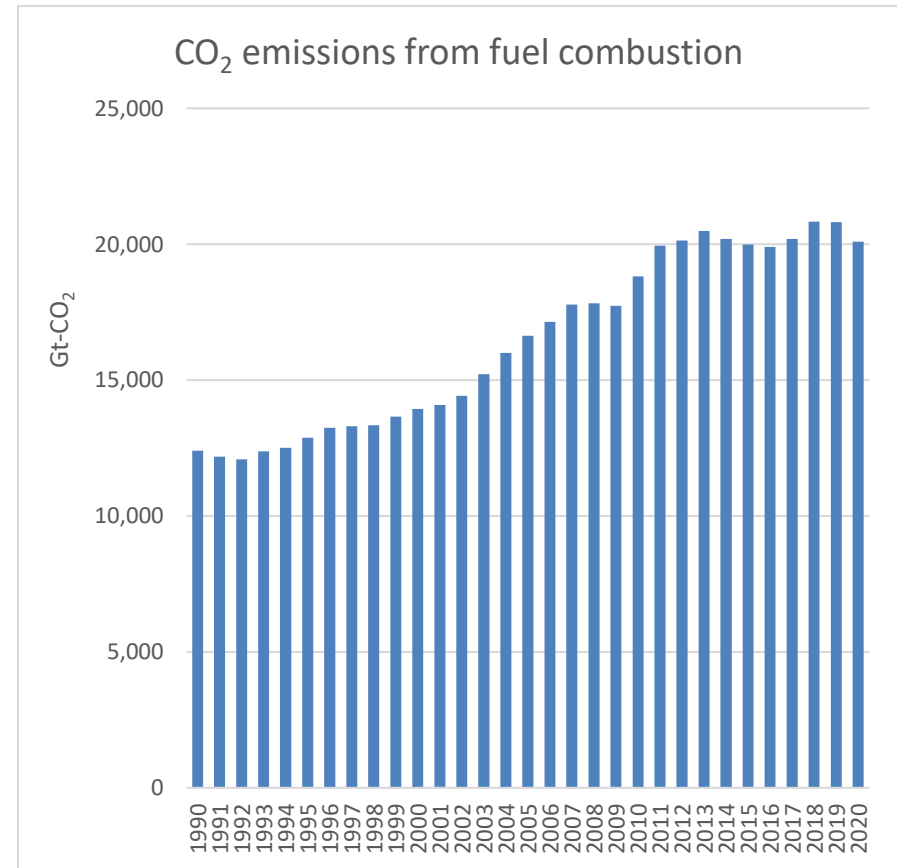
Global Methane Initiative

Proposed APEC goal of 50% reduction in methane emission

Collecting additional GHG emissions data

Background

- The EGEDA secretariat has been collecting CO₂ emissions data from fossil fuel combustion until the 2020 data
- Although there are other greenhouse gases (GHG), only CO₂ emissions are collected
- Fugitive emissions, CO₂ transport and storage data are not collected
- CO₂ emission in APEC, increased at an annual compounded rate of 1.6% from 1990 to 2020



Status of CO₂ emissions data collection (2020)

- Only three (3) economies submitted data
- The secretariat obtained CO₂ emissions data of six (6) Annex 1 economies from their submissions to UNFCCC
- The secretariat calculated CO₂ emissions of 12 economies using their energy balances and revised 2006 IPCC guidelines

The Global Methane Initiative



The Global Methane Initiative (GMI) is an international public-private partnership focused on reducing barriers to the recovery and use of methane as a valuable energy source. GMI's 47 Partner Countries and more than 700 Project Network members exchange information and technical resources to advance methane mitigation in three key sectors: Oil and Gas, Biogas, and Coal Mines.



GMI provides technical support to deploy methane-to-energy projects around the world. Since 2004, GMI support has enabled Partner Countries to launch hundreds of methane recovery and use projects, with more than 500 MMTCO₂e of associated emission reductions. These reductions result in many benefits, including:

- ↓ Decreased greenhouse gases
- ↑ Improved human health
- ↑ Increased worker safety
- ↑ Better air and water quality
- ↑ Enhanced energy security
- ↑ Expanded economic growth

GMI is an information resource for Partner Countries, Project Network members, and other stakeholders. GMI's website serves as an online library with extensive information on methane-to-energy projects, best practices, and technical tools and resources. In the last 16 years, GMI has trained more than 16,000 people around the world in methane mitigation and recovery.

GMI collaborates with other international organizations focused on methane recovery and use, including the Climate and Clean Air Coalition (CCAC), the United Nations Economic Commission for Europe (UNECE), and the International Energy Agency (IEA).

Methane Matters

The Challenge

Methane is a potent greenhouse gas. Over its 12-year lifetime in the atmosphere, it traps 28 times more heat than carbon dioxide, resulting in a stronger influence on warming.

The Opportunity

Methane's short atmospheric lifetime also means that reductions today can make an immediate impact to slow warming. And, a variety of technologies are available to capture methane and convert it to useful energy.



Oil & Gas Sector

Methane emissions from oil and natural gas systems result from both normal operations and system disruptions. These emissions can be cost-effectively reduced by upgrading technologies or equipment, and by improving operations.



Biogas Sector

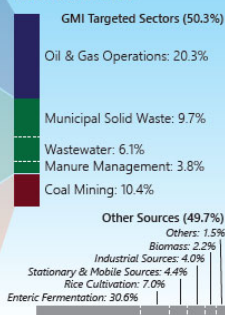
Biogas produced from the anaerobic digestion of organic material or emitted directly from landfills can be treated to create pipeline-quality natural gas, used as a cooking fuel, used to generate electricity, and captured on-site to provide heat and power.



Coal Mines Sector

Removing fugitive methane gas from underground coal mines and using it in profitable and practical ways can improve worker safety, enhance mine productivity, increase revenues, and reduce greenhouse gas emissions.

Estimated Global Methane Emissions from Human Activities in 2030¹



¹ U.S. Environmental Protection Agency, Global Non-CO₂ Greenhouse Gas Emission Projections & Mitigation Potential: 2015–2050.

July 2023

The Global Methane Initiative (GMI)

- An international public-private partnership that started in 2004 focusing on reducing barriers to the recovery and use of methane as valuable energy source.
- GMI has enabled partner countries to launch hundreds of methane recovery and use projects with the more than 500 MMTCO₂e of associated emissions reductions.
- GMI targeted sectors account for 50.3% of estimated global methane emissions from human activities
 - Oil and gas operations (20.3%) – emissions can be cost-effectively reduced by upgrading technologies or equipment, and by improving operations
 - Biogas sector (19.6%) – biogas produced can be treated to create pipeline-quality natural gas, used as cooking fuel, used to generate electricity, and captured on-site to provide heat and power
 - Coal mining (10.4%) – removing fugitive emissions from underground coal mines and using it in profitable and practical ways can improve worker safety, enhance mine productivity, increase revenues, and reduce GHG emissions

Source: Global Methane Initiative – Leading methane action since 2004, globalmethane.org.

Proposed APEC goal of 50% reduction in methane emission

- During EWG65 in Detroit, USA; members discussed the importance of abating methane in the fossil energy sector as a component of sustainable development of fossil fuel resources, with a proposal to reducing global anthropogenic methane emissions by at least 30 percent by 2030 from 2020 levels,
- During the energy ministerial meeting in Seattle, USA; members discussed a higher goal of 50% reduction but not all economies agreed.
- Should this new goal would be adopted in the future, data on methane emissions would be needed
- In this regard, the EGEDA secretariat decided to revise the CO₂ emission template to include methane, N₂O, fugitive emissions and CO₂ transport and storage data

Collecting additional GHG emissions data

CO₂ Emission Table

Member Economy Name:

Unit: kt-CO₂ (kiloton of Carbon dioxide)

	2017	2018	2019	2020	2021
Total CO₂ emission	0	0	0	0	0
1A. Fuel combustion					
1. CO₂ emission by energy	0	0	0	0	0
1.1 Coal & coal products					
1.2 Crude oil & petroleum products					
1.3 Gas	Old format				
1.4 Other fossil fuels					
2. CO₂ emission by sector	0	0	0	0	0
2.1 Transformation sector	0	0	0	0	0
2.1.1 Main activity producer					
2.1.2 Autoproducers					
2.1.3 Gas processing					
2.1.4 Loss & own use					
2.2 Final energy consumption sector	0	0	0	0	0
2.2.1 Industry sector					
2.2.2 Transport sector					
2.2.3 Residential & commercial					
2.2.4 Other					

CO₂ Emission Table

Member Economy Name:

Unit: kt-CO₂ (kiloton of Carbon dioxide)

	2017	2018	2019	2020	2021
Total CO₂ emission	0	0	0	0	0
1A. Fuel combustion					
1. CO₂ emission by energy	0	0	0	0	0
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1.3 Gas	New format				
1.4 Other fossil fuels					
2. CO₂ emission by sector	0	0	0	0	0
2.1 Transformation sector	0	0	0	0	0
2.1.1 Main activity producer					
2.1.2 Autoproducers					
2.1.3 Gas processing					
2.1.4 Loss & own use					
2.2 Final energy consumption sector	0	0	0	0	0
2.2.1 Industry sector					
2.2.2 Transport sector					
2.2.3 Residential & commercial					
2.2.4 Other					
1B. Fugitive emissions from fuels	0	0	0	0	0
1. Solid Fuels	Additional data				
2. Oil and natural gas					
1C. CO₂ transport and storage					

Collecting additional GHG emissions data (CH₄ and N₂O)

CH₄ Emission Table

Member Economy Name:

Unit: kt-CH₄ (kilon of Methane)

	2017	2018	2019	2020	2021
Total CH₄ emission	0	0	0	0	0
1A. Fuel combustion					
1. CH₄ emission by energy	0	0	0	0	0
1.1 Coal & coal products					
1.2 Crude oil & petroleum products					
1.3 Gas					
1.4 Other fossil fuels					
2. CH₄ emission by sector	0	0	0	0	0
2.1 Transformation sector	0	0	0	0	0
2.1.1 Main activity producer					
2.1.2 Autoproducers					
2.1.3 Gas processing					
2.1.4 Loss & own use					
2.2 Final energy consumption sector	0	0	0	0	0
2.2.1 Industry sector					
2.2.2 Transport sector					
2.2.3 Residential & commercial					
2.2.4 Other					
1B. Fugitive emissions from fuels	0	0	0	0	0
1. Solid Fuels					
2. Oil and natural gas					

N₂O Emission Table

Member Economy Name:

Unit: kt-N₂O (kilon of Nitrous Oxide)

	2017	2018	2019	2020	2021
Total N₂O emission	0	0	0	0	0
1A. Fuel combustion					
1. N₂O emission by energy	0	0	0	0	0
1.1 Coal & coal products					
1.2 Crude oil & petroleum products					
1.3 Gas					
1.4 Other fossil fuels					
2. N₂O emission by sector	0	0	0	0	0
2.1 Transformation sector	0	0	0	0	0
2.1.1 Main activity producer					
2.1.2 Autoproducers					
2.1.3 Gas processing					
2.1.4 Loss & own use					
2.2 Final energy consumption sector	0	0	0	0	0
2.2.1 Industry sector					
2.2.2 Transport sector					
2.2.3 Residential & commercial					
2.2.4 Other					
1B. Fugitive emissions from fuels	0	0	0	0	0
1. Solid Fuels					
2. Oil and natural gas					

Issues

- **Why CH₄ and N₂O only?**

- The revised 2006 IPCC guidelines only provides default emission factor for these two gases
- No default emission factors for other gases

- **What if not all economies submit data?**

- The EGEDA secretariat will continue to calculate emissions using energy balance data and revised 2006 IPCC guideline
- But, there would be huge uncertainties in the calculation of fugitive emissions especially from coal mining due to absence of information on geological characteristics of coal seams; for oil and gas, fugitive leaks are linked to common types of equipment
- The secretariat has no information on CO₂ transported and stored

- **In this regard, the 15 economies that do not regularly submit emissions data to UNFCCC are requested to submit the data to the secretariat.**

Summary

- The secretariat is collecting additional GHG emissions data in anticipation of new goals that may be set by APEC energy ministers
- For economies that do not submit data, the secretariat will calculate emission using energy balance data
- There will be huge uncertainties in the estimates
- Therefore, member economies are requested to submit the data to the secretariat using the revised GHG emissions template.

Thank you.

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