World's Top Methane Hotspots

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Why in News?

A new study in Nature Food has found that greenhouse gas (GHG) emissions from paddy fields worldwide have doubled since the 1960s.

- **Methane Hotspots** – These are localised geographic areas with exceptionally high emissions of methane.

Findings of the study

- Greenhouse gas (GHG) emissions from paddy fields worldwide have doubled since the 1960s.
- The paddy fields around the world produced around 1.1 billion tonnes of carbon dioxide-equivalent (CO_2-e) emissions every year — a ***90.4% increase*** from the annual emissions between 1961 and 1980.
- **Sources contributing to the rise**
- **Loss of soil organic carbon** (About half the increase) – In the 2010s, over a third of paddy fields worldwide in fact began losing carbon from the soil.
- **Methane from paddy fields** – Flooded fields develop low-oxygen conditions where methane-producing microbes thrive.
- **India's Position –** India's rice fields now rank among the ***world's top methane hotspots*** & paddy fields in eastern India were among the global methane hotspots.
- India tops the list of countries on *rice production*, delivering 154 million tonnes in 2025-26.
- The area under paddy cultivation has also increased by around 25% since the 1970s, and currently covers 55% of India's rainfed harvested area.
- This expansion, together with continuous irrigation of fields, incorporating residues such as leftover stalks, leaves, and stubble, and increasing use of nitrogen fertilisers, has also increased emissions.
- Irrigated paddy fields in India release around 3.9 million tonnes of methane every year. This is a little more than the entire annual methane emissions of Germany.
- **Future Projection** – Between 2031 and 2050, annual emissions will increase by around 26%, fuelled by global warming, erratic rainfall, and the continued intense use of agricultural inputs.

India has not set up goals to reduce emissions from agriculture.

- **Suggestions** – A combination of improved irrigation, optimised fertiliser use, residue management, and reduced tillage could reduce global rice-related greenhouse gas emissions by about 10% by mid-century, even under a warming climate.

Reference

The Hindu | India’s rice fields now rank among world’s top methane hotspots

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