



UK to Support Nitrogen Research in India

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The **United Kingdom** will fund the **South Asian Nitrogen Hub (SANH)**, a group of **50 institutions** to assess and study the quantum and impact of "**nitrogen pollution**" in **South Asia**.

- **Eighteen research institutions in India** are the part of SANH which will study the impacts of the different forms of pollution to form a "coherent picture" of the nitrogen cycle.
In particular, it will look at nitrogen in agriculture in **eight countries** — India, Pakistan, Bangladesh, Nepal, Afghanistan, Sri Lanka, Bhutan and Maldives.
- This is a five-year programme established with funds from the UK Research and Innovation (UKRI) under its **Global Challenges Research Fund (GCRF)**.

Global Challenges Research Fund

- The Global Challenges Research Fund (GCRF) is a £1.5 billion fund announced by the **UK Government in late 2015** to support cutting-edge research that addresses the challenges faced by **developing countries**.
- GCRF forms part of the UK's Official Development Assistance (ODA) commitment, which is monitored by the **Organisation for Economic Cooperation and Development (OECD)**.

Nitrogen Pollution

- Nitrogen **constitutes 78% of Earth's air**. In the form of gas it is colourless, odourless and generally considered as **inert gas**. In aqueous form also it is **colourless and odourless**.
Nitrogen makes plants grow and is an **essential component for life**.
- Nitrogen is **potent greenhouse gas**. Nitrous oxide (N₂O) is **300 times more potent** green house gas than carbon dioxide.
- Nitrogen pollution is caused by emission of excess of Nitrogen from the use of chemical fertilisers, livestock manure and burning fossil fuels.

- Gases such as ammonia (NH_3) and nitrogen dioxide (NO_2) contribute to poor air quality and can aggravate respiratory and heart conditions, leading to millions of premature deaths across the world.
- Nitrate from chemical fertilisers, manure and industry pollutes the rivers and seas, posing a health risk for humans, fish, coral and plant life.
- Other than air pollution, nitrogen is also linked to the loss of biodiversity, the pollution of rivers and seas, ozone depletion, health, economy, and livelihoods.

Need of the Study

- According to a study, **nitrogen emissions in India grew** at 52% from 1991 to 2001 and 69% from 2001 to 2011.
- The **planetary boundary** of N (nitrogen) is set at 44 Tg (Tera-grams) per year globally and current application of N, primarily through fertiliser usage, is about 150 Tg N per year.
 Planetary boundary is the limits of the earth within which humans can thrive.
- Specially in case of South Asia, **high doses of fertiliser input** of nitrogen to agriculture combined with **low nitrogen-use efficiency** means that research on nitrogen pollution must be a priority. This is emphasised by the scale of **nitrogen subsidies** across South Asia at around **\$10 billion per year**.