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## Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions

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### Why in News

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Recently, a report, titled **Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions** suggested that the world needs to dramatically cut methane emissions to avoid the worst of climate change.

The report was released by the Climate and Clean Air Coalition and the United Nations Environment Programme (UNEP).

### Methane

- **About:**
  - Methane is gas that is found in small quantities in Earth's atmosphere. **Methane is the simplest hydrocarbon**, consisting of one carbon atom and four hydrogen atoms (CH<sub>4</sub>). **Methane is a powerful greenhouse gas**. It is **flammable, and is used as a fuel worldwide**.
  - Methane is **produced by the breakdown or decay of organic material** and can be **introduced into the atmosphere by either natural processes** – such as the decay of plant material in wetlands, the seepage of gas from underground deposits or the digestion of food by cattle – **or human activities** – such as oil and gas production, rice farming or waste management.
- **Impact of Methane:**
  - Methane is **84 times more potent than carbon and doesn't last as long in the atmosphere before it breaks down**. This makes it a critical target for reducing global warming more quickly while simultaneously working to reduce other greenhouse gases.
  - It is **responsible for creating ground-level ozone**, a dangerous air pollutant.

### Key Points

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- **Current Situation:**
  - Human-caused **methane emissions are increasing faster currently** than at any other time since record keeping began in the 1980s.
  - **Carbon dioxide levels have dropped** during the Covid-19 pandemic. However, **methane in the atmosphere reached record levels last year**.
  - This is a cause of concern as it was **responsible for about 30% of warming since pre-industrial times**.
- **Reducing Methane Emissions from Major Sources:**
  - **Fossil Fuel:**
    - **Oil and gas extraction**, processing and distribution accounted for 23% of methane emissions in the fossil fuel sector. **Coal mining** accounted for 12% of emissions.
    - Fossil fuel industry had the **greatest potential for low-cost methane cuts**, up to 80% of measures in the oil and gas industry could be implemented at negative or low cost.
    - About 60% of methane cuts in this sector could make money as **reducing leaks would make more gas available for sale**.
  - **Waste:**
    - **Landfills and wastewater** made up about 20% of emissions in the waste sector.
    - The waste sector could cut its methane emissions by **improving the disposal of sewage around the world**.
  - **Agriculture:**
    - In the agricultural sector, **livestock emissions** from manure and enteric fermentation constituted for roughly 32% and rice cultivation 8% of emissions.
    - Three behavioural changes — **reducing food waste and loss, improving livestock management and adopting healthy diets** (vegetarian or with a lower meat and dairy content) — could reduce methane emissions by 65–80 million tonnes per year over the next few decades.

- **Region-wise Emission Reduction Potential:**
  - **Europe:**  
Greatest potential to curb methane emissions from **farming, fossil fuel operations and waste management.**  
The European Commission had adopted the **European Union Methane Strategy.**
  - **India:**  
Greatest potential to reduce methane emissions in the **waste sector.**
  - **China:**  
Mitigation potential was best in **coal production and livestock.**
  - **Africa:**  
Its potential to reduce methane emission was in **livestock, followed by oil and gas.**
- **Need and Benefits:**
  - Human-caused **methane emissions must be cut by 45%** to avoid the worst effects of climate change.
  - Such a cut would **prevent a rise in global warming by up to 0.3 degrees Celsius by 2045.** It would also **prevent 260,000 premature deaths, 775,000 asthma-related hospital visits** annually, as well as **25 million tonnes of crop losses.**
  - However, **cutting methane emissions can rapidly reduce the rate of warming in the near-term** as the gas broke down quickly.

## Related Indian Initiatives

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- **Seaweed-Based Animal Feed:**  
Central Salt & Marine Chemical Research Institute (CSMCRI) in collaboration with the country's three leading institutes developed a seaweed-based animal feed additive formulation that **aims to reduce methane emissions from cattle and also boost immunity of cattle and poultry.**
- **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:**  
The **National Action Plan on Climate Change (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.

### **Climate and Clean Air Coalition**

**Launched** in 2019, It is a **voluntary partnership** of governments, intergovernmental organizations, businesses, scientific institutions and civil society organizations **committed to protecting the climate and improving air quality through actions** to reduce short-lived climate pollutants.

**India is a member** of the coalition.

### **United Nations Environment Programme**

- **Launch:**

The UNEP is a leading global environmental authority **established on 5<sup>th</sup> june 1972.**

- **Functions:**

It **sets the global environmental agenda, promotes the sustainable development** within the **United Nations** system, and serves as an authoritative advocate for global environment protection.

- **Major Reports:**

- **Major Campaigns:**

Beat Pollution, UN75, **World Environment Day**, Wild for Life.

- **Headquarters:**

Nairobi, Kenya.

**Source: DTE**