



## Methane Alert and Response System

**For Prelims:** Methane Alert and Response System, Conference of Parties, United Nations Framework Convention on Climate Change, Methane Gas, Related Initiatives

**For Mains:** Global and National Initiatives to Cut Methane Emission, Methane Gas

### Why in News?

Recently the [United Nations \(UN\)](#) has decided to set up a **satellite-based** monitoring system “**MARS: Methane Alert and Response System**” for tracking [methane emissions](#) and alerting governments and corporations to respond.

- The MARS initiative is intended to **strengthen the efforts to cut methane emissions.**

### What is Methane Alert and Response System (MARS)?

- **About:**
  - The **MARS** was launched at the **27<sup>th</sup> Conference of Parties (COP27)** to the [United Nations Framework Convention on Climate Change](#) in Sharm El-Sheikh, Egypt.
  - The data-to-action platform was set up as part of the [UN Environment Programme's \(UNEP\)](#) International Methane Emissions Observatory (IMEO) strategy to get **policy-relevant data** into the right hands for emissions mitigation.
  - The system will be the **first publicly available global system** to connect methane detection to notification processes transparently.
- **Objectives:**
  - 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, and send out notifications to the relevant stakeholders to act on it.
  - MARS will **track the large point emission sources**, mainly in the [fossil fuel](#) industry, but with time, would be able to detect emissions from [coal](#), waste, livestock and rice fields as well.

### Why do we Need to Cut Methane Emissions?

- **About Methane:**
  - Methane is a **colourless** and **odourless** gas that occurs abundantly in nature and as a product of certain human activities.
  - Methane is the **simplest member of the paraffin series of hydrocarbons** and is among the most potent of the [greenhouse gases](#).
- **Concerns Regarding Methane:**
  - Methane is the **second-most common of the six major greenhouse gases**, but is **far more dangerous than carbon dioxide** in its potential to cause global warming.
  - **Accounting for about 17%** of the current global greenhouse gas emissions, methane is blamed for having **caused at least 25%- 30% of temperature rise** since the pre-

industrial times.

- It accounts for a small portion of human-induced greenhouse gas emissions compared to carbon dioxide. But it is thought to be **80 times more efficient than carbon dioxide at trapping atmospheric heat** in the 20 years following its release.

## What are the Initiatives to Cut Methane Emission?

### ▪ Global:

#### ◦ 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**.
- More countries have joined in this initiative since then, bringing the total to nearly 130.
- A 30% reduction in methane emissions by 2030 is expected to result in avoiding 0.2 degree rise in temperature by the year 2050, and is considered absolutely essential in the global efforts to keep the temperature increase below the **1.5 degree Celsius target**.

#### ◦ 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**.
- GMI provides **technical support to deploy methane-to-energy projects** around the world that enable Partner Countries to launch methane recovery and use projects.
- **India is a partner country.**

### ▪ National:

#### ◦ 'Harit Dhara' (HD):

- **Indian Council of Agricultural Research (ICAR)** has developed an anti-methanogenic feed supplement '**Harit Dhara**', 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 **World Resources Institute (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.

## UPSC Civil Services Examination Previous Year Question (PYQ)

### 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)**

**Exp:**

- Methane hydrate is a crystalline solid that consists of a methane molecule surrounded by a cage of interlocking water molecules. It is an "ice" that only occurs naturally in subsurface deposits where temperature and pressure conditions are favourable for its formation.
- Regions with suitable temperature and pressure conditions for the formation and stability of methane hydrate- sediment and sedimentary rock units below the Arctic permafrost; sedimentary deposits along continental margins; deep-water sediments of inland lakes and seas; and, under Antarctic ice. Hence, statement 2 is correct.
- Methane hydrates, the sensitive sediments, can rapidly dissociate with an increase in temperature or a decrease in pressure. The dissociation produces free methane and water, which can be triggered by global warming. Hence, statement 1 is correct.
- Methane is removed from the atmosphere in about 9 to 12-year period by oxidation reaction where it is converted into Carbon Dioxide. Hence, statement 3 is correct.
- **Therefore, option (d) is the correct answer.**

**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)**

**Exp:**

- Biomass is organic material that comes from plants and animals, and it is a renewable source of energy.
- Biomass contains stored energy from the Sun. Plants absorb the Sun's energy in a process called photosynthesis. When biomass is burned, the chemical energy in biomass is released as heat.
- Crop residue and biomass burning (forest fires) is considered as a major source of Carbon Dioxide (CO<sub>2</sub>), Carbon Monoxide (CO), Methane (CH<sub>4</sub>), volatile organic compounds (VOC), and Nitrogen Oxides (NOX). Burning of rice crop residue releases Suspended Particulate Matter, SO<sub>2</sub>, NO<sub>2</sub> and O<sub>3</sub> in the atmosphere.
- **Therefore, option (d) is the correct answer.**

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## **Mains**

**Q1.** Explain the purpose of the Green Grid Initiative launched at World Leaders Summit of the COP26 UN Climate Change Conference in Glasgow in November, 2021. When was this idea first floated in the International Solar Alliance (ISA)? **(2021)**

**Q2.** Describe the major outcomes of the 26th session of the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). What are the commitments made by India in this conference? **(2021)**

**Source: IE**

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