TERMS OF REFERENCE FOR MOOC TRANSLATION

UKRI GCRF South Asian Nitrogen Hub (SANH)

Background:

Humans have massively altered flows of nitrogen on our planet, leading to both benefits for food production and multiple threats to the environment. There are few places on Earth more affected than South Asia, with levels of nitrogen pollution rapidly increasing. The result is a web of interlinked problems, as nitrogen losses from agriculture and from fossil fuel combustion cause air and water pollution. This damages human health, threatens biodiversity of forests and rivers, and leads to coastal and marine pollution that exacerbates the effects of climate change, such as by predisposing reefs to coral bleaching. Altogether, it is clear that nitrogen pollution is something we should be taking very seriously.

The amazing thing is that so few people have heard of the problem. Everyone knows about climate change and carbon footprints, but how many people are aware that nitrogen pollution is just as significant? One reason for this is that scientists and policy makers have traditionally specialized. Different experts have focused on different parts of the nitrogen story, and few have the expertise to see how all the issues fit together.

This challenge is taken up by a major new research hub established under the UK Global Challenge Research Fund. The "GCRF South Asian Nitrogen Hub" is a partnership that brings together 32 leading research organizations with project engagement partners from the UK and South Asia. All eight countries of the South Asia Co-operative Environment Programme (SACEP) are included. The hub includes research on how to improve nitrogen management in agriculture, saving money on fertilizers and making better use of manure, urine and natural nitrogen fixation processes. It highlights options for more profitable and cleaner farming for India, Pakistan, Bangladesh, Nepal, Afghanistan, Sri Lanka, Bhutan and the Maldives. At the same time, the hub considers how nitrogen pollution could be turned back to fertilizer, for example by capturing nitrogen oxide gas from factories and converting it into nitrate.

The South Asian case provides for some exciting scientific, social, cultural and economic research challenges. The first is simply to get all the researchers talking together and understanding each other. There are dozens of languages in South Asia, matching the challenge met when different research disciplines come together. This is where developing a shared language around nitrogen can really help. There are lots of nitrogen forms ranging from unreactive atmospheric nitrogen (N2), to the air pollutants ammonia (NH3) and nitrogen dioxide (NO2), to nitrate (NO3-) which contaminates watercourses, and nitrous oxide (N2O) which is a greenhouse gas. The impacts of each of these are being studied to provide a better understanding of how they all fit together.

The result is an approach that aims to give a much more coherent picture of the nitrogen cycle in South Asia: What is stopping us from taking action, and what can be done about it. One of the big expectations is that the economic value of nitrogen will help. India alone spends around £6 billion per year subsidizing fertilizer supply. It means that South Asian governments are strongly motivated to use nitrogen better. At which point research from the South Asian hub can provide guidance on where they might start.

Objectives of SANH:

The overall goal of the GCRF South Asian Nitrogen Hub is to develop an approach that links the many impacts of human alteration of the nitrogen cycle on environment, health, food security and climate resilience. The partnership recognizes that historical specialization across the nitrogen cycle has led to fragmented policy responses, often associated with little progress. The hub therefore builds interdisciplinary integration as a foundation to overcoming the barriers, which is vital to meet the Sustainable Development Goals (SDGs).

The hub will take this forward by developing better understanding of the social, cultural and economic barriers to adopting measures, technologies and lifestyles that reduce N pollution. It then aims to assemble the evidence, developing linked models of the South Asian N cycle. Integration of the models with measurements and social surveys will help to distil future visions that support the emergence of an effective South Asian Nitrogen Policy Arena.

The hub has four key objectives:

OBJECTIVE 1: To establish an approach that integrates the scientific, social, cultural and economic evidence needed for an effective NITROGEN POLICY ARENA. This requires evaluation of the current (inter-) governmental policy landscape, developing future visions and scenarios, considering options for N management, while recognizing the role of environmental diplomacy. Scenarios will link the key drivers (crop-livestock options, food choice, waste reduction, technological 'circular economy' approaches). The hub will develop guidance and e-tools to aid policy makers and practitioners.

OBJECTIVE 2: To identify the solutions to producing more food and energy with less pollution, maximizing resilience and co-benefits, while minimizing trade-offs. The hub will focus first on AGRICULTURAL SOLUTIONS, exploring how agronomy, genetics and biotechnology could raise nitrogen use efficiency and reduce nitrogen losses. It will then test solutions with VILLAGE GROUPS across South Asia to provide a deeper understanding of the practical and social challenges. These will be complemented by feasibility testing of ENGINEERING APPROACHES to recapture and recycle N, with a focus on adsorption/desorption of nitrogen oxides (NOx), aiming to open up a multi-billion-dollar sector turning air pollution into fertilizer.

OBJECTIVE 3: To improve understanding and awareness of KEY NITROGEN THREATS in South Asia, including education through MOOCs. This will give special attention: a) to assess the effects of air pollution from the Indo-Gangetic Plain (highest ambient NH3 in the world) on HIMALAYAN FORESTS. The hub will assess ecosystem services (esp. epiphytes used for perfume manufacture) and deploy an innovative field NH3 micro-dosing system to understand the mechanisms of epiphyte damage; b) to quantify how much eutrophication predisposes reefs to CORAL BLEACHING and prevents recovery, sharing observational capability to improve understanding and inform mitigation strategies.

OBJECTIVE 4: To integrate regional nitrogen flows and impacts in South Asia: a) to assess how much rural NH3 and NOx sources contribute to urban AIR POLLUTION; b) to assess the relative contributions of SOIL, FRESHWATER and MARINE N POLLUTION to human and ecosystem health; c) to quantify the two-way

interaction between GREENHOUSE GAS 21 emission and CLIMATE RESILIENCE. Integration will be supported by data harmonization, modelling and experimentation to support the Nitrogen Policy Arena.

Work Package 3.3 - Nitrogen education: integrating perspectives across the nitrogen cycle

Description of work

Drawing on extensive experience in digital education aligned with our expertise in N research this Work Package will deliver world-leading N awareness and education at a range of scales. We will create a Massive Open Online Course (MOOC) on N challenges in each of the 8 national languages of SA to reach a mass audience (high-school to undergraduate). We will combine in-country training and specialised digital education resources to enhance the capacity for improved N research, policy and management – this will include bespoke online courses (SOOCs) in 'Nitrogen Monitoring, Reporting and Verification (MRV)' and in 'N & Social Science Research Methods'. The capstone Nitrogen & Planetary Health MOOC will be a cross-cutting global challenges course aimed at a very large audience globally and integrating N threats and opportunities with the swathe of aligned global challenges. Special focus throughout will be given to N threats to Himalayan forest lichen communities, coral reefs (linked to WP3.1 & 3.2), and human health impacts via air, water and food, as case-studies in nitrogen and 'planetary health'.

Work package level Specific objectives:

a. Translation of our world-first 'Nitrogen MOOC' into the 8 national languages of the South Asia partners. Each MOOC translation then checked by in-country N champion to correct any errors. N Champion for each nation then interviewed (with Reay and Moring using UoE online suite) to provide introductory video in national language for each MOOC.

b. 'Nitrogen MRV' online course: enhancing N flux estimation and reporting. A specialised open online course (SOOC) covering monitoring, reporting and verification methods for key N species (NH3, NO3, N2O, NOx). Aligned with existing international standards (e.g. IPCC) and providing tiered levels to account for diversity of technical expertise, equipment and data availability.

c. 'Nitrogen & Society' online course: research skills for social science & nitrogen. Combines existing (Cambridge) course on social science research methods with residential training course for 16 SANH delegates (2 from each South Asia partner nation) that is also recorded.

d. Delivers a tertiary level online course that incorporate interviews, footage and role-plays from the residential training course within the framework of the existing course (using N as a case study).

e. 'Nitrogen & Planetary Health MOOC: Massive Open Online course in collaboration with all GCRF Hubs, the Planetary Health Alliance, and InterAction Council. Delivers top-level messages on Nitrogen's role in planetary health for a mass audience (high school level content).

Referring to the first main objective of the work package 3.3, this TOR is to find a translator of the Nitrogen MOOC to Dhivehi language, so that this online course can also be offered in Dhivehi language.

Details of work

The MOOC translation documents consist of:

- A typed English word document for MOOC course content, of 95 pages with 19528 words as a soft copy.
- 30 files of Notepad written in English, (each equivalent to 3 pages of Microsoft Word document) consisting of the subtitles of videos used in the MOOC, provided as a soft copy.

Expected Output:

The translated MOOC documents should consist of:

- A typed Dhivehi word document for the MOOC course content as a soft copy.
- Video subtitles typed in Dhivehi, files in Notepad format as soft copies.

Qualifications:

The interested individual should have:

- Fluency in both written and spoken, Dhivehi and English languages.
- Full capability of typing the translated materials in Dhivehi language, as per the expected output formats.
- Educational qualification of an MQA level 7 and/or above in the field of Environmental Management or equivalent in a related field.

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