Sustainable Nitrogen Management

Options and Modalities for Improved Coordination of Policies Across the Global Nitrogen Cycle

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1. Introduction: Why we need improved coordination of policies across the global nitrogen cycle.

Despite multiple nitrogen-relevant UN agencies and conventions having become operational since 1972, global nitrogen waste has steadily increased over that period. Different aspects of the nitrogen cycle fall within the remit of different parts of the UN system. Whilst in theory this allows for each aspect of the nitrogen cycle to be considered and addressed by the body that is best placed to tackle any pollution and waste that may arise from its use, there are still gaps and a lack of coherence in addressing the multiple negative impacts such pollution and waste cause for people and for the planet.

At the same time, awareness has increased of the climate and biodiversity related impacts of nitrogen. As the world gets better at tackling carbon dioxide (CO_2), there is an increasing focus on other potent greenhouse gases, including methane and nitrogen[1], and a growing understanding that we will not be able to tackle global warming effectively if we look at CO_2 in isolation. Similarly, there is a growing understanding of the role of pollution as one of the main drivers of biodiversity loss and ecosystem degradation[2], including in marine and freshwater environments.

The recent conflict in Ukraine has affected the availability and affordability of fertilisers, highlighting the global food security issues linked to nitrogen use[3]. The wider health implications of nitrogen pollution are also increasingly coming to the fore, in terms of both water[4] and air pollution[5].

Failure to address nitrogen in a coherent way will therefore also impact on the world's ability to achieve the Sustainable Development Goals – as sustainable nitrogen management contributes to Goals 1 (no poverty), 2 (zero hunger), 3 (good health and wellbeing), 6 (clean water and

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[1] Nitrous oxide (N_2O) has a global warming potential 300 times more powerful than CO_2 and an atmospheric lifetime of 200 years. It is now the dominant cause of ozone depletion for 2020 and beyond.

[2] Target 7 of the Convention on Biological Diversity's Global Biodiversity Framework calls for *"the reduction of pollution risks and the negative impact of pollution from all sources, by 2030, to levels that are not harmful to biodiversity and ecosystem functions and services … including: reducing excess nutrients lost to the environment by at least half, including through more efficient nutrient cycling and use…"*

[3] The production of nitrogen fertilisers depends on natural gas. The peak in gas prices led to a 2 to 3 times increase in the price of fertilisers in September 2022 compared with the previous year. This in turn leads to higher food prices with potentially devastating effects on food security, especially in vulnerable regions of the world that are highly dependent on imports. (See https://agricultureandfoodsecurity.biomedcentral.com/articles/10.1186/s40066-023-00409-5; https://www.iisd.org/articles/analysis/tackling-hunger-nitrogen-fertilizers)

[4] Water containing elevated levels of nitrate raises the risk of infants developing methemoglobinemia, commonly referred to as "blue baby syndrome", which can be fatal. High levels of nitrate in drinking water can also increase the risk of cancer in adults (See: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6068531/).

[5] Nitrogen compounds contribute 10-50% of fine particulate matter, 100% of nitrogen oxides (NOx)and 60% of the increase in tropospheric ozone pollution, contributing to heart disease and respiratory illnesses (See: https://www.nature.com/articles/s41467-021-25854-3#Abs1).

sanitation), 7 (affordable and clean energy), 11 (sustainable cities and communities), 13 (climate action), 14 (life below water), 15 (life on land) and 17 (partnerships for the goals).[6]

In addition to the environmental and health arguments, there is an increasingly strong economic argument for the reduction of nitrogen waste. According to UNEP's 2018-19 Frontiers Report, nitrogen costs the global economy between US$340 billion and US$3.4 trillion annually, when taking into account its impact on human health and ecosystems.

The lack of a coherent and joined-up approach at international, regional and national levels can be seen in policy trade-offs that can lead to unintended consequences, for example policies to reduce nitrate pollution of water in the European Union (EU) led to the prohibition of manure application to land in closed periods, leading to an unintended peak in atmospheric ammonia concentrations; and policies recommending bringing cattle indoors to reduce climate-relevant emissions of nitrous oxide leading to increased ammonia emissions.[7]

Addressing this fragmentation though better cooperation and working together to support better coordination of outcomes through existing processes will therefore help UN Member States reach their goals across a range of policy areas.

This paper considers the background to nitrogen policies at international level, before moving to look at different modalities that could provide a precedent or model to operationalize the options under consideration by UN Member States in relation to United Nations Environment Assembly (UNEA) Resolutions 4/14 and 5/1 on Sustainable Nitrogen Management.

2. Background to nitrogen policies at regional and global levels

2.1 Multilateral Environmental Agreements (MEAs) relevant to nitrogen

2.1.1 The UNECE Convention on Long-Range Transboundary Air Pollution[8]

One of the earliest regional agreements to focus on nitrogen was the 1979 United Nations Economic Commission for Europe (UNECE) Convention on Long-Range Transboundary Air Pollution, which entered into force in 1983 ("the Air Convention"). Conceived to address the problem of acid rain, the Air Convention set out the general principles of international

[6] See "Nitrogen: Grasping the Challenge. 2019 https://web.archive.org/web/20230609053528/https://apps1.unep.org/resolution/?q=node/286

[7] See UN Frontiers Report 2018/19 *The Nitrogen Fix: From Nitrogen Cycle Pollution to Nitrogen Circular Economy:* https://wedocs.unep.org/handle/20.500.11822/27543

[8] https://unece.org/environmental-policy-1/air

cooperation for air pollution abatement, setting up an institutional framework making provision for the negotiation and adoption of pollutant specific protocols.

The 1988 Protocol concerning the Control of Nitrogen Oxides or their Transboundary Fluxes (the "NO_x Protocol") entered into force in 1991 with a focus on large industrial combustion sources, including for electricity supply. Further progress was made with the negotiation of the multi-pollutant 1999 Protocol to Abate Acidification, Eutrophication and Ground Level Ozone (the "Gothenburg Protocol"), which entered into force in 2005 and highlighted the dual importance of NO_x and ammonia (NH_3) emissions for particulate matter (PM) air pollution and ecosystem impacts.

In response to political barriers to abating agricultural NH_3 emissions and the need for synergy across the nitrogen cycle to strengthen the case for action, the Air Convention established the Task Force on Reactive Nitrogen (TFRN) in 2007 *''to develop a better understanding of the integrated, multi-pollutant nature of reactive nitrogen which may be used by other bodies outside the Convention''*[9]. The activity also drew on global science cooperation through the International Nitrogen Initiative (INI) to develop the European Nitrogen Assessment[10].

This work led directly to the inclusion of national nitrogen budgets under the revised Gothenburg Protocol in 2012[11], to guidance on NH_3 abatement[12], and to assessment of how eating less meat and dairy can reduce nitrogen pollution[13]. The most recent product, adopted in December 2021, is a guidance document on integrated sustainable nitrogen management[14].

Despite focusing on one dimension of pollution, the Air Convention provides the most advanced example of integrated nitrogen policy at international or regional level.

2.1.2 The Vienna Convention for the Protection of the Ozone Layer[15]

Just as understanding of the impacts of transboundary air pollution increased during the 1970s and 1980s, so did understanding of the harmful effects of certain man-made chemicals on the ozone layer. The Vienna Convention for the Protection of the Ozone Layer (the "Vienna Convention") was adopted in 1985 and entered into force in 1988. Just like the Air Convention before it, the Vienna Convention creates a framework for more concrete measures, which are

[9] ECE/EB.AIR/ 91.Add1, Decision 2007/1
[10] http://www.nine-esf.org/node/204/ENA.html
[11] https://unece.org/sites/default/files/2021-10/ECE.EB_.AIR_.114_ENG.pdf
[12] https://unece.org/sites/default/files/2021-06/Ammonia_SR136_28-4_HR_0_0.pdf
[13] https://nora.nerc.ac.uk/id/eprint/513111/
[14] https://unece.org/sites/default/files/2022-11/UNECE_NitroOpps%20red.pdf
[15] https://ozone.unep.org/

set out in the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer (the "Montreal Protocol").

Both N_2O and NO_x are listed in Annex I to the Vienna Convention as substances thought to have the potential to modify the chemical and physical properties of the ozone layer.[16] Neither substance was, however, included under the Montreal Protocol, which focused exclusively on solvents, coolants and other manufactured chemicals. With chlorofluorocarbons and many other ozone-depleting substances largely banned as a result, N_2O has now become the largest contributor to ozone depletion, 70% of which is emitted from agriculture[17].

The Montreal Protocol has been successful in reducing ozone depleting substances and reactive chlorine and bromine in the stratosphere. As a result, the ozone layer is showing signs of recovery and it is expected that the Antarctic ozone hole will close by around 2060[18].

Despite its success, the Montreal Protocol only controls some of the ozone depleting substances listed in the parent Vienna Convention. Adding N_2O and / or NO_x to the Montreal Protocol's phase down mechanisms would therefore require an amendment to the controlled substances listed in the Protocol's annexes (see section 3.1 below).

2.1.3 The United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and the Paris Agreement[19]

As the third most important contributor to warming, N_2O is included in the UNFCCC basket of greenhouse gases alongside carbon dioxide and methane and as such is covered by both the Kyoto Protocol and the Paris Agreement. Countries that have signed and ratified the Paris Agreement are asked to declare a Nationally Determined Contribution (NDC), where countries set out what targets they intend to meet to contribute to mitigating climate change, and information on how the country plans to achieve those targets.

A 2022 assessment of Nationally Determined Contributions carried out by the UNFCCC Secretariat found that most nationally determined contributions (NDCs) submitted by Parties to the Paris Agreement cover N_2O emissions (89%)[20]. Some Parties include measures in their NDCs

[16] See https://ozone.unep.org/sites/default/files/2019-12/The%20Ozone%20Treaties%20EN%20-%20WEB_final.pdf pp26-27.
[17] UNEP (2013) *Drawing Down N_2O to Protect Climate and the Ozone Layer.* A UNEP Synthesis Report. (Eds.: J. Alcamo, S.A. Leonard, A.R. Ravishankara and M.A. Sutton). ISBN: 978-92-807-3358-7, United Nations Environment Programme, Nairobi.
[18] https://www.unep.org/news-and-stories/story/thirty-years-what-montreal-protocol-doing-protect-ozone
[19] https://unfccc.int/
[20] https://unfccc.int/documents/619180

for reducing N_2O emissions in agriculture (37%, accounting for 53% of total global N_2O emissions in 2019); however, very few include specific targets for N_2O reductions.

The full range of mechanisms under the UNFCCC and its Protocols are available to help monitor and tackle N_2O emissions (i.e. reporting, assessment, policy frameworks, technology transfer, capacity building and financial mechanisms), but there is relatively little discussion of N_2O within the negotiations.

The work of the Intergovernmental Panel on Climate Change (IPCC) provides scientific evidence support the UNFCCC. It is not a body of the UNFCCC itself, but rather was created in 1998 by the World Meteorological Association (WMO) and UNEP to provide governments at all levels with scientific information they can use to develop climate policies. The IPCC is an organisation of governments that are members of the UN or WMO.[21]

2.1.4 The Convention on Biological Diversity (CBD)[22], the Aichi Targets[23] and the Montreal-Kunming Global Biodiversity Framework[24]

Although the CBD does not specifically mention pollution, the preamble notes that the causes of significant reduction or loss of biodiversity should be anticipated, prevented and attacked at source; and Article 7(c) requires Contracting Parties to identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biodiversity and monitor their effects.

The detrimental role of pollutants on biodiversity an ecosystems was explicitly recognised in the Aichi Biodiversity Targets 2011-2020, which were adopted at COP10 in Nagoya in October 2010. Target 8 called for pollution, including from excess nutrients, to be brought to levels that are not detrimental to ecosystem function and biodiversity by 2020. Trends in NO_x emissions, trends in nitrogen deposit, trends in loss of reactive nitrogen to the environment and trends in global surplus of nitrogen are all indicators for this target[25].

Building on the Aichi Targets, target 7[26] of the Montreal-Kunming Global Biodiversity Framework 2022-2030 (GBF) calls for the reduction of pollution risks and the negative impact of pollution from all sources by 2030 to levels that are not harmful to biodiversity and ecosystem services.

[21] https://www.ipcc.ch/
[22] https://www.cbd.int/
[23] https://www.cbd.int/sp/targets/
[24] https://www.cbd.int/gbf/
[25] Decision XIII/28. See: https://www.cbd.int/doc/decisions/cop-13/cop-13-dec-28-en.pdf
[26] https://www.cbd.int/gbf/targets/7/

This explicitly includes reducing excess nutrients lost to the environment by at least half, including through more efficient nutrient cycling. Whilst the detailed indicators for target 7 remain to be developed, the proposed complementary indicators include trends in loss of reactive nitrogen to the environment and trends in nitrogen deposition[27].

Despite the increased focus on pollution within the GBF, as in the context of the UNFCCC there has been relatively little discussion of nitrogen compounds within the CBD negotiations.

Just as UNFCCC has the IPCC, scientific support is provided to CBD by the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES). Like the IPCC, IPBES is an intergovernmental body in its own right.[28]

2.1.5 The UNECE Water Convention[29]

Beyond climate, biodiversity and agriculture, nitrogen is also entwined in the water-food-energy-ecosystems nexus, since much wasted reactive nitrogen from atmospheric deposition and farm inputs finds its way into watercourses, affecting water quality, ecology, and coastal fisheries. The UNECE Water Convention is therefore relevant. As part of its work on the water-food-energy-ecosystems nexus[30], the Water Convention has addressed pollution and nutrient management in a broad sense, but it has not so far addressed nitrogen or nitrates directly as a discrete policy area or recommendation.

2.2 UN Organisations and Programmes relevant to nitrogen

2.2.1 The Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities[31]

The Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA) is a comprehensive and voluntary international framework adopted in 1995 by governments and organisations to address the increasing threats posed to the marine environment by activities on land. It was developed under the auspices of the United Nations

[27] See CBD decision 15/2: https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-05-en.pdf
[28] https://www.ipbes.net/
[29] https://unece.org/environment-policy/water
[30] https://unece.org/sites/default/files/2021-10/ECE_MP.WAT_66_new_web.pdf
[31] https://www.unep.org/explore-topics/oceans-seas/what-we-do/addressing-land-based-pollution/governing-global-programme

Environment Programme (UNEP) and was further endorsed by United Nations General Assembly (UNGA) Resolution 51/189 in December 1996[32].

In 2012, Member States decided that the GPA should focus on three source categories of pollution, namely: wastewater; nutrients; plastic pollution and marine litter. They endorsed three global partnerships to address these sources of pollution: the Global Wastewater Initiative (GWWI)[33], the Global Partnership on Nutrient Management (GPNM)[34], and the Global Partnership on Marine Litter and Plastic Pollution (GPML)[35].

The GPNM is a multi-stakeholder partnership mechanism comprised of academia and research organisations, private sector agricultural fertiliser producer organisations and public sector bodies alongside UN agencies[36]. The aim of the GPNM is "*to promote effective nutrient management to achieve the twin goals of food security through increased productivity and conservation of natural resources and the environment*". Unlike the Air Convention or the Vienna Convention, the GPNM cannot set binding targets or set policy direction. While recognised by an intergovernmental programme (GPA), its partnerships are not of themselves intergovernmental bodies.

In February 2022, Member States decided to hold no further sessions of the periodic Intergovernmental Review Meeting of the GPA, recognising that any future work could continue under UNEA[37].

2.2.2 The United Nations Food and Agriculture Organisation (FAO)[38]

The IPCC noted in its special report on climate change and land[39] that anthropogenic N_2O emissions are rising and that anthropogenic N_2O emissions from soils are primarily due to nitrogen application, including inefficiencies (over-application or poorly synchronised with crop demand timings). In addition, the IPCC noted that there has been a major growth in emissions from managed pastures due to increased manure deposition with livestock on managed pastures accounting for more than one half of total anthropogenic N_2O emissions from

[32] https://documents-dds-ny.un.org/doc/UNDOC/GEN/N97/768/61/PDF/N9776861.pdf?OpenElement
[33] https://www.unep.org/explore-topics/water/what-we-do/global-wastewater-initiative-gwwi
[34] http://www.nutrientchallenge.org/
[35] https://www.gpmarinelitter.org/
[36] http://www.nutrientchallenge.org/partner-list
[37] See: UNEP/GPA/IGR.5/4, p8: https://wedocs.unep.org/bitstream/handle/20.500.11822/40600/K2201191.pdf?sequence=6&isAllowed=y
[38] https://www.fao.org/home/en
[39] https://www.ipcc.ch/site/assets/uploads/sites/4/2022/11/SRCCL_SPM.pdf

agriculture. This highlights the relevance of work by FAO for global nitrogen flows and mitigation.

According to the latest data available through FAOSTAT, in 2021 world agriculture used 109 million tonnes of nitrogen, a slight decrease on the previous year due to high fertiliser prices and disruptions to global supply chains following the COVID-19 pandemic[40]. FAO recognises the importance of nitrogen for food production, but also acknowledges the environmental and health risks associated with its misuse. FAO has a number of programmes and initiatives that seek to promote sustainable nitrogen management practices that balance the need for agricultural productivity with the protection of natural resources and ecosystems[41]. As with other bodies, however, there is no single programme of work or policy statement regarding nitrogen pollution.

2.2.3 The International Energy Agency (IEA)[42] and the International Renewable Energy Agency (IRENA)[43]

The use of ammonia as a fuel has recently emerged as a key issue in the energy transition. The production of ammonia from renewable energy sources (i.e. green ammonia) is likely to become an important future fuel as part of decarbonisation strategies, since burning of ammonia in principle only releases N_2 and water[44]. Uses include for long-distance shipping and for electric power generation. Wolfram et al[45] have estimated that if all shipping were changed to use ammonia fuel, the energetic requirements would approximately quadruple current total Nr fixation. Burning ammonia not only produces N_2 but also leads to NH_3 emissions, while also providing an additional source of N_2O and NO_x emissions. From this it is clear that further work will be needed by both the IEA and IRENA to quantify and address these risks[46].

2.2.4 The World Health Organization (WHO)[47]

Nitrogen is relevant to the WHOs work in a number of different ways, ranging from issues around air quality and health, nitrate contamination of water and soils and food safety and nutrition. WHO sets air quality guidelines, including limits for N_2O and is working to establish

[40] https://www.fao.org/food-agriculture-statistics/data-release/data-release-detail/en/c/1644432/
[41] For example, the Research Programme on Water, Land and Ecosystems; the Global Soils Partnership; the Intergovernmental Technical Panel on Soils.
[42] https://www.iea.org/
[43] https://www.irena.org/
[44] See: Royal Society (2020) *Ammonia: zero-carbon fertiliser, fuel and energy store. Policy Briefing.* The Royal Society, London. (ISBN: 978-1-78252-448-9) https://royalsociety.org/topics-policy/projects/low-carbon-energy-programme/green-ammonia
[45] Wolfram P., Kyle P., Zhang X., Gkantonas S and Smith S. (2022) Using ammonia as a shipping fuel could disturb the nitrogen cycle. *Nature Energy* **7**, 1112–1114. doi.org/10.1038/s41560-022-01124-4
[46] IRENA and AEA (2022), *Innovation Outlook: Renewable Ammonia.* International Renewable Energy Agency, Abu Dhabi, Ammonia Energy Association, Brooklyn. www.irena.org/publications/2022/May/Innovation-Outlook-Renewable-Ammonia
[47] https://www.who.int/

safe levels of nitrates and other contaminants in drinking water to prevent adverse health effects. WHO also provides guidance on safe agricultural practices and maximum allowable levels of nitrates in food. As such, nitrogen is relevant to a number of WHO's programmes and activities[48].

2.2.5 The World Meteorological Organization (WMO)[49]

In 2021, the WMO issued its first ever air quality bulletin, the 2022 update of which introduced, for the first time, ground measurements of annual mean concentrations of NO_2[50]. WMO's Global Atmosphere Watch programme provides scientific data and information on a range of different types and source of emissions[51], including N_2O. In June 2022, the WMO Executive Council decided to develop an architecture for a global greenhouse gas monitoring infrastructure, which will establish an internationally coordinated approach to observations.[52] This programme will build on and expand WMOs long standing activities in greenhouse gas monitoring, implemented as part of Global Atmosphere Watch and via its Integrated Global Greenhouse Gas Information system. The system will enable WMO to better support UNFCCC processes, including the Global Stocktake[53].

2.2.6 The UN Global Campaign on Sustainable Nitrogen Management[54] and the Colombo Declaration[55]

The United Nations Environment Programme (UNEP) recognised nitrogen as *'an emerging issue of environmental concern'* in its 2018-19 Frontiers Report[56] and the rationale and context for a proposed nitrogen resolution was presented by the Government of India, leading to the adoption of UNEA Resolution 4/14 on Sustainable Nitrogen Management in March 2019[57].

Resolution 4/14 calls on the Executive Director of UNEP, inter alia, to:

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[48] See: https://www.who.int/health-topics/air-pollution#tab=tab_1; https://www.who.int/health-topics/water-sanitation-and-hygiene-wash#tab=tab_1; and https://www.who.int/health-topics/food-safety#tab=tab_1
[49] https://public.wmo.int/en
[50] https://public.wmo.int/en/our-mandate/focus-areas/environment/air_quality/wmo-air-quality-and-climate-bulletin-no.2
[51] https://public.wmo.int/en/programmes/global-atmosphere-watch-programme
[52] https://meetings.wmo.int/EC-75/_layouts/15/WopiFrame.aspx?sourcedoc={d79d2e71-1e54-4996-8715-e0ab6541e21c}&action=default
[53] https://public.wmo.int/en/our-mandate/focus-areas/environment/greenhouse-gases/global-greenhouse-gas-monitoring-infrastructure
[54] https://www.unep.org/events/symposium/launch-united-nations-global-campaign-sustainable-nitrogen-management
[55] https://www.inms.international/colombo-declaration/colombo-declaration
[56] See footnote 7.
[57] https://wedocs.unep.org/bitstream/handle/20.500.11822/28478/English.pdf

a. *Consider the options for facilitating improved coordination of policies across the global nitrogen cycle at the national, regional and global levels, including consideration of the case for establishing an intergovernmental mechanism for coordination of nitrogen policies, based primarily on existing networks and platforms, and consideration of the case for developing an integrated nitrogen policy, which could enhance recognition of the need for common action across multiple policy domains;*

…

f. report to the United Nations Environment Assembly at its sixth session on the progress achieved in the implementation of the present resolution

Resolution 4/14 therefore omitted the inclusion of a quantified target for the reduction of nitrogen waste but established a process towards improved coordination of nitrogen policies at national, regional and global levels.

An initial discussion on options was held in Nairobi in April 2019 as part of the High–Level Segment of the Fourth Meeting of the International Nitrogen Management System (INMS-4)[58], followed by the launch of the UN Global Campaign on Sustainable Nitrogen Management and the adoption of the Colombo Declaration in October 2019[59] at a meeting including representatives of UNEP and countries from each of the six UNEP regions.

Following a request for nominations, the first meeting of the UNEP Working Group on Nitrogen took place in June 2020[60]. At this meeting, the Working Group decided to establish a Task Team comprised of representatives of UN Member States, MEAs and processes with an interest in the nitrogen cycle, and representatives of UNEP and the GEF, to consider the options requested in Resolution 4/14.

The Government of Sri Lanka proposed a second nitrogen resolution to UNEA at its resumed fifth session (UNEA-5.2), co-sponsored by Brazil, the Maldives, Pakistan and Uganda. This resolution was adopted by UNEA (Resolution 5/2)[61]. It requests the Executive Director of UNEP to:

(b) identify possible modalities for the options being considered for improved coordination of policies across the global nitrogen cycle at the national, regional and global levels, including among other options, for an inter-governmental coordination mechanism for nitrogen policies, as specified in subparagraph (a) of resolution 4/14;

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[58] https://www.inms.international/sites/inms.international/files/Provisional%20INMS-4%20full%20report%20of%20high-level%20segment%20(30%20July%202019).pdf

[59] https://web.archive.org/web/20230609053528/https://apps1.unep.org/resolution/?q=node/286

[60] https://web.archive.org/web/20221203092136/https://apps1.unep.org/resolution/?q=UNEP-Nitrogen-Working-Group

[61] https://www.unep.org/environmentassembly/unea-5.2/proceedings-report-ministerial-declaration-resolutions-and-decisions-unea-5.2

The Task Team established by the Working Group on Nitrogen met seven times between January 2021 and December 2022 and presented a report to the Working Group, which was considered at its second meeting in January 2023.[62] The four options considered by the Task Team and presented to the Working Group are set out in more detail in section 3 below.

3. Options and Modalities for Action

The work of the Task Team focused on the four options for improved coordination of policies across the global nitrogen cycle at the national, regional and global levels that were initially identified in the UNEP Frontiers Report 2018/2019[63] and subsequently reviewed at the High-Level Segment of the INMS-4 held at UNEP in Nairobi in April 2019:

i. Continue with the status quo, essentially a fragmented approach with nitrogen issues being dealt with between multiple MEAs, organisations and processes;
ii. One (existing) MEA takes the lead in addressing interactions across the nitrogen cycle between water, air, climate, ecosystems and biodiversity, soils, stratospheric ozone etc;
iii. Negotiation of a new nitrogen treaty; and
iv. Establishment of an intergovernmental mechanism for coordination of nitrogen policies, based primarily on existing networks and platforms.

The advantages and disadvantages of each of these options have been discussed by the Task Team and an overview of its deliberations can be found at Annex I.

The following parts of this section use illustrative case studies to identify possible precedents for modalities to operationalise options ii, iii and iv above. 'Modalities' is understood to mean the particular arrangements of structure, approach, hosting etc; essentially what is needed to operationalise the options.

[62] See: Discussion Paper on Options for Facilitating Improved Coordination of Policies Across the Global Nitrogen Cycle: Implementing United Nations Environment Assembly (UNEA) Resolution 4/14 and UNEA Resolution 5/2 on Sustainable Nitrogen Management. https://wedocs.unep.org/handle/20.500.11822/41610. And: Informative Document for the 2nd Meeting of the UNEP Working Group on Nitrogen: Note on the *ad hoc* Task Team to examine the possible terms of reference for an Interconvention Nitrogen Coordination Mechanism (INCOM). https://wedocs.unep.org/20.500.11822/41612

[63] See footnote 7.

3.1 Option ii: an existing treaty takes the lead. Case Study: The Montreal Protocol[64]

As explained in section 2.1 above, although both N_2O and NO_x are listed in Annex I to the Vienna Convention, neither substance is, however, included under the Montreal Protocol. Adding N_2O and / or NO_x to the Montreal Protocol's phase down mechanisms would therefore require an amendment to the controlled substances listed in the Protocol's annexes.

The process for achieving this would be as follows:

- **Initial discussions (momentum building)**
- **Amendment proposal formally submitted**
  The formal process for proposing amendments to the Protocol is set out in Articles 9.1 and 9.2 of the parent Vienna Convention for the Protection of the Ozone Layer:
  - Any Party may propose amendments to the Protocol;
  - The text of proposed amendments must be communicated to the Parties by the Secretariat at least six months before the meeting at which it is proposed for adoption.

- **Negotiation of amendment**
  This is likely to take place in both formal and informal settings between government representatives, but informed and supported by scientists, academics and NGOs.

- **Adoption of amendment**
  In accordance with Articles 9.3 and 9.4 of the Convention, amendments require consensus of the Parties for adoption, or where consensus cannot be achieved can be adopted by two thirds majority of Parties present and voting.

- **Ratification of amendment**
  Amendments must be ratified by Parties to the Protocol in order for them to be binding. Each Party has its own national ratification procedures governed by domestic law.

- **Entry into Force**
  Article 9.5 of the Convention provides that an amendment will enter into force on the 90th day after ratification by at least two-thirds of the Parties to the Protocol[65].

The recent process of adding hydrofluorocarbons (HFCs) to the Montreal Protocol demonstrates how this works in practice:

[64] https://ozone.unep.org/treaties/montreal-protocol

[65] The two thirds rule would require ratification by 131 out of 197 Parties for entry into force (not including the EU, which as a regional economic integration organisation, is not counted in addition to its members for this purpose).

A. Initial discussions

The process to add HFCs began in 2009 when the Federated States of Micronesia and Mauritius submitted an amendment proposal to the 29th Open-ended Working Group under the Protocol. This proposal was not taken forward but instead launched six years of discussions on the possibility of adding HFCs to the Protocol's Annexes.

B. Formal negotiation of amendment

Four separate amendment proposals on the addition of HFCs were submitted to the 27th Meeting of the Parties (MOP) to the Montreal Protocol in 2015, with the MOP formally deciding to commence negotiations on an amendment.

Decision XXVII/1[66] set out the roadmap for the Dubai Pathway on HFCs, including a mandate for an intersessional contact group, which convened as part of the 37th Open-Ended Working Group meeting in April 2016.

An extraordinary meeting of the Parties to the Protocol was held in Vienna in July 2016[67], alongside a continuation of the Open Ended Working Group (OEWG), specifically to resolve challenges identified under the Dubai Pathway and agree a way forward.

C. Adoption

The amendment adding HFCs to the Montreal Protocol was adopted by consensus in Kigali, Rwanda in October 2016. A dissenting statement was issued on behalf of the Russian Federation, Belarus, Kazakhstan, Tajikistan and Uzbekistan in respect of replenishment of the Multilateral Fund to implement measures aimed at the regulation of HFCs.

D. Ratification

The amendment was opened for ratification by the Depositary, the UN Secretary General, on 23rd November 2016. Special provision was made in the text of the amendment itself, with the date of entry into force specified as 1st January 2019, provided that at least 20 instruments of ratification had been deposited by that date.

E. Entry into Force

64 countries and the EU ratified the Kigali amendment before 1st January 2019, meaning that the amendment entered into force on that date[68]. As at end of June 2023, the amendment has been ratified by 151 countries.

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[66] https://ozone.unep.org/treaties/montreal-protocol/meetings/twenty-seventh-meeting-parties/decisions/decision-xxvii1-dubai-pathway-hydrofluorocarbons

[67] https://ozone.unep.org/treaties/montreal-protocol/meetings/third-extraordinary-meeting-parties

[68] Sweden and Trinidad and Tobago deposited their instruments of ratification of the Kigali amendment on 17 November 2017, bringing the number of ratifications above the required threshold.

Although the process can be seen as relatively slow – taking 10 years from the original amendment proposal to entry into force of the Kigali amendment – one of the most important outcomes of the Kigali amendment is the signal that the Montreal Protocol is a universal treaty with relevance for chemicals, climate change and energy. The expansion in scope to address a family of chemicals that are not ozone depleting substances per se also shows the willingness of the Protocol to address wider issues and as such potentially opens the door to addressing N_2O and / or NO_x.

Two other issues are worthy of note. Firstly, the Protocol has both an adjustment and an amendment procedure, with the adjustment procedure allowing for automatic entry into force. This procedure is limited to controlled substances already listed under the Protocol and would not therefore be available as a mechanism to add N_2O and / or NO_x. Secondly, the inclusion within the amendment of a derogation to the amendment procedure set out in the parent convention, which enabled swifter entry into force of the amendment than might otherwise have been the case.

3.2 Option iii: a new treaty on nitrogen: Case Study: the Minamata Convention on mercury[69]

Negotiation of an entirely new treaty can be a lengthy and complex process. Unlike amendment of an existing instrument, there is a need to consider institutional arrangements and the basic infrastructure required for a treaty to operate effectively (i.e. a Secretariat, financial resources, convention bodies, compliance, monitoring and reporting mechanisms) needs to be established not only for post-entry into force, but also on an interim basis to facilitate the negotiating process.

Although the Plastics Treaty, which is currently under negotiation, may offer a slightly more current example, this paper considers the process required for the negotiation of the Minamata Convention on Mercury in order to see the entire process. The Minamata Convention thus provides a useful precedent, from the point of initial discussion to the point of entry into force and operationalisation.

The process for negotiation of a new treaty has many similarities with the process for amending an existing treaty and essentially consists of the following steps:

- **Initial discussions**

[69] https://mercuryconvention.org/en

Building momentum and consensus on the issue and establishing a critical mass of countries and stakeholders who consider the issue in question to be so important / of such cross-cutting international impact that a treaty is needed to ensure that the issue is tackled appropriately.

This stage is likely to include the adoption of declarations, resolutions or decisions on the issue in question under relevant overarching bodies, which could include UN institutions such as the UN General Assembly (UNGA), UNEP and FAO; regional UN institutions such as the UNECE, the South Pacific Regional Environment Programme (SPREP), the African Union or the Organization of American States; or intergovernmental organisations such as the International Union for the Conservation of Nature (IUCN).

This stage is also likely to include discussions on the most appropriate host body for any treaty that may be negotiated.

- **Agreement to launch negotiations**
  An agreement to launch negotiations is likely to take the form of a decision or resolution of the body likely to provide the Secretariat function for the negotiations. Such decision or resolution is likely to set out broad parameters for the negotiations, providing an initial long-list of issues that countries would like the eventual treaty to cover, which may be further refined in technical discussions.

- **Negotiation**
  An Intergovernmental Negotiating Committee (INC) is likely to be established to progress negotiations on the treaty. Negotiations can be swift where there is a good level of consensus or urgency; but can also be protracted, particularly in relation to difficult or contentious topics where there are differences of approach and opinion in different parts of the world. The negotiating stage can therefore take several years to complete.

- **Adoption and Signature**
  Once negotiations have concluded, the new treaty must be formally adopted and opened for signature. Signature implies an intention by a country to be bound by the terms of a treaty and, during the period between signature and ratification, not to act so as to frustrate the aims of the new treaty.

  The period between adoption and ratification is generally used to consolidate any interim arrangements for the institutional architecture needed to operationalise the treaty (i.e. the Secretariat functions), noting that the first formal meeting following entry into force will take a decision on any such arrangements.

- **Ratification and Entry into Force**
  Each treaty will state the minimum number of ratifications required for entry into force. This is usually a delicate balance between a desire for a small number of countries to ensure

swift entry into force and a desire for a larger number of countries to ensure the broadest possible reach. If the entry into force threshold is set too high, it may be many years before a treaty enters into force and its provisions can be operationalised. Once a country ratifies a treaty, it should ideally have the necessary measures in place at domestic level to enable it to fulfil the requirements of the treaty.

In the case of the Minamata Convention, these steps were carried out as follows:

A. Initial Discussions

The issue of mercury pollution gained significant international attention following the discovery of the Minamata disease in the 1950s and 1960s in Minamata City, Japan. The disease was caused by the release of mercury into the environment by a chemical plant, resulting in severe health effects on local communities. In 1972, delegates to the Stockholm Conference on the Human Environment witnessed a Japanese junior high school student, who had been disabled as the result of methylmercury poisoning in utero.

In 2001, the Executive Director of UNEP was invited by its Governing Council to undertake a global assessment of mercury and its compounds, including the chemistry and health effects, sources, long-range transport, as well as prevention and control technologies relating to mercury[70].

In 2003, UNEP Governing Council considered this assessment and found that there was sufficient evidence of significant global adverse impacts from mercury and its compounds to warrant further international action to reduce the risks to human health and the environment from their release to the environment[71]. Governments were urged to adopt goals for the reduction of mercury emissions and releases.

A mercury programme was established and further strengthened in 2005[72] and 2007[73] with the creation of the UNEP Global Mercury Partnership. In 2007, UNEP Governing Council concluded that the options of enhanced voluntary measures and new or existing international legal instruments should be reviewed and assessed to make progress in addressing mercury.

[70] Decision 21/5, UNEP/GC.21/9, p36. See: https://digitallibrary.un.org/record/443112?ln=en
[71] Decision 22/4, UNEP/GC.22/11, p52. See: https://wedocs.unep.org/bitstream/handle/20.500.11822/10645/K0360655-E-GC22_Proceeding.pdf
[72] Decision 23/9, UNEP/GC.23/11, p41. See: https://wedocs.unep.org/bitstream/handle/20.500.11822/10581/GC23_PROCEEDING_ENGLISH.pdf
[73] Decision 24/3, UNEP/GC.24/12, p17. See: https://wedocs.unep.org/bitstream/handle/20.500.11822/10624/K0760630_GC24-proceedings.pdf

Three Open Ended Working Groups (OEWG) were held to review and assess measures to address mercury[74] prior to the agreement to launch negotiations on a new treaty.

B. Agreement to launch negotiations

In February 2009, UNEP Governing Council adopted Decision 25/5 on the development of a global legally binding instrument on mercury[75]. The decision specified that an INC should be established and should start its work in 2010, supported by UNEP as Secretariat, with a view to completing its work before the next meeting of the Governing Council in 2013. The decision also specified the provisions that were to be included in the considerations of the INC.

C. Negotiation

The INC held five negotiating sessions from June 2010 in Stockholm, Sweden, until January 2013 in Geneva, Switzerland[76].

D. Adoption and Signature

At its 27th Session in 2013, UNEP Governing Council welcomed the completion of negotiations and requested the Executive Director of UNEP to convene a Diplomatic Conference to adopt and open the Convention for signature[77].

The final text of the Minamata Convention on Mercury was adopted and opened for signature at a Diplomatic Conference held in Kumamoto, Japan in October 2013. The Diplomatic Conference mandated the INC to meet during the period prior to the first Conference of the Parties to the Convention to facilitate rapid entry into force of the Convention and its effective implementation upon entry into force. The INC met twice, in November 2014 in Bangkok, Thailand and in March 2016 at the Dead Sea in Jordan.

E. Ratification and Entry into Force

The Convention required a minimum of 50 countries to ratify it before it could enter into force. This milestone was achieved on 18th May 2017 and the Convention officially entered into force on 16th August 2017, with the first Conference of the Parties taking place in Geneva in September 2017.

Just like the treaty amendment process considered in section C.2, the process from initial idea to entry into force and operationalisation of a new treaty can be protracted. In the case of the

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[74] OEWG 1 was held in Bangkok, Thailand, in November 2007, OEWG 2 was held in Nairobi, Kenya, in October 2008, and an ad-hoc OEWG was held in Bangkok, Thailand in October 2009.

[75] Decision 25/5, UNEP/GC.25/17, p20. See: https://wedocs.unep.org/bitstream/handle/20.500.11822/10623/K0950890%20GC-25-17-Proceedings-FINAL.pdf

[76] INC-2 was held in Chiba, Japan, in January 2011; INC-3 in Nairobi, Kenya in October 2011; and INC-4 in Punta del Este, Uruguay, in July 2012.

[77] Decision 27/12, UNEP/GC.27/17, p42. See: https://wedocs.unep.org/bitstream/handle/20.500.11822/11262/K1350945.pdf

Minamata Convention, if we consider the process from the first calls for action in the 1950s and 1960s or from the initial discussion at the Stockholm Conference on the Human Environment in 1972, the process seems glacial. Even if we consider the process from the point where UNEP was first invited to take action on mercury in 2001, it was still a further 16 years from that point to Convention itself entering into force.

Notwithstanding the fact that countries are of course able to take action at national level without an overarching treaty to guide their activities, any monitoring, reporting or compliance measures will not be triggered until after entry into force.

3.3 Option iv: an intergovernmental coordination mechanism

The fourth option that has been considered by the Working Group on Nitrogen (and the option that was preferred by the High-Level Segment of the INMS-4 in April 2019 as a solution to the fragmentation described in the introductory section to this paper) is the establishment of an intergovernmental mechanism for coordination of nitrogen policies, based primarily on existing networks and platforms.

The Task Team established by the Working Group on Nitrogen discussed extensively what is meant by 'intergovernmental mechanism for coordination of nitrogen policies', as referenced in both UNEA Resolution 4/14 and UNEA Resolution 5/2 ('intergovernmental coordination mechanism').

At this point it is useful to consider what is meant by 'intergovernmental'. The Oxford English Dictionary defines intergovernmental as *"relating to or conducted between two or more governments"*. Whilst international practice clearly shows that intergovernmental mechanisms can and do engage and involve participants and observers that are not governments, the expectation is that governments will be the driving force and primary decision makers.

The definition of 'intergovernmental organisation' used by UNEP is also helpful in this regard, as it defines an intergovernmental organisation as *"an organization composed primarily of sovereign states, or of other intergovernmental organizations"*.[78]

The choice of the term 'intergovernmental' in UNEA resolutions 4/14 and 5/2 therefore demonstrates a clear desire by UN Member States for any mechanism considered under this option to be primarily between governments, rather than a stakeholder or multi-actor

[78] See: https://www.informea.org/en/terms/intergovernmental-organization

coordination mechanism. Helpful examples and experience can nonetheless be drawn from the operation of such groups and bodies.

The Task Team and the Working Group determined that the role of an intergovernmental coordination mechanism would not be to dictate policy or action to either countries or to conventions or UN organisations or bodies. Rather it would provide a forum to bring together countries and the Secretariats of relevant conventions, bodies and UN organisations to identify gaps, overlaps or contradictions. This would also make it easier to identify which convention, body or organisation is best placed to address those gaps – or policy needs - through its own processes and procedures.

In so doing, the aim would be to make the best possible use of existing networks and platforms to ensure policy coherence and consistency, enabling a common approach where different parts of the system support one another in taking action. Such an approach would involve sharing of information, developing common understanding and equipping conventions, bodies, organisations and their Secretariats, alongside countries, with the knowledge needed to ensure that the whole of the nitrogen cycle is addressed across and beyond the UN system. A key aim would be to avoid parts of the UN system working at cross-purposes.

There are already a number of enablers that would facilitate more coherent action on nitrogen, including:

- Awareness raising and cooperation between UN bodies through the Environmental Management Group (see case study 1 below);
- Work by UNEP and UNEA to raise awareness amongst UN Member States as well as across the UN system and to support implementation of Resolutions 4/14 and 5/2;
- UNGA resolutions, which can be used to raise awareness at a higher political level, for example the UNGA resolution on the human right to a clean, healthy and sustainable environment[79];
- Decision making processes under existing conventions, bodies and organisations, for example to authorise specific programmes of work or Secretariat activities related to nitrogen, or to endorse the findings of external bodies regarding nitrogen pollution;
- Country champions, such as India, Sri Lanka, Bangladesh, Brazil, Pakistan, Uganda and Maldives, who led or co-sponsored UNEA Resolutions 4/14 and 5/2, including with support from regional bodies such as the South Asia Cooperative Environment Programme (SACEP). Such country champions can help to inform and engage other countries and lead or guide international discussions and negotiations; and

[79] https://digitallibrary.un.org/record/3982508?ln=en

- Science-policy interfaces, including the International Nitrogen Management System (INMS), the International Nitrogen Initiative (INI) and the Science Policy Panel on Sound Management of Chemicals and Waste and to Prevent Pollution envisaged by UNEA Resolution 5/8[80].

There are many different forms that an intergovernmental coordination mechanism might take. The appropriate form and functions of any such mechanism would need to be determined on the basis of UN Member State input, however, the following case studies of existing bodies may help to provide inspiration.

3.3.1 Case Studies

Case Study 1: Cross-UN Coordination Groups

The United Nations Environment Management Group (EMG)[81]

Background: Established in 2001 pursuant to UN General Assembly Resolution 53/242[82] (1999), which supported the proposal to establish an environmental management group, as set out in the UN Secretary General's report on the Environment and Human Settlements[83].

Purpose: To enhance UN system-wide inter-agency coordination related to specific issues in the field of environment and human settlements.

Membership: Chaired by the UNEP Director General. Members of EMG are the specialised agencies, programmes and organs of the UN system, including the Secretariats of MEAs.

Representatives of relevant sectors of civil society and international NGOs with potential and specific expertise related to the issues being considered by EMG may be invited by the Chair to participate in meetings. This is at the request of EMG members. There is no provision for participation by governments.

Secretariat: EMG is supported by a small secretariat provided by UNEP and based in Geneva.

[80] Whilst the format, composition and remit of the Science Policy Panel is still under discussion, it seems possible that it will follow a similar format to the Intergovernmental Panel on Biodiversity and Ecosystem Services and the Intergovernmental Panel on Climate Change in being Member State led.
[81] https://unemg.org/
[82] Paragraph 5: https://unemg.org/images/emgdocs/about/a_53_242.pdf
[83] See: https://digitallibrary.un.org/record/262644?ln=en

Remit / Responsibilities: EMG identifies issues on the international environmental agenda that warrant cooperation and finds ways of engaging its collective capacity in coherent management responses to those issues. EMGs mandate is set out in its terms of reference[84], which include:

- to facilitate an effective coordinated and flexible UN system response and joint action aimed at finding solutions to important and newly emerging issues of environmental and human settlements concern in the context of the 2030 Agenda for Sustainable Development;
- to promote interlinkages, encourage timely and relevant exchange of data and information on specific issues and compatibility of different approaches to finding solitons to those problems, contribute to the synergy and complementarity among and between activities of members;
- to promote coordination and information exchange among its members with regard to advancing the environmental and social sustainability of UN operations, facilities, programs, projects and policies;
- to assist in the promotion of system-wide policy coherence, synergy and collaborative and flexible approaches to environmental and human settlement issues; and
- to support the development of synergies and system-wide collaboration in the implementation of MEAs.

Modus Operandi: EMG has a two-tier structure: a senior level decision-making body (senior officials management group), which meets at least once per year; and time-bound issue-based workstreams set up by the senior officials management group.

The EMG terms of reference set out the process for selection of issues for consideration. Issues can be brought for consideration through the EMG Chair at the suggestion of the UN Secretary General or the Chieve Executives Board; suggested by the Chair herself; suggested by one or a group of EMG members; or suggested by the EMG Secretariat.

Issue selection criteria are also set out in the terms of reference. To be selected, an issue must:

- be of relevance to the environmental agenda and contribute to integrated implementation of the three dimensions of the SDGs;
- be of interest to the majority of EMG members;
- warrant system-wide collaboration and coordination;
- add value to potential work on the topic by any other interagency mechanism; and
- build on work previously undertaken in similar areas within the UN system.

[84] https://unemg.org/images/emgdocs/about/FINAL_clean_EMG_ToR_updated.pdf

Once an issue has been accepted, it can be included within the programme of work either through an issue management group; a task team; a consultative process; a technical group; or an information exchange dialogue.

Three current areas of the EMG workplan are potentially relevant for addressing nitrogen and could help to ensure coherence across the UN system:

- *The Nexus Dialogues*: these dialogues bring together experts from diverse institutions and disciplines to explore emerging, persistent and systemic cross-cutting issues. Ultimately, the dialogues may trigger UN agencies to establish multi-stakeholder partnerships to strengthen policy coherence and integrated policy development. A Nexus Dialogue on Sustainable Nitrogen Management was held in Geneva on 20th April 2023.
- *The UN System-Wide Framework of Strategies on the Environment (SWFS)*: the SWFS was introduced in 2014 to enable more effective coordination in the handling of environmental and environment-related matters within the UN system. To date, the SWFS has prepared two synthesis reports: an assessment of the strategic alignment of 51 UN Member Agencies to Agenda 2030 and the SDGs[85]; and a thematic report on biodiversity[86].
- *The Consultative Process on a Pollution-free Planet*: The implementation plan 'Towards a Pollution Free Planet' was adopted by the fourth meeting of the UN Environment Assembly in 2019[87]. The Consultative Process was established in 2021 by the Senior Official's Group, aiming to prepare a UN system-wide approach towards a pollution-free planet. To date, a concept note for a roadmap for preparation of the common approach[88] has been prepared (March 2023), along with a mapping report[89] (April 2023) and an annotated outline of the common approach[90] (March 2023).

[85] System-Wide Collaboration on the Environment, 2017: https://unemg.org/images/emgdocs/UN_sws/SWFS_Synthesis_Report.pdf
[86] Supporting the Global Biodiversity Agenda, 2021: https://unemg.org/wp-content/uploads/2021/04/EMG-Biodiversity-WEB.pdf
[87] https://wedocs.unep.org/bitstream/handle/20.500.11822/31129/k1804190e.pdf?sequence=6&isAllowed=y
[88] https://unemg.org/wp-content/uploads/2023/05/Roadmap-for-preparation-of-the-common-approach-%E2%80%93-Concept-note-march-23.pdf
[89] https://unemg.org/wp-content/uploads/2023/05/Mapping-report-%E2%80%98An-Overview-of-UN-Activities-and-Initiatives-related-to-Pollution-v3.pdf
[90] https://unemg.org/wp-content/uploads/2023/05/annotated-outline-common-approach-pollution.pdf

Case Study 2: Issue-specific cross-sectoral coordination mechanisms

The World Health Organisation's Global Coordination Mechanism on the Prevention and Control of Non-Communicable Diseases[91] (GCM/NCD)

Background: The GCM/NCD is a global Member State-led coordinating and engagement platform, established in 2014 by the World Health Organisation (WHO) to help counteract the growing global health threat of noncommunicable diseases. Three UN General Assembly High-level Meetings on the Prevention and Control of NCDs in 2011, 2014 and 2018 reiterated the importance of shared responsibility of all stakeholders across sectors in creating an environment conducive to preventing and controlling NCDs.

In 2019, a supporting Global Noncommunicable Diseases Platform was established to coordinate the UN system and mobilise non-state actors to complement and enhance WHO's work in supporting governments to develop whole-of-government, whole-of-society responses to address NCD-related SDGs. The Platform was established on the basis of resolutions of both WHO and the UN Economic and Social Council (ECOSOC).

Purpose: As set out in its terms of reference, the purpose of the GCM/NCD is to facilitate and enhance coordination of activities, multistakeholder engagement and action across sectors at local, national, regional and global levels, in order to contribute to the implementation of the WHO Global NCD Action Plan, while avoiding duplication of efforts, using resources in an efficient and results-oriented way, and safeguarding WHO and public health from any undue influence by any form of real, perceived or potential conflicts of interest.[92]

Membership: The GCM/NCD is led by WHO Member States. Other 'participants' may include UN funds, programmes, organisations and other relevant intergovernmental organisations; and non-state actors. Principles and eligibility criteria have been adopted in respect of non-state actors, which make it clear that decision making is reserved to Member States[93]. Registered non-state actors include academic institutions, charitable bodies and private sector organisations[94].

Secretariat: The World Health Organisation's Noncommunicable Diseases and Mental Health Cluster provides the Secretariat for the GCM/NCD.

Remit / Responsibilities: The functions of the GCM/NCD are set out in the terms of reference as follows:

- Advocating and raising awareness;

[91] https://www.who.int/groups/gcm
[92] https://apps.who.int/gb/ebwha/pdf_files/WHA67/A67_14Add1-en.pdf?ua=1
[93] https://www.knowledge-action-portal.com/sites/all/themes/pinitall/img/Principles.pdf
[94] Full list can be found at: https://www.knowledge-action-portal.com/en/about/gcm-participants

- Disseminating knowledge and information;
- Encouraging innovation and identifying barriers;
- Advancing multisectoral action;
- Advocating for mobilisation of resources.

Modus Operandi: Member States provide oversight and guidance to the GCM/NCD through the Executive Board and the World Health Assembly, as well as through periodic consultations and / or briefings organised by the WHO Secretariat. A General Meeting is held at intervals determined by Member States in the context of the adoption of the GCM/NCD's workplan and the WHO programme budget.

The terms of reference of the GCM/NCD enable the WHO's Director General to establish Working Groups, in consultation with Member States, to deliver work under each of the five functions set out above. The Director General, in consultation with Member States, is responsible for selecting experts from the Member States to participate in the Working Groups. Working Groups may consult with relevant non-state actors, as needed.

The GCM/NCD has organised several multistakeholder dialogues, as well as policy briefs, a knowledge action portal[95] and numerous publications, webinars and events.

Case Study 3: Multi-stakeholder partnerships

Case Study 3A: The Global Partnership on Nutrient Management[96] (GPNM)

Background: At a side event during the United Nations Commission on Sustainable Development in May 2009, it was decided to establish a global mechanism to bring together and harmonise efforts to address the nutrient challenge amongst numerous stakeholders. These included government, research and academia, agricultural and fertiliser producer organisations in the private sector, regional and international intergovernmental organisations and non-governmental organisations.

GPNM was formed as a result as a multi-stakeholder partnership comprised of these entities along with UN agencies committed to promote effective nutrient management to achieve the twin goals of food security through increased productivity and conservation of natural resources and the environment.

[95] https://www.knowledge-action-portal.com/en
[96] http://www.nutrientchallenge.org/

Purpose: The goal of the GPNM, as set out in its Charter (which was agreed in 2018)[97], is to highlight the importance of nutrient flows and impacts for global society, working to identify and promote effective solutions.

Membership: Unlike the GCM/NCD, the GPNM is not governed by Member States and is not, therefore, an intergovernmental partnership. Membership is open to organisations and individuals that meet the criteria set out in the GPNM Charter. For organisations, this means that their organisational mandate must be aligned with the aims and objectives of the GPNM. Individuals can become members if they have an interest and / or competencies in the field of nutrient management to be associated with the GPNM.

The GPNM does not, therefore, include UN Member States as such, but the relevant ministries within Member States can apply for membership[98]. The current reported membership of the GPNM includes ministries and / or public bodies from 5 countries; 2 regional programmes; 5 multi-stakeholder organisations; 9 NGOs; 3 private sector organisations; 9 science organisations; and 4 UN organisations[99].

Secretariat: GPNM is supported by a Secretariat hosted by UNEP's Global Programme for the Protection of the Marine Environment from Land-based Activities (GPA).

Remit / Responsibilities: The mandate of the GPNM, as set out in its Charter, is to:

- Advance improved understanding of the nutrient life cycle and its socio-economic and environmental impacts through direct observation and modelling approaches;
- Build knowledge through sharing of lessons learned to assist in analysis of policies, business models and technological options for sustainable production and use of nutrients;
- Create a global base of knowledge on policy experience and ways to adapt that experience to specific national circumstances;
- Promote activities that raise awareness and disseminate information for improving capabilities of partners;
- Facilitate development of new approaches and projects to complement governments' efforts to reform/develop policy frameworks as a necessary foundation for sustainable nutrient management;
- Identify key research, education and extension needs that would fill gaps in knowledge; and
- Provide a network to support cooperation on the nutrient challenge among the members.

Modus Operandi: GPNM operates under the guidance of a Steering Committee which is currently chaired by a representative of a government ministry and according to the GPNM

[97] http://www.nutrientchallenge.org/sites/default/files/GPNM%20operational%20frmwk_FINAL.pdf
[98] It is important to note that in many national legal systems, this has a different status to country membership.
[99] http://www.nutrientchallenge.org/?q=partner-list

website includes 2 representatives of science organisations; 1 representative of a multi-stakeholder organisation; 2 NGO representatives; 1 private sector representative; and 1 representative of a UN organisation. According to its Charter, the Chair of the Steering Committee must be a representative of a government organisation, who serves for a 3-year term. The Chair rotates between OECD and non-OECD countries.

The Charter makes provision for the Steering Committee to establish Task Teams and envisages Task Teams on:

- Policy development
- Partnership building
- Nutrient use efficiency
- Tools and technical extension
- Communications; and
- Phosphorous management

The Charter also envisages the establishment of GPNM regional platforms to facilitate transfer of its work to national level. Regional platforms for Asia and for the Caribbean are reported to have been established, with further regional platforms envisaged for Africa, Europe, North America, Central and South America and the Pacific[100].

Case Study 3B: The UNEP Global Mercury Partnership[101]

Background: Partnership activity on mercury was initiated in 2005 at the 23rd session of the UNEP Governing Council[102]. At its 25th session in 2009, UNEP Governing Council specified the UNEP Global Mercury Partnership as one of the main mechanisms for the delivery of immediate actions on mercury during the negotiation of the global mercury convention[103]. The work was continued by the UNEP Governing Council at its 26th session in 2011[104] and at its 27th session in 2013[105].

Purpose: The overall goal of the Global Mercury Partnership is to protect human health and the global environment from the release of mercury and its compounds by minimising and, where feasible, ultimately eliminating global, anthropogenic mercury releases to air, water and land.

[100] See: http://www.nutrientchallenge.org/sites/default/files/GPNM%20operational%20frmwk_FINAL.pdf pp20-22.
[101] https://www.unep.org/globalmercurypartnership/
[102] See footnote 50.
[103] See footnote 53.
[104] Decision 26/3, UNEP/GC.26/19, p17. See: https://wedocs.unep.org/bitstream/handle/20.500.11822/10644/K1170817-E-GC26-19-Proceedings.pdf?sequence=1&isAllowed=y
[105] See footnote 55.

Membership: Like the GPNM, the Global Mercury Partnership is not intergovernmental in nature. It is open to any government, regional economic integration organisation (REIO), international organisation, industry or business organisation, non-governmental/civil society organisation or academic institution that supports the UNEP Global Mercury Partnership goal. It is open also to any other entity or an individual who agrees to work towards the goal of the Partnership.

Membership currently includes 37 governmental organisations; 33 academic / scientific institutions; 11 intergovernmental organisations (including UNEP); 70 industry / private sector bodies; and 82 NGOs. The membership is therefore significantly larger in all categories than the GPNM.

Secretariat: Administrative and Secretariat support for the Global Mercury Partnership is provided by UNEP.

Remit / Responsibilities: The Partnership areas, as set out in the Overarching Framework[106], are:

- Artisanal and small-scale gold mining;
- Mercury-cell chlor-alkali production;
- Mercury air transport and fate research;
- Mercury in products;
- Mercury releases from coal combustion;
- Mercury waste management;
- Mercury supply and storage;
- Mercury releases from the cement industry; and potentially
- Mercury releases from non-ferrous metals mining.

According to its Overarching Framework, the partnership areas should contribute to the following objectives, consistent with the priorities set out in paragraph 19 of Governing Council Decision 24/3[107]:

- Minimisation and, where possible, elimination of mercury supply considering a hierarchy of sources, and the retirement of mercury from the market to environmentally sound management;
- Minimisation and, where feasible, elimination of unintentional mercury releases to air, water, and land from anthropogenic sources;
- Continued minimisation and elimination of global use and demand for mercury; and
- Promoting the development of non-mercury technologies where suitable economically feasible alternatives do not exist.

[106] https://wedocs.unep.org/bitstream/handle/20.500.11822/31405/Overarching.pdf?sequence=1&isAllowed=y
[107] See footnote 51.

To achieve these objectives the partnership areas should also:

- Strengthen the capacity of developing countries and countries with economies in transition.
- Share and exchange information.
- Reduce atmospheric mercury emissions from human sources;
- Find environmentally sound solutions for the management of waste containing mercury and mercury compounds;
- Reduce global mercury demand related to use in products and production processes;
- Reduce the global mercury supply, including considering curbing primary mining and taking into account a hierarchy of sources;
- Find environmentally sound storage solutions for mercury;
- Address, the remediation of existing contaminated sites affecting public and environmental health; and
- Increase knowledge on areas such as inventories, human and environmental exposure, environmental monitoring and socio-economic impacts.

Modus Operandi: The Global Mercury Partnership is a voluntary and collaborative relationship between various parties, governmental, non-governmental, public and private, in which all participants agree to work together in a systematic way to achieve the Partnership's goal. The Partnership is also specifically tasked to support the objectives of the Strategic Approach to International Chemicals Management (SAICM, see Case Study 4) and the Minamata Convention on Mercury. In this way, as a multi-stakeholder partnership, the Global Mercury Partnership complements the Member State led actions under the Mercury Convention.

A Partnership Advisory Group, composed of up to 25 members, has been established to serve the Partnership. The Advisory Group is comprised of representatives of governments, REIOs, and major groups and sectors (including NGOs, science and industry). The Advisory Group meets at least on an annual basis and at such other times as deemed necessary.

Activities and projects are carried out under each of the partnership areas set out above, with support from UNEP.

The Partnership is explicitly mandated to strengthen capacity of developing countries and countries with economies in transition; share and exchange information; support timely and effective implementation of the Minamata Convention; provide state of the art knowledge and science on mercury; and deliver outreach and awareness raising towards global action on mercury. According to its Overarching Framework, the Partnership regularly reports on its activities to the Minamata Convention on Mercury.

Case Study 4: International Policy Frameworks and Programmes

The Strategic Approach to International Chemicals Management[108] (SAICM)

Background: Negotiations for SAICM officially began in 2002. The process leading to SAICM's establishment was initiated during the World Summit on Sustainable Development (WSSD). The negotiations aimed to develop an international policy framework that would address the sound management of chemicals throughout their lifecycle, from production to disposal. After several rounds of negotiations and consultations involving governments, international organisations, industry representatives, NGOs, and other stakeholders, the SAICM framework[109] was adopted in 2006.

Purpose: SAICM's overall objective is the achievement of the sound management of chemicals throughout their life cycle so that by the year 2020, chemicals are produced and used in ways that minimise significant adverse impacts on the environment and human health.

Membership: SAICM membership includes governments, officially designated by Foreign Affairs Ministries; intergovernmental organisations; and NGOs. There are currently 195 governments; 20 intergovernmental organisations; and 135 NGOs.

Secretariat: Both UNEP and WHO have lead roles in the SAICM secretariat in their respective areas of expertise. UNEP has overall administrative responsibility for the SAICM secretariat, which is located in Geneva, Switzerland. The secretariat is integrated within the Chemicals and Wastes Branch of the Economy Division of UNEP. The secretariat works in coordination with the participating organisations of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC).

Remit / Responsibilities: SAICM's scope and objectives are set out in its Overarching Policy Strategy[110]. Objectives are grouped under five themes:

- Risk reduction
- Knowledge and Information
- Governance
- Capacity-building and technical cooperation; and
- Illegal international traffic.

[108] https://www.saicm.org/Home/tabid/5410/language/en-US/Default.aspx

[109] https://www.saicm.org/Portals/12/Documents/saicmtexts/New%20SAICM%20Text%20with%20ICCM%20resolutions_E.pdf

[110] See footnote 84.

The Strategy is accompanied by a Global Plan of Action[111] that serves as a working tool and guidance document to support implementation of SAICM and other relevant international instruments and initiatives. Activities in the plan are to be implemented, as appropriate, by stakeholders.

Modus Operandi: SAICM is managed by the International Conference on Chemicals Management (ICCM), which holds regular meetings to review progress and identify actions needed to achieve the goals of the SAICM framework.

A bureau is elected by and from among the representatives of the governmental participants present at each session. The elected governmental participants serve as the Bureau of each session of the ICCM. The Bureau advises the President and the secretariat on the conduct of the business of the ICCM and its subsidiary bodies. Four representatives of non-governmental participants as well as the chair of the IOMC participate in Bureau meetings.

An Open-ended Working Group (OEWG) has also been established to consider the implementation, development and enhancement of SAICM, including by:

- Reviewing and prioritising proposals for emerging policy issues in preparation of the next session of the ICCM;
- Continuing discussion on work on emerging policy issues;
- Considering proposals for the inclusion of new activities in the Global Plan of Action;
- Considering initiatives that are being undertaken and addressing progress and gaps in achieving the goal that, by 2020, chemicals are used and produced in ways that lead to the minimisation of significant adverse effects on human health and the environment;
- Considering the outcomes of regional meetings;
- Identifying priority issues for consideration for inclusion in the agendas of the sessions of the ICCM;
- Undertaking such other activities as the ICCM may direct.

SAICM cooperates closely with the BRS Conventions[112] on emerging issues of relevance to those agreements[113].

[111] Ibid.
[112] The Basel Convention on the control of transboundary movements of hazardous wastes and their disposal; the Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade; and the Stockholm convention on persistent organic pollutants. See: https://www.brsmeas.org/
[113] https://www.brsmeas.org/Partners/UNEP/SAICM/tabid/4073/language/en-US/Default.aspx

Case Study 5: Cooperation initiatives and voluntary pledges

The Climate and Clean Air Coalition[114] (CCAC)

Background: The CCAC was launched in February 2012 in response to the UNEP and World Meteorological Organisation (WMO) report on short-lived climate pollutants (SLCPs). The initiators of the CCAC were the governments of Bangladesh, Canada, Ghana, Mexico, Sweden and the United States, along with UNEP. CCAC is the only body working on integrated climate and clean air solutions to reduce the rate of near-term warming.

Purpose: CCAC's mission is to put the world on a pathway that rapidly reduces warming in the near-term and maximises development, health, environmental and food security benefits by catalysing fast action to reduce SLCPs[115].

Membership: Any UN Member State or REIO may join the CCAC as a partner, subject to consensus approval of the existing State and REIO partners. Membership is also open to NGOs, IGOs or regional or international organisations, again subject to the consensus approval of the existing State and REIO partners. CCAC currently has 80 State Partners and 80 non-State Partners, including 61 NGOs, 19 IGOs.

Becoming a CCAC state partner means committing to accelerating action to reduce SLCPs. Non-state partners are involved across the CCACs activities, participating in meetings and in the hubs and providing expertise to deliver projects.

Secretariat: CCAC's Secretariat is hosted by UNEP.

Remit / Responsibilities: CCAC's 2030 Strategy[116] sets out three directions to guide its work. These are:

- Driving an ambitious agenda by increasing high-level ambition;
- Supporting national and transformative actions by mobilising finance and strengthening capacity building to achieve substantial emission reductions; and
- Advancing policy-relevant research and analysis to provide decision-makers the confidence and tools to make ambitious commitments and take fast action.

CCAC's work is focused on five key areas:

- National planning and policy development – developing policies that integrate climate and clean air objectives;

[114] https://www.ccacoalition.org/
[115] https://www.ccacoalition.org/resources/climate-and-clean-air-coalition-ccac-framework-document
[116] https://www.ccacoalition.org/content/our-2030-strategy

- Sector mitigation – supporting transformative change in the main SLCP sectors (agriculture, cooling, fossil fuels, household energy, transport and waste);
- Science policy – advancing understanding of SLCP impacts, solutions and the benefits of action, including through the work of the Scientific Advisory Panel;
- Political leadership and cooperation – convening public and private sector leaders to galvanize action on SLCPs and targeting partners and other decision makers with direct responsibility for reducing emissions across the spectrum of government, business, development banks and other key organisations; and
- Climate commitments – encouraging countries to include SLCP actions in their updated Nationally Determined Contributions under the UNFCCC.

Modus Operandi: The CCAC has a number of bodies and programmes through which it delivers its responsibilities:

- Climate and Clean Air Ministerial – annual meeting of Partner ministers and invited leaders. Formal adoption of any important strategies, changes to the Coalition's framework or major announcements are taken by ministers;
- Annual meeting – convenes to share policy action and encourage replication as well as to approve the work plan and budget, review activities and elect new board members. Partner and hub focused parallel sessions are held, along with meetings of the Scientific Advisory Panel, board meetings and public meetings or science-policy dialogues;
- Board meeting – co-chaired by two State or REIO partners with up to 10 State and REIO partners also as members, along with four non-voting representatives (2 IGO representatives 2 NGO representatives) and the Chair of the Scientific Advisory Panel in an non-voting capacity.
- Scientific Advisory Panel – comprised of up to 20 internationally renowned scientific advisors, including from natural and social sciences.
- Hubs – formerly known as 'initiatives', State and non-State partners work through the hubs to accelerate the transformation of key emitting sectors. It was initially envisaged that there would be a SLCP planning hub and sectoral hubs, with one for each key emitting sector.

The CCACs work has contributed to coordinated policy developments, including the negotiation and adoption of the Kigali Amendment to the Montreal Protocol, which saw HFCs added to the Protocols Annexes; and the adoption of the Global Methane Pledge[117] at UNFCCC COP26 in 2021.

The Global Methane Pledge is a voluntary framework supporting nations to reduce methane emissions collectively by 30% from 2020 levels by 2030. Participants also commit to moving

[117] https://www.globalmethanepledge.org/

toward using the highest tier IPCC good practice inventory methodologies as well as working to continuously improve the accuracy, transparency, consistency, comparability and completeness of national greenhouse gas inventory reporting.

3.3.2 A bespoke option for an intergovernmental coordination mechanism on nitrogen policies

As can be seen from the above case studies, the problem of policy fragmentation is not new and there are many different approaches that can be taken to solving the problem. It is clear that, in the absence of cooperation in some form, fragmentation will persist and the ability of the UN system as a whole to tackle future scenarios for nitrogen use (i.e. the use of ammonia as a fuel) will be compromised.

The most appropriate form for an intergovernmental coordination mechanism for nitrogen will largely be dictated by the wishes of UN Member States and the functions they wish to assign to such a mechanism. The following points, however, merit consideration:

- Membership: The success of any intergovernmental coordination mechanism for nitrogen will substantially depend on galvanising sufficient political will and motivation globally to address the problem. It is therefore essential that any such mechanism is led by UN Member States and that decision making and direction setting is reserved to Member States, with input and guidance from non-state actors where appropriate. In the case of nitrogen, it will be particularly important to ensure that representatives of IGOs, including the relevant MEA Secretariats and UN organisations, are all able to contribute to and participate fully in the work of the mechanism. The case studies above provide examples of how this could be achieved (case studies 2, 4, 5).

  Membership also needs to extend to a wide number of countries to ensure the broad reach required to secure the political buy-in to achieve transformative action at both national and international levels. The case studies above show the impact of securing the involvement of a large number of countries (case studies 2, 3B, 4, 5).

- Secretariat: A dedicated Secretariat will be needed for any intergovernmental coordination mechanism in order to facilitate the work of the mechanism, service meetings and take forward the agreed work programme and workstreams.

  The logical home for a Secretariat is within UNEP. UNEP already has experience from the Global Campaign on Sustainable Nitrogen Management, GPNM and its work to implement UNEA decisions 4/14 and 5/2, as well as the considerable institutional knowledge and experience of broader related and interconnected processes. UNEP provides the secretariat for many of the mechanisms and bodies described above (case studies 2, 3A, 3B,

4, 5 as well as the case studies related to options ii and iii) and is well placed to draw on and implement best practice in the delivery of Secretariat functions. UNEP's key role in the EMG (case study 1) would also only serve to enhance UNEP's potential role as Secretariat of an intergovernmental coordination mechanism for nitrogen.

A further advantage of hosting by UNEP, which is not discussed in relation to the case studies above, is that UNEP already has the structures in place to enable financing through voluntary contributions to be directed towards specific and defined purposes, such as for the financing of an intergovernmental coordination mechanism.

- Remit / responsibilities: The case studies above demonstrate clearly how a cooperation mechanism can help to strengthen and enhance actions and activities under legally binding treaties, as well as helping to generate a groundswell of support for action that can lead to changes within treaty systems (case studies 3B, 4, 5).

  There are many commonalities in the remits and responsibilities described in the case studies above. The majority (case studies 1, 2, 3B, 4, 5) include awareness raising, policy support, provision of guidance to facilitate national actions, promotion of multi-actor networks of cooperation, providing evidence or analysis to support decision making, and supporting high-level ambition.

- Modus operandi: An intergovernmental coordination mechanism would need to develop a structure and ways of working that are appropriate to what it is trying to achieve. Most of the case studies above (case studies 2, 3B, 4, 5) include a board or steering committee comprised of Member States, with observer or non-voting membership from NGOs, IGOs or others.

  Most also include the development of workstreams, programmes or initiatives that are delivered under the leadership of Member States and with the support of NGOs, IGOs and others (case studies 2, 3B, 4, 5), reporting back to general or annual meetings that are open to all in order to ensure transparency and accountability (case studies 1, 2, 3B, 4, 5).

  The ability to draw on support and input from the scientific community and from multi-stakeholder organisations and platforms is also crucial to effective policy development and implementation (case studies 2, 3B, 4, 5), and the links to and support for decision making bodies such as UNFCCC and the Mercury Convention can be clearly seen.

4. Conclusion

There are many different ways to address the global nitrogen cycle. The aim must be to reduce nitrogen waste and pollution, to enable existing commitments to be met (be they in relation to

biodiversity, climate change, air quality or health), to improve food security and to create a mechanism that can respond agilely and effectively to future challenges. The first option considered to date in relation to the implementation of UNEA resolutions 4/14 and 5/2 (i.e. maintaining the status quo), is clearly inadequate.

The most appropriate and effective option for improved coordination of nitrogen policies may be to build on a single option through an existing body, or a combination of existing bodies, or it could be a bespoke mechanism designed to address the challenges posed by nitrogen at national, regional and international levels. What is clear from the analysis to date is that there is no single body or entity that is currently capable of providing the reach and the required level of political support, action and transparency that is warranted to address the challenge that nitrogen poses.

From a technical standpoint, options ii, iii or iv as considered by the Task Team would be capable of providing the necessary focus. However, option ii (an existing MEA takes the lead on nitrogen) may struggle with the breadth of mandate, recognising that no existing body embraces the full scope relevant for nitrogen. Option iii (a new treaty on nitrogen) is the most ambitious option and would require the highest level of support but would face risks associated both with a very long negotiation process (probably longer than a decade from commencing negotiations to entry into force, based on previous experience) and with possible overlap with the mandates of existing MEAs. For these reasons alone, option iv can be considered positively as a pragmatic approach that could also foster exchange between existing MEAs and programmes, as requested in UNEA Resolutions 4/14 and 5/2.

Whilst transforming existing structures might appear an attractive option, consideration needs to be given to whether this is the most effective approach. For example, the case studies linked to mercury demonstrate the benefits of linked bodies with complementary functions. The Minamata Convention provides the focus for intergovernmental agreements, which is supported with technical evidence by SAICM, with wider multi-actor mobilisation through the Global Mercury Partnership, all of which have a broad reach in terms of membership. Such an approach could also be appropriate for nitrogen, where a bespoke intergovernmental coordination mechanism on nitrogen would be supported by multi-actor engagement from GPNM, GWWI and other relevant groups (e.g. on ammonia energy). In such an approach, the intergovernmental focus would help to accelerate actions by the multi-actor partnerships; while lessons from the partnerships would in turn inform the actions being taken by Member States. Such an approach distinguishes the complementary roles of different bodies within the context of the UN system.

Existing bodies and bodies that are currently under development will have key roles to play as part of the wider coordination process – including EMG and the Science Policy Panel on Sound Management of Chemicals and Waste and to Prevent Pollution envisaged by UNEA Resolution 5/8. Any final decision is, of course, for countries, respecting the sovereignty and mandates of existing conventions and bodies.

Annex 1: Advantages and disadvantages of the each of the options identified by the Task Team for improved coordination of policies across the nitrogen cycle at the national, regional and global levels

Option	Advantages	Disadvantages
I. Status Quo	- Low financial operating cost. - Familiarity and degree of comfort with existing structures and processes.	- Continued fragmentation. - Lack of visibility / awareness. - Unlikely to fully address negative impacts of nitrogen. - Risk of unintended consequences from fragmented approach. - Any action dependent on lead countries proposing resolutions or decisions under the various existing fora. - Difficult to impose specific, new, legally binding obligations (requires amendment or subsequent / interpretative agreement). - Difficult to leverage resources for actions on nitrogen both at international and national levels.
II. Lead by an existing MEA	- Relatively low financial operating cost. - Relies on existing structures (i.e. no need to create new secretariat). - Familiarity and degree of comfort with existing structures and processes.	- Continued fragmentation. - Lack of visibility / awareness outside of lead MEA when compared to options iii and iv. - Unlikely to fully address negative impacts of nitrogen. - Risk of unintended consequences from fragmented approach. - Any action dependent on lead countries proposing resolutions or decisions under the various existing fora. - Significant risk of mandate creep. - 'Real' action limited to remit of the lead MEA. - Difficult to impose specific, new, legally binding obligations (requires amendment or subsequent / interpretative agreement). - Difficult to leverage resources for actions on nitrogen both at international and national levels.

Option	Advantages	Disadvantages
III. Nitrogen Treaty	- Bespoke solution that could address the entire nitrogen cycle. - Raises awareness and visibility amongst lawmakers, policymakers, and the public in a more targeted way than options i and ii. - A new treaty would include new, specific legally binding obligations to address sustainable nitrogen management.	- High financial cost, both during negotiating phase and once new treaty adopted. - Would require the establishment of a new Secretariat, entailing both financial costs and administrative requirements. - New and additional funding streams would be required, both to negotiate and operationalise the treaty and to support Parties in the implementation of their obligations. - Slow: would require negotiation of a mandate to even begin negotiations on the treaty itself (estimate 10-15 years based on recent experience). - Unlikely to enter into force quickly (minimum number of ratifications required for entry into force). - Limited initial impact, at least initially would only be likely to include a small number of Member States that would have ratified. - Could divert funding from other priorities - Question whether there is an appetite for another new treaty at this point.
IV. Intergovernmental coordination mechanism	- Bespoke solution that could be designed to complement existing mechanisms and address the entire nitrogen cycle. - Faster impact than a new treaty as would not need to wait for entry into force - Could rely on decision making processes under existing MEAs, organisations and processes: no need to reinvent the wheel. - Would foster cooperation on nitrogen between existing MEAs, organisations and processes and provide a way for them to work together more effectively. - Raises awareness and visibility amongst lawmakers, policymakers, and the public in a more targeted way than option i or ii.	- Would require the establishment of a new Secretariat, entailing both financial costs and administrative requirements. - New and additional funding streams would be required, both to negotiate and operationalise the mechanism and to support Member States to deliver sustainable nitrogen management. - Action would still depend on lead countries proposing resolutions or decisions under the various existing fora. - Cannot impose specific, binding obligations, other than through existing fora.

Option	Advantages	Disadvantages
	- Moderate financial cost for creation and running of secretariat.	