



Phase Out Methane Emissions By 2030

For Prelims: [Methane Gas](#), Related Initiatives, [COP 28](#), [Climate Change](#), [Net Zero emissions](#)

For Mains: [Impacts of methane emissions on global warming](#), Role of hydrocarbons in the transition to new energy systems, Significance of climate technologies in climate mitigation

Why in News?

Recently, Sultan Ahmed Al Jaber, the President-Designate of [COP28](#) has called upon the oil and gas industry to **phase out methane emissions by 2030**, as Methane have emerged as a critical concern in the fight against [climate change](#). And align with comprehensive [net-zero emission plans by or before 2050](#).

- The significance of inclusivity and the active involvement of **developing nations in climate action** and the [energy transition](#), as well as the **adoption of technologies for climate mitigation**, was strongly emphasized.
- COP28, or the 28th United Nations Climate Change conference is scheduled to be held between November 30 and December 12 in the UAE.

What is Methane?

- **About:**
 - Methane is the **simplest hydrocarbon**, consisting of one carbon atom and four hydrogen atoms (CH₄).
 - It is flammable and is used as a fuel worldwide.
 - Methane is powerful [greenhouse gas](#).
 - Methane has more than **80 times the warming power of carbon dioxide** over the first 20 years of its lifetime in the atmosphere.
 - It has a shorter lifespan in the atmosphere compared to carbon dioxide.
 - The common **sources of methane are oil and natural gas systems**, agricultural activities, coal mining, and wastes.
- **Impact:**
 - **More Global Warming Potential:**
 - The [International Energy Agency \(IEA\)](#) reports that fossil fuel operations generate over one-third of all methane emissions from human activity.
 - It is nearly 80-85 times more potent than carbon dioxide in terms of its global warming capacity.
 - This makes it a critical target for reducing global warming more quickly while simultaneously working to reduce other greenhouse gases.
 - Methane is responsible for around **30% of the rise in global temperatures since the Industrial Revolution**.
 - **Promotes Generation of Tropospheric Ozone:**
 - Increasing emissions are driving a rise in [tropospheric ozone air pollution](#), which causes more than one million premature deaths annually.

What is the Role of Hydrocarbons in Energy Transition from Methane?

- **Transition Role:**
 - Hydrocarbons can play a transitional role during the shift to new energy systems by providing a **reliable and readily available source of energy**.
- **Bridge Fuel:**
 - They can serve as a bridge fuel between **high-carbon fossil fuels and cleaner alternatives**, helping to meet energy demand while reducing carbon emissions.
- **Energy System Stability:**
 - Hydrocarbons contribute to maintaining energy system stability during the initial phases of integrating intermittent **renewable energy sources**.
- **Existing Infrastructure:**
 - The infrastructure for extracting, processing, and distributing hydrocarbons is already established, allowing for a smoother transition to new energy systems.
- **Carbon Intensity Reduction:**
 - Efforts should focus on minimizing the **carbon footprint** of hydrocarbons by implementing cleaner technologies and practices throughout the production and consumption processes.

How can Developing Nations be Included in the Energy Transition?

- **Increase Financial Support:**
 - Provide increased climate finance to **developing nations to facilitate their transition to clean energy sources and technologies**.
- **Technology Transfer:**
 - Facilitate the transfer of **clean energy technologies** from developed countries to developing nations, ensuring access to affordable and efficient solutions.
- **Capacity Building:**
 - Invest in **training programs and knowledge-sharing initiatives** to build the capacity of developing nations in implementing and managing clean energy projects.
- **Policy Support:**
 - Assist developing countries in developing and implementing supportive policies and regulations that encourage the adoption of renewable energy and energy-efficient practices.
- **Public-Private Partnerships:**
 - Foster collaborations between public and private sectors to **leverage resources, expertise, and innovation** in supporting the energy transition of developing nations.

What is the Role of Climate Technologies in Climate Mitigation?

- **Renewable Energy Technologies:**
 - Climate technologies encompass a wide range of renewable energy sources such as **solar**, **wind**, **hydro**, and **geothermal power**.
 - These technologies enable the generation of clean and sustainable energy, reducing reliance on fossil fuels and lowering carbon emissions.
- **Energy Efficiency Technologies:**
 - Climate technologies focus on enhancing energy efficiency in various sectors, including buildings, transportation, and industries.
 - Building technologies such as **smart meters, energy-efficient appliances, and insulation** that improve energy performance.
 - **Batteries and energy storage** enable the integration of variable renewables and provide backup power for grid stability and reliability.
 - These technologies aim to reduce energy consumption and minimize wastage, leading to significant emissions reductions.
- **Carbon Capture, Utilization, and Storage (CCUS):**
 - **CCUS** technologies capture **carbon dioxide emissions** from power plants and industrial facilities, preventing them from being released into the atmosphere.
 - The captured carbon is then stored underground or utilized in other applications, effectively reducing greenhouse gas emissions.

- **Sustainable Transportation Technologies:**
 - Climate technologies promote the development and adoption of low-carbon transportation solutions such as [electric vehicles \(EVs\)](#), [hydrogen fuel cells](#), and [advanced biofuels](#).
 - These technologies help reduce emissions from the **transportation sector**, which is a significant contributor to greenhouse gas emissions.
- **Circular Economy Technologies:**
 - Optimizes resource use and minimizes waste by designing products and systems that can be reused, repaired, recycled, or biodegraded.

What are the Initiatives to Tackle Methane Emissions?

- **Indian:**
 - **'Harit Dhara' (HD):**
 - Indian Council of Agricultural Research (ICAR) has developed an anti-methanogenic feed supplement '[Harit Dhara' \(HD\)](#), which can cut down cattle methane emissions by 17-20% and can also result in higher milk production.
 - **India Greenhouse Gas Program:**
 - The India GHG Program led by WRI India (non-profit organization), Confederation of Indian Industry (CII) and [The Energy and Resources Institute \(TERI\)](#) is an industry-led voluntary framework to measure and manage greenhouse gas emissions.
 - The programme builds comprehensive measurement and management strategies to reduce emissions and drive more profitable, competitive and sustainable businesses and organisations in India.
 - **National Action Plan on Climate Change (NAPCC):**
 - [NAPCC](#) was launched in 2008 which aims at creating awareness among the representatives of the public, different agencies of the government, scientists, industry and the communities on the threat posed by climate change and the steps to counter it.
 - **Bharat Stage-VI Norms:**
 - India shifted from [Bharat Stage-IV \(BS-IV\) to Bharat Stage-VI \(BS-VI\)](#) emission norms.
- **Global:**
 - **Methane Alert and Response System (MARS):**
 - MARS will integrate data from a large number of existing and future satellites that have the ability to detect methane emission events anywhere in the world, send out notifications to the relevant stakeholders to act on it.
 - **Global Methane Pledge:**
 - At the [Glasgow climate conference \(UNFCCC COP 26\)](#) in 2021, **nearly 100 countries had come together in a voluntary pledge**, referred to as the Global Methane Pledge, to cut methane emissions by at least 30% by 2030 from the 2020 levels.
 - **India is not a part of Global Methane Pledge.**
 - **Global Methane Initiative (GMI):**
 - It is an international public-private partnership focused on reducing barriers to the recovery and use of methane as a clean energy source.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q1. Which of the following statements is/are correct about the deposits of 'methane hydrate'? (2019)

1. Global warming might trigger the release of methane gas from these deposits.

2. Large deposits of 'methane hydrate' are found in Arctic Tundra and under the sea floor.
3. Methane in atmosphere oxidizes to carbon dioxide after a decade or two.

Select the correct answer using the code given below.

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (d)

Q2. Consider the following: (2019)

1. Carbon monoxide
2. Methane
3. Ozone
4. Sulphur dioxide

Which of the above are released into atmosphere due to the burning of crop/biomass residue?

- (a) 1 and 2 only
- (b) 2, 3 and 4 only
- (c) 1 and 4 only
- (d) 1, 2, 3 and 4

Ans: (d)

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PDF Refernece URL: <https://www.drishtiias.com/printpdf/phase-out-methane-emissions-by-2030>