

UNEP Working Group on Nitrogen

Fifth Meeting

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Nairobi, Kenya

Agenda item 4: National action plans on sustainable nitrogen management

## **VOLUNTARY NATIONAL ACTION PLAN ON SUSTAINABLE NITROGEN MANAGEMENT**

**- Revised consolidated version -**

### **Introductory note**

The voluntary national action plan on sustainable nitrogen management provides a flexible framework to address and prevent nitrogen waste at the national level across the nitrogen cycle.

This document was initially prepared based on the findings from the baseline screening on actions for sustainable nitrogen management at country level that were presented for discussion at the third meeting of the UNEP Working Group on Nitrogen.

The first version of the document was further revised during the fourth meeting of the UNEP Working Group on Nitrogen. Focal points were invited to provide further comments in writing after the fourth meeting.

The document has been further consolidated for the fifth meeting of the UNEP Working Group on Nitrogen based on additional written inputs received from one Member State after the meeting.

The document takes full recognition of the actions already taken by countries as part of their national action plans, while encouraging further actions to significantly reduce nitrogen waste.

### **I. Proposed action areas**

Under the mandate of UNEA resolutions 4/14 and 5/2, the below actions serve as recommendations that could be applied by countries on a voluntary basis. The proposed actions are to be adapted at the country level, as necessary.

Guidance text is added below each of the ten proposed action areas.

#### ACTION AREA 1:

- **Ensure leadership and coordination at government level through the Ministry for Environment and the relevant Ministries** (depending on their importance at national level in relation to nitrogen emissions, such as **the Ministry for Agriculture**, the Ministry for Transportation, Ministry for Industry or other Ministries, as relevant).

- Inter-ministerial coordination would be necessary for the national action plan preparation and its monitoring. Legal process / policy decision process may be necessary.
- Biodiversity loss, climate change and pollution are to be addressed.
- Human health impacts related to [nitrogen waste/pollution] could be considered as well.
- Allocation of financial resources will be necessary for the preparation of the national action plan.
- Scientists/research institutes to be involved/integrated in the process.
- The representatives of the private sector and other relevant stakeholders would also be included.
- Cross-sectoral perspectives and an integrated approach to be considered to improve policy coherence and identify and resolve (potential) trade-offs.

#### ACTION AREA 2:

- **Set-up and operate a viable water and air quality monitoring network.**

General characteristics to include:

- Regular monitoring (e.g., carried-out by a state agency or local government) + private sector of nitrogen concentrations/ emissions – as available.
- Co-location of the monitoring sites (with integration of monitoring programs) is recommended in order to meet the most efficient use of resources and avoid overlapping of the monitoring of parameters; already existing data and monitoring systems may be used to the extent possible.
- In addition to monitoring of nitrogen concentration, the monitoring of the cross-sectoral nitrogen flows is of importance for the identification and calculation of the life cycles of various nitrogenous compounds and associated emissions.
- Effect-based indicators are recommended.
- The monitoring systems should comply, if possible, with agreed international methodologies and concentration limits, to allow data exchange and comparability, leading to regular reports/inputs to a reporting system that would serve policy preparation and implementation.
- Modelling aggregated data is encouraged.
- Allocation of appropriate financial, physical and human resources is vital for a functional water and air quality monitoring network. This action may include details on infrastructure and required equipment, as well laboratories to be further accredited, as well details on operations of which entities/government agencies/private sector/organizations in the network are responsible for monitoring.

### ACTION AREA 3:

#### - **Preparing voluntary applied Guidelines / Codes of good practices on sustainable nitrogen management**

- Measures that may be considered are: inappropriate periods for fertilizers application on land, storage of livestock manure, limitation of the land application of fertilizers according to soil and climatic conditions, switching from urea-based fertilizers to ammonium nitrate and application of low emission spreading techniques, conditions and foreseeable nitrogen requirements of the crops, fertilizer plans on a farm-by-farm basis and the keeping of records on fertilizer use, recommendations of the amount of nitrogen from livestock manure applied to the land each year, specific conditions regarding sloping grounds, water-saturated, flooded, frozen or snow-covered ground, and vegetation cover during (rainy) periods. Interactions and trade-offs between measures have to be regarded, as some mitigation measures of ammonia emissions may increase nitrate pollution.
- Measures for recovery and recycling of nitrogen are important to be envisaged.
- Focus on the reduction of nitrogen losses is paramount.
- Non-technical measures such as measures for addressing consumption patterns to be included.
- Appropriate consideration for the local farming practices is important.
- Existing guidance such as FAOs international Code of Conduct for the sustainable use and management of fertilizers and UNECE guidelines (e.g., on ammonia emissions) / templates may be considered (adaptation may be required based on local conditions and national circumstances).
- [Regulation of the sales and use of fertilizers can be an option depending on the situation of the country].
- Guidelines may approach separately the nitrates (and non-nitrates forms) from ammonia, but an integrated approach might be worth considering. Key actors to be involved in the preparation are research institutes, farmer organisations, industry and input suppliers. Local research and farming specificities should be considered.
- Wide public consultation with relevant stakeholders is essential.

### ACTION AREA 4:

#### - **Action programmes**

- While Guidelines/Codes are designed to inspire and guide, some basic measures for reducing nitrogen waste might be worth being included in an Action programme, to be applied at country level.
- Actions to be integrated in nature, with the consideration of water quality, air quality, climate change and biodiversity impacts in mind (considering the inter-connection of the list of actions). The links between the triple planetary crisis of biodiversity loss, climate change and pollution to be envisaged, as many nitrogen measures have a positive effect in tackling the triple planetary crisis.

- Depending on the country readiness/advancement, norms or standards may be prepared and linked with critical loads for environment, emissions targets/ceilings, such as those under action areas 5 and 6.

#### ACTION AREA 5:

##### - **Norms on wastewater treatment and discharge**

- Norms on ammonia and nitrates concentration in discharged wastewater should be promoted.
- These norms may be adapted depending on the environmental sensitivity of the areas.

#### ACTION AREA 6:

##### - **Emissions norms on combustion**

- NO<sub>x</sub> emissions standards on cars would be expected to have a direct impact on air quality.
- More focus could be put on air pollution and nitrous oxide (actions towards prevention at the source level).

#### ACTION AREA 7:

##### - **Awareness campaigns on reducing reactive nitrogen losses**

- Nitrogen waste is not yet a well-known topic as climate change, biodiversity loss or plastic pollution. It also has the disadvantage in terms of public visibility, as is in general odourless and colourless. Acknowledging the problem of reactive nitrogen losses however is crucial.
- Awareness campaigns could target sensitization of policy makers and local officials, as well as focus on farmers, consumers and stakeholders (suggested).
- Health officials/Ministry to be considered as well as target audience in communications, as nitrogen pollution is leading to substantial health damage due to the adverse effects on air quality and water quality.
- Possible tools for awareness raising might be types of platforms for public consultations, where citizens and stakeholder can share their views on policies, relevant topics etc.

#### ACTION AREA 8:

##### - **Capacity building and training for relevant stakeholders on sustainable use of fertilizers**

- There are various means to be considered for delivering training, such as through: public advisory services, scientific or practical sessions organised by the relevant Ministries, universities, professional or scientific societies and farmer organisations/producer rings.

#### ACTION AREA 9:

##### - **Programmes for public investments on reducing nitrogen losses**

- Building/modernising public laboratories for analytical and diagnostic services may be considered.
- Demonstration/role model farms for knowledge transfer may be included as well as capacity building to support knowledge transfer and information, advisory services, and cooperation on methods of reducing nitrogen losses.
- All sectors are to be addressed. Public support may be needed to cover investments in modern technology aiming at nitrogen use efficiency/reactive nitrogen losses reduction, in machinery and equipment for manure storage capacity, composting, biogas, application of fertilizers, barns design to reduce ammonia emissions, precision farming agriculture etc.
- Planning and consulting services directly related to the investments could be considered.

#### ACTION AREA 10:

##### - **Scientific/ technological advancements on reducing nitrogen losses**

- To be promoted/supported/public funded. For fund raising, mechanisms of private responsibility and international cooperation may be considered, especially in developing countries. Involving farmers/industry to be encouraged, as would be a more applied orientation.
- Relevant studies on specific local soil and climatic conditions are mandatory to be taken into account before considering other scientific / technological findings on reducing reactive nitrogen losses.
- Regional and national nitrogen management cooperation should be promoted, based on global, regional and national political commitments.

## **II. Open questions (to be further clarified in e.g., policy webinars):**

- What are the challenges for action plan preparation? What about approval process? What would constitute the legal framework for inter-ministerial committees/ working groups?
- What would be the main obstacles encountered in implementation?
- What is the level of readiness for setting national targets on reducing nitrogen waste?

- How can rules for labelling and trading fertilisers support sustainable nitrogen management?
- What specific nitrogen management measures distinguish cases of deficit and cases of excess of nitrogen use?
- What specific best practices exist for reducing nitrogen (and what are the success factors behind them)?

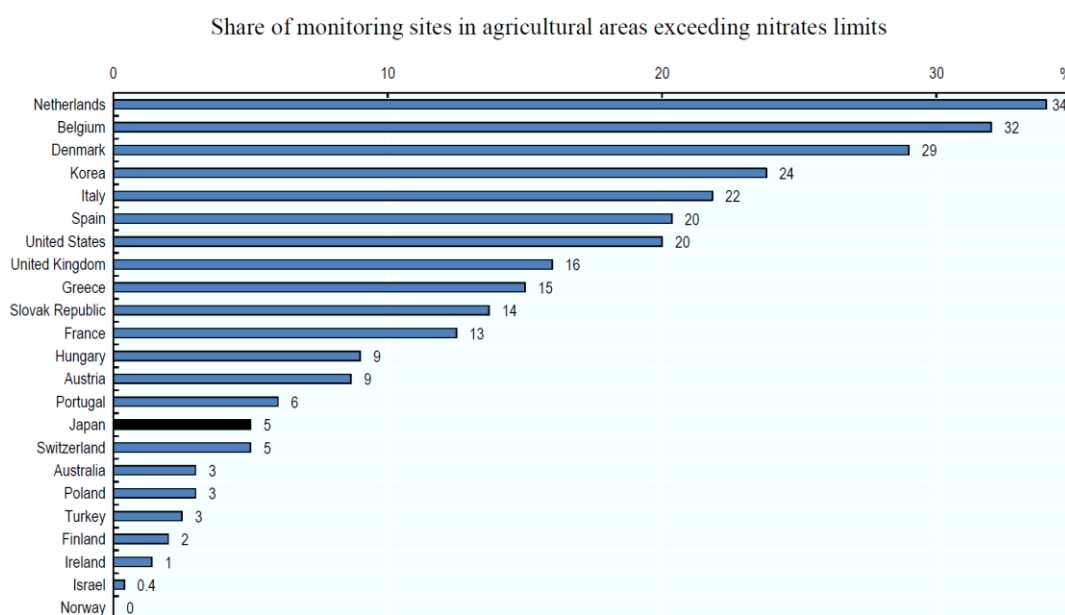
➤ **Reference 1: Fertilizer management in Japan**

In Japan, the improvement of fertilizer use in agricultural sector has been achieved by de facto guidelines for fertilizer application established by local government. Such guidelines can be adopted in the cultivation calendar for annual work schedule by crops for each region set by local farmers' organisation.

In addition to above, farmers are encouraged to increase efficient use of manure compost rather than inorganic fertilizers under the MIDORI strategy for sustainable Food systems where the 30% reduction in chemical fertilizer use is set as one of KPIs by 2050. For example, they are appropriately applying fertilizer based on soil diagnosis and growth conditions of crops using remote sensing to ensure that the proper amount of nitrogen is applied in according to soil and crop conditions. The act to encourage and support such actions by farmers also entered into force.

As a result of these efforts, the inflow of excess nitrogen from the agricultural sector into the closed sea area is 10% of the total and the share of monitoring sites in agricultural areas that exceeded recommended drinking water limits is low (See the Figure from OECD Food and Agricultural Reviews below).

**Figure 2.15. Agricultural areas exceeding recommended drinking water limits for nitrates in groundwater, OECD countries, 2000-10**



Note: The figures refer to: 2000 for Japan, Korea, Turkey and United States; 2001 for Greece; 2002 for Australia, Finland, Hungary and Norway; 2003 for Denmark, Italy and Spain; 2005 for Belgium (Flanders), Portugal and Slovak Republic; 2008 for France and Poland; 2009 for Switzerland; and 2010 for Austria, Ireland, Israel, Netherlands and United Kingdom.

Source: Adapted from OECD (2013<sup>[46]</sup>), *OECD Compendium of Agri-environmental Indicators*, <http://dx.doi.org/10.1787/9789264181151-en>.

➤ **Reference 2: Awareness campaign in Japan**

➤ **Reference 3: Japan's cooperation for sustainable food system and improved water environment**

Japan, along with ASEAN countries, has just launched the ASEAN-Japan “MIDORI Cooperation Plan” for Strengthening Cooperation towards Enhancing Resilient and Sustainable Agriculture

and Food Systems for Ensuring Regional Food Security in Asian monsoon region. The plan includes cooperation to reduce fertilizer use through automated plotting technology and soil diagnosis using satellite data.

Japan also has been making efforts to improve the water environment in the Asia-Pacific region through “the Water Environment Partnership in Asia (WEPA)” and “the Model Project for Improvement of Water Environment in Asia”.

The partnership aims to improve the capacity of government officials in Asian countries by sharing issues and experiences related to water environmental governance.

The Model Project aims to promote the improvement of the water environment by disseminating appropriate water treatment technologies.