



**PRESS RELEASE**

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## **South Asian countries release reports on nitrogen pollution policy and management**

Dhaka, 22 June 2022.

Demonstrating collective leadership on emerging global environmental concerns, scientists from South Asian countries have released a regional report on the status of policies dealing with nitrogen (N) pollution in South Asia. Four countries have also released their national reports (Bangladesh, Sri Lanka, Maldives, and Nepal). These reports document the policies available to counter the high and rapidly growing threats that N pollution poses for the environment, climate change, food security, human health and the economy in South Asia. They are a first step in raising awareness of the problems of nitrogen pollution, and they identify key areas for urgent action.

The policy reports were released in a meeting in Dhaka today (22 June 2022) called by the regional intergovernmental body, South Asia Cooperative Environment Programme (SACEP). The regional nitrogen policy report was released by the chief guest Dr. Muhammad Abdur Razzaque, Hon'ble Minister, Ministry of Agriculture, Bangladesh. He stated that agriculture is the main livelihood in the South Asian region where nitrogen management is challenging for crop production and environmental pollution. Dr. Razzaque also said that it is the high time for us in South Asia to cooperate and collaborate more concretely to develop sustainable nitrogen management for ensuring food security and environmental sustainability in the region. The national policy report of Bangladesh was released by the special guest Mr. Md. Shahab Uddin, Hon'ble Minister, Ministry of Environment, Forest and Climate Change, Bangladesh. He emphasized the urgent need for an intelligible linkage between scientists and policy makers to find pragmatic solutions to nitrogen challenges in relation to environmental pollution, food security and climate change.

Speeches were also delivered by Md. Sayedul Islam, Secretary, Ministry of Agriculture, Bangladesh; Dr. Farhina Ahmed, Secretary, Ministry of Environment, Forest and Climate Change, Bangladesh; Dr. Anil Jasinghe, Secretary, Ministry of Environment, Sri Lanka, and Prof. Dr. Md. Giashuddin Miah, Vice-Chancellor of BSMRAU, Bangladesh. In his speech Prof. Miah highlighted the issues and challenges of nitrogen management and pollution in the region. He further added that environmental issues have always been a high priority in academics and research of BSMRAU.

“This is a historic moment for South Asian cooperation to develop an evidence-based policy approach to tackle nitrogen pollution. We thank our partners across South Asia and the UKRI-GCRF-SANH project for making this possible” said Dr Masumur Rahman, DG, SACEP, and the Chair of the today’s auspicious event.

“One of the major research programmes of SANH is to build the policy arena for nitrogen in South Asia. These status reports are an important output, based on the last three years of work, which will help in catalysing informed interventions over the next 2 years” said Roger Jeffery, a Principal Investigator of the SANH project and Professor at the University of Edinburgh, UK. “It is such a great pleasure to work with South Asian countries, as nitrogen is so high on their agenda,” he added.

Mark Sutton, the project director of SANH and professor at the UK Centre for Ecology & Hydrology (UKCEH), said that “South Asia is the only region that has led the global intergovernmental action against nitrogen pollution with two UN resolutions on sustainable nitrogen management. The first resolution originated from a meeting of South Asian partners in 2017 and was piloted by India in the 4<sup>th</sup> UN environment assembly in 2019. The second resolution was piloted by Sri Lanka in the 5<sup>th</sup> assembly held recently in March 2022, a few months after the President of Sri Lanka hosted a nitrogen event during the COP26 deliberations in Glasgow during Oct-Nov 2021”.

SANH brings together over 30 South Asian institutions, including universities, institutes and NGOs. Several South Asian countries, including Nepal, Sri Lanka and India, are already working to take action across all the relevant ministries. “India has already established an inter-ministerial high level National Nitrogen Steering Committee to implement the UN resolution on sustainable nitrogen management. This project is delivering important inputs for this committee’s deliberations through its research publications and policy reports” said a leading scientist from India, Dr Tapan Adhya.

“Bangladesh leads the region in urea deep placement technique and is keen on adopting other interventions towards sustainable nitrogen management. This project has been a great interdisciplinary learning experience in aiding evidence-based policies. We would like Bangladesh to

produce the next national nitrogen assessment in South Asia, said Mizanur Rahman, Professor at BSMRAU, the host organization of the event in Bangladesh.

### Contact details

For interview requests or further information, please contact:

SACEP : Priyankari Alexander (priyankari.alexander@sacep.org)

### Notes for editors:

The event was organised by SACEP and hosted by BSMRAU. This inaugural session is part of a five-day programme where scientists and National Focal Points from all eight South Asian countries and UK joined in discussions on confronting the challenge of nitrogen pollution globally and in South Asia in particular.

**The South Asian Nitrogen Hub (SANH)**, is a partnership led by the UK Centre for Ecology & Hydrology (UKCEH). SANH comprises around 40 organisations from across the UK and all eight countries of South Asia, with funding from UK Research and Innovation (UKRI) under its Global Challenges Research Fund (GCRF). The Hub was awarded about £15 million from UKRI for five years beginning from 2019, with additional funding in cash and kind from UK and international partners, including SACEP.

**Professor Mark Sutton** is based at UKCEH in Edinburgh and leads the South Asia Nitrogen Hub. Since 2012 he has been working with the United Nations Environment Programme supporting their work through the Global Programme of Action on the Protection of the Marine Environment from Land-based Activities (GPA) and leading the Global Overview on Nutrient Management for UNEP *'Our Nutrient World'* (2013). He also leads a GEF-UNEP-INI project on international nitrogen assessment towards the establishment of an International Nitrogen Management System (INMS). He tweets as @MarkNitrogen

**Dr Masumur Rahman** has been Director-General SACEP since 9 August 2021. He has a Ph. D in Agroforestry and Environment from Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Bangladesh. Dr Rahman joined the Bangladesh Civil Service in the year 1998. Prior to becoming Head of Mission of SACEP, he was the Director General of the Ministry of Foreign Affairs, Government of Bangladesh.

**Dr Roger Jeffery** is Professor of Sociology of South Asia at the University of Edinburgh, which regularly ranks in the top 25 universities world-wide. He has carried out research in several South

Asian countries since 1970, and now co-leads the work of SANH in policy analysis and engagement. He was lead author of the regional nitrogen policy report.

**Dr Tapan Adhya** is also attending the meeting. He is Professor of Biotechnology at Kalinga Institute of Industrial Technology, Bhubaneswar, Science Director of SANH and a member of India's national nitrogen committee. He is also the South Asia Director of the INI and a member of India's national nitrogen committee. He has commented that "The SANH is one of 12 GCRF hubs funded by UKRI to address intractable challenges in sustainable development. Nitrogen is one such major challenge that impacts all sustainable development goals".

## Additional materials for background information

Public debate about planetary health tends to focus on carbon. But nitrogen is also critically important as it is connected to air pollution, biodiversity loss, the pollution of rivers and seas, ozone depletion, health, economy and livelihoods. Nitrogen pollution is caused, for example, by emissions from chemical fertilizers, livestock manure, and burning fossil fuels. Previous efforts have addressed only specific aspects of the problem, while the Hub will bring these together in a more coherent approach.



*A farmer sows urea fertilizer on a paddy field in Madurai, India* Picture: Shutterstock

Nitrogen pollution comes in many forms, with multiple impacts – for humans, animals and plant life. Gases such as ammonia ( $\text{NH}_3$ ) and nitrogen dioxide ( $\text{NO}_2$ ) contribute to poor air quality and can aggravate respiratory and heart conditions, leading to millions of premature deaths across the world; while nitrous oxide ( $\text{N}_2\text{O}$ ) is a greenhouse gas that depletes the ozone layer. Nitrate from chemical fertilizers, manure and industry pollutes rivers and seas, posing a health risk for humans, fish, coral and plant life.

The UKRI GCRF South Asian Nitrogen Hub studies the impacts of the different forms of pollution to form a coherent picture of the nitrogen cycle. In particular, it looks at nitrogen in agriculture in eight countries – India, Pakistan, Bangladesh, Nepal, Afghanistan, Sri Lanka, Bhutan and Maldives. The Hub's recommendations will support cleaner and more profitable farming, as well as industrial recycling of nitrogen, fostering development of a cleaner circular economy for nitrogen.

Nitrogen pollution presents significant barriers to achieving United Nations Sustainable Development Goals on: Zero Hunger, Climate Action, Good Health & Well-being, Clean Water & Sanitation, Affordable & Clean Energy, Life Below Water, Life on Land, No Poverty, Responsible Consumption & Production, and Decent Work & Economic Growth. The Hub will support progress towards meeting SDGs, address barriers to change, and demonstrate the economic benefits of tackling nitrogen pollution. The involvement of UN Environment, SACEP and South Asian governments will ensure that the outcomes are shared widely as a basis to accelerate uptake of the most promising solutions.



*Nitrogen flux testing over rice fields in Odisha, India* Picture: Mark Sutton

Professor Tapan Adhya, Hub Co-Director for Science, who is from the Kalinga Institute of Industrial Technology, Bhubaneswar, India, one of the partners in the South Asian Nitrogen Hub, says: “High doses of fertilizer input of nitrogen to agriculture combined with low nitrogen-use efficiency mean that research on nitrogen pollution must be a priority for South Asia. This is emphasised by the scale of nitrogen subsidies across South Asia at around 10 billion dollars per year. Better nitrogen management will have huge economic and environmental benefits.”

Director General of the SACEP, Dr Masumur Rahman, who is the Hub Co-Director for Policy, adds: “SACEP, as an international organisation, has the responsibility to embrace Strategic Development Goals (SDGs). Considering the impacts of nitrogen on climate change, air and water, addressing nitrogen pollution throughout the hubs will help us to mobilise major progress towards multiple SDGs globally, starting from the South Asia region, to meet the global needs.”

### **Contact details**

For interview requests or further information, please contact:

SACEP : Priyankari Alexander (priyankari.alexander@sacep.org)

**In India**, please contact Professor N. Raghuram, Guru Gobind Singh Indraprastha University, New Delhi, at +91 9891252943, raghuram@ipu.ac.in or raghuram98@hotmail.com

**UK Research & Innovation** (UKRI) is providing £15.1m for the hub out of the UK Government’s £1.5 billion Global Challenges Research Fund, a key component in delivering the UK AID strategy and puts UK-led research at the heart of efforts to tackle the United Nations Sustainable Development Goals. An additional £2.5m and other resources will be provided by the project partners.

**The South Asian partner institutions include** (in alphabetical order): Aligarh Muslim University; Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU); Bangladesh Rice Research Institute (BRRI); Centre for Marine Living Resources & Ecology; CSIR National Institute of Oceanography; Guru Gobind Singh Indraprastha University; ICAR-Indian Agricultural Research Institute and National Rice Research Institute; ICMAM Project Directorate- NIOT Campus; Indian Institute of Tropical Meteorology; Institute of Soil and Environmental Sciences, University of Agriculture Faisalabad; IORA Ecological Solutions; Jawaharlal Nehru University; Kalinga Institute of Industrial Technology; Kathmandu University; Maldives National University; Marine Environment Protection Authority, Sri Lanka; National Centre for Sustainable Coastal Management; National Environmental Protection Agency, Afghanistan; Sherubtse College, Royal University of Bhutan; Society for Conservation of Nature; Sustainable India Trust; TERI University; University of Peradeniya

In addition to the UK Centre for Ecology & Hydrology, UK project partners include the Universities of Edinburgh, Aberdeen and Bristol, plus the Cool Farm Alliance, London School of Hygiene and Tropical Medicine, Moredun Research Institute, National Oceanography Centre, Nourish Scotland, Plymouth Marine Laboratory, Rothamsted Research, Royal Botanic Garden Edinburgh, Scottish Government and Scotland's Rural College. The Hub also includes the intergovernmental South Asia Cooperative Environment Programme (SACEP) as well as the UN Food & Agriculture Programme and UN Environment, plus industry including international chemical company BASF.

### **About nitrogen**

- Nitrogen is a naturally occurring element that is a component of all proteins and essential for all life – humans, animals and plants. Unreactive nitrogen gas ( $N_2$ ) makes up 78 per cent of the air we breathe.
- Human activities contribute to various forms of nitrogen pollution such as ammonia, nitrate, nitrogen dioxide and nitrous oxide, which worsens air, water and soil quality and contributes to climate warming, with multiple threats for health of people, animals and plants.
- South Asia, home to a quarter of the world's population, is critical to the global nitrogen cycle. By 2050, its population of 1.8 billion is expected to rise by 20 per cent, while its use of fertilizers could double.
- Around 12 million tonnes of nitrogen are used in fertilizers across South Asia to support food production, but the efficiency is low, with around 80% wasted which contributes to multiple forms of nitrogen pollution.
- About 10 billion USD worth of nitrogen is lost as pollution in South Asia. In India alone, the total societal cost of nitrogen pollution on human health, ecosystems and climate is estimated at about 75 billion USD annually.
- Atmospheric nitrogen pollution stimulates growth of certain plants at the expense of more sensitive species with a high conservation value. There is a significant risk to global biodiversity hotspots such as the Himalayan foothills, especially as the Indo-Gangetic Plain (IGP) has the highest ammonia ( $NH_3$ ) concentrations in the world, arising mainly from livestock excreta and urea fertilizer used in agriculture.
- Government subsidies of the fertilizer industry in South Asia are around 10 billion US dollars a year (including 7 billion USD in India).

### **About the UK Centre for Ecology & Hydrology (UKCEH)**

The UK Centre for Ecology & Hydrology is a centre for excellence in environmental science across water, land and air. Our 500-plus scientists work to understand the environment, how it sustains life and the human impact on it – so that together, people and nature can prosper.

We have a long history of investigating, monitoring and modelling environmental change, and our science makes a positive difference in the world.

The UK Centre for Ecology & Hydrology is a strategic delivery partner for the Natural Environment Research Council, part of UK Research and Innovation.

[www.ceh.ac.uk](http://www.ceh.ac.uk) / @UK\_CEH / LinkedIn: [UK Centre for Ecology & Hydrology](#)

### **About UK Research and Innovation**

UK Research and Innovation (UKRI) is the largest public funder of research and innovation in the UK, with a budget of around £8bn. It is composed of seven disciplinary research councils, Innovate UK and Research England.

We operate across the whole country and work with our many partners in higher education, research organisations businesses, government, and charities.

Our vision is for an outstanding research and innovation system in the UK that gives everyone the opportunity to contribute and to benefit, enriching lives locally, nationally and internationally.

Our mission is to convene, catalyse and invest in close collaboration with others to build a thriving, inclusive research and innovation system that connects discovery to prosperity and public good.

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