

# Establishing a Scottish Nitrogen Balance Sheet

Consultation

December 2020



Scottish Government  
Riaghaltas na h-Alba  
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## **Establishing a Scottish Nitrogen Balance Sheet**

### **Introduction – what is this consultation about?**

A Scottish Nitrogen Balance Sheet will be established by March 2022. As part of a programme of engagement, the Scottish Government is consulting on key aspects of the approach to shape this new initiative.

### **Background – what is a Nitrogen Balance Sheet?**

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 requires the establishment, via a process of regulations by March 2022, of a national Nitrogen Balance Sheet for Scotland. Nitrogen is a basic building block of life and present everywhere across the economy and environment. A Nitrogen Balance Sheet is a way to keep track of how nitrogen is being used, any losses to the environment and whether there is scope for improvement.

In particular, the Scottish Nitrogen Balance Sheet (SNBS) will provide a method for determining a baseline figure for “Nitrogen Use Efficiency” in Scotland. Nitrogen use efficiency means the proportion of nitrogen used for its intended purpose (e.g. growing food) vs. losses to the environment, which can have harmful effects on, for example, climate change, biodiversity, air quality and water quality. Once established, the SNBS will be reviewed and updated at regular intervals, helping us keep track of progress on improving nitrogen use efficiency.

The main purpose, as set out in the 2019 Act, for the SNBS will be to support progress to Scotland’s national climate change targets. This is because one form of nitrogen - nitrous oxide, N<sub>2</sub>O - is an important greenhouse gas. Improving nitrogen use efficiency will, therefore, help with tackling climate change. However, the fact that nitrogen in all of its many forms is basically everywhere (in the air we breathe, soils, plants, water, animals, food production, combustion, waste management, etc) means that the SNBS will also have the potential to support a range of wider applications (some key examples around air quality and agriculture are discussed below). The Scottish Government is keen to maximise the potential of the new evidence base from the SNBS to support linkages between as wide a range of policy areas as possible.

A Nitrogen Balance Sheet is, inherently, a technical undertaking – given the complexity of the different flows and types of nitrogen across the economy and environment. The Scottish Government’s current SNBS project is building from a previous study by the UK Centre for Ecology & Hydrology in 2019. This study made a first attempt at a national Nitrogen Balance Sheet for Scotland (those interested in the detailed aspects of the project might wish to review the [report](#) from this work, a summary of which is also included in the technical annex here). In particular, the current project aims is to bring all major sectors of Scotland’s economy and environment into the scope of the balance sheet. Whilst recognising this technical background, we are also keen that the outputs from the SNBS are as accessible and widely usable as possible. Aspects of the consultation questions below relate to both the technical and communication aspects of the work.

## **Background – how does this work relate to other Scottish Government initiatives?**

As set out above, nitrogen is a key nutrient for sustaining life and is a constituent of a wide range of materials and processes. It is especially important in relation to growing and producing food, waste management and activities involving fuel combustion. This means that effective and efficient use of nitrogen is an important consideration across many sectors of the economy, environment and well-being. Establishing the SNBS will be an important step in developing the national evidence base around these matters, by bringing together data from a range of sources and providing baseline figures for nitrogen use efficiency.

This evidence base, once established, can then be used to help support a range of initiatives and policy frameworks. In addition to the central purpose around supporting progress to national greenhouse gas emissions reduction targets, two further key examples of potential future applications for the SNBS will be around:

- a new air quality strategy for Scotland, with related benefits for public health and biodiversity. This link arises because emissions to air of ammonia (NH<sub>3</sub>) and oxides of nitrogen (NO<sub>x</sub>), which arise mainly from agriculture and transport, are key air quality pollutants. A separate consultation on a draft of the new strategy, including information on how the SNBS can support this, is open until 22 January 2021 at <https://consult.gov.scot/environmental-quality/cleaner-air-for-scotland-2>.
- building from existing good practice to further optimise the efficient use of nitrogen in food production. The development of future rural support and consideration by farmer-led groups of delivering environmental and climate outcomes will help identify how best support farmers and crofters to adopt best practice. The SNBS will help provide relevant data to inform this on-going policy development

## **Q1 – The scope of the Scottish Nitrogen Balance Sheet**

The Scottish Government proposes that the SNBS should, wherever possible, cover all major flows of nitrogen within all parts of the Scottish economy and environment. Flows across relevant national boundaries should also be quantified wherever possible.

Such an approach would mean that the SNBS will cover flows of nitrogen within and between the following sectors of the economy: aquaculture, energy production, fisheries, food and drink production, forestry, human nutrition, industry, transport, waste management. It will also cover the following aspects of the environment: atmosphere, terrestrial, freshwater and coastal systems.

Do you:

- fully support the proposal
- support the proposal to some extent
- not support the proposal
- don't know/don't have an opinion

Do you have any changes you would like to suggest and/or any other comments? In particular, are there any important sectors that may be missing from the lists above? (400 word limit)

## **Q2 – The spatial scale of the Scottish Nitrogen Balance Sheet**

The Scottish Government proposes that the SNBS, at the point of its establishment, will be national in scale. Further outputs will also be prepared at regional and sector by sector scales, where data availability allows for this.

We further propose that the SNBS should also be designed as flexibly as possible, to allow it to fit together with any higher spatial resolution data sources that may become available in the future (e.g. data at the river catchment, farm or community levels). It is recognised that nitrogen accounting at more detailed levels could be of value in terms of understanding improvements in national nitrogen use efficiency and giving appropriate credit for these. Under the proposed approach, the possibility of further development in these directions will be kept under regular review and updates provided to Parliament (see Q5 for the frequency of these reviews).

Do you:

- fully support the proposal
- support the proposal to some extent
- not support the proposal
- don't know/don't have an opinion

Do you have any changes you would like to suggest and/or any other comments? (400 word limit)

### **Q3 – Setting targets based on the Scottish Nitrogen Balance Sheet**

The Scottish Government's view is that targets for improving national nitrogen use efficiency cannot be meaningfully set until the baseline evidence base has first been established. However, we also recognise that such targets may be appropriate in the future. As such, we propose that the setting of targets based on the SNBS should be kept under regular review and updates should be provided to Parliament (see Q5 for the frequency of these reviews) following its initial establishment.

Do you:

- fully support the proposal
- support the proposal to some extent
- not support the proposal
- don't know/don't have an opinion

Do you have any changes you would like to suggest and/or any other comments? (400 word limit)

### **Q4 – Making the Scottish Nitrogen Balance Sheet as accessible as possible**

The Scottish Government proposes that, in order to make the SNBS as user friendly as possible, the outputs should also include a suite of non-technical factsheets. These should set out the key findings on nitrogen use efficiency at national and sector by sector scales.

Our intention is that these factsheets will help with broader understanding of the cross-cutting nature of nitrogen across the economy and the environment, and help to support the wider development of joined-up strategies and policy measures. Where possible, the factsheets could include relevant contextual information alongside the nitrogen flow data themselves – for example on the impacts associated with nitrogen losses.

Do you:

- fully support the proposal
- support the proposal to some extent
- not support the proposal
- don't know/don't have an opinion

Do you have any changes you would like to suggest and/or any other comments? In particular, are there any other outputs you would like to see? (400 word limit)

**Q5 – How often should the Scottish Nitrogen Balance Sheet be updated?**

The Scottish Government proposes that the frequency of review and updating of the SNBS should be annual, following its initial establishment by March 2022.

Annual updates would match reporting cycles for other key datasets, such as agricultural census/survey data, the UK National Atmospheric Emission Inventory and the Scottish Pollutant Release Inventory. However, not all of the data will be available on an annual basis. This means that the largest nitrogen flows and those expected to change most over time will need to be prioritised in the updates, with very small flows potentially being updated on a less frequent cycle.

Do you:

- fully support the proposal
- support the proposal to some extent
- not support the proposal
- don't know/don't have an opinion

Do you have any changes you would like to suggest and/or any other comments? In particular, if you do not support the proposed annual update frequency, please say which frequency you would prefer (400 word limit)

**Q6 – Any other comments**

Is there anything else you would like to suggest or comment on that has not been covered by the previous questions? (1000 word limit)

A large, empty rectangular box with a thin black border, intended for the user to provide their comments or suggestions. The box is currently blank.

## **Responding to this Consultation**

We are inviting responses to this consultation by 14 January 2021.

Please respond to this consultation using the Scottish Government's consultation hub, Citizen Space (<http://consult.gov.scot>). Access and respond to this consultation online at <https://consult.gov.scot/energy-and-climate-change-directorate/scottish-nitrogen-balance-sheet>. You can save and return to your responses while the consultation is still open. Please ensure that consultation responses are submitted before the closing date of 14 January 2021.

If you are unable to respond using our consultation hub, please complete the Respondent Information Form to:

Climate Change Legislation and Adaptation  
Scottish Government  
Area 3F South  
Victoria Quay  
Edinburgh, EH6 6QQ

### **Handling your response**

If you respond using the consultation hub, you will be directed to the About You page before submitting your response. Please indicate how you wish your response to be handled and, in particular, whether you are content for your response to be published. If you ask for your response not to be published, we will regard it as confidential, and we will treat it accordingly.

All respondents should be aware that the Scottish Government is subject to the provisions of the Freedom of Information (Scotland) Act 2002 and would therefore have to consider any request made to it under the Act for information relating to responses made to this consultation exercise.

If you are unable to respond via Citizen Space, please complete and return the Respondent Information Form included in this document.

To find out how we handle your personal data, please see our privacy policy: <https://www.gov.scot/privacy/>

### **Next steps in the process**

Where respondents have given permission for their response to be made public, and after we have checked that they contain no potentially defamatory material, responses will be made available to the public at <http://consult.gov.scot>. If you use the consultation hub to respond, you will receive a copy of your response via email.

Following the closing date, all responses will be analysed and considered along with any other available evidence to help us. Responses will be published where we have been given permission to do so. An analysis report will also be made available.

### **Comments and complaints**

If you have any comments about how this consultation exercise has been conducted,

please send them to the contact address above or at [climate\\_change@gov.scot](mailto:climate_change@gov.scot).

### **Scottish Government consultation process**

Consultation is an essential part of the policymaking process. It gives us the opportunity to consider your opinion and expertise on a proposed area of work.

You can find all our consultations online: <http://consult.gov.scot>. Each consultation details the issues under consideration, as well as a way for you to give us your views, either online, by email or by post.

Responses will be analysed and used as part of the decision making process, along with a range of other available information and evidence. We will publish a report of this analysis for every consultation. Depending on the nature of the consultation exercise the responses received may:

- indicate the need for policy development or review
- inform the development of a particular policy
- help decisions to be made between alternative policy proposals
- be used to finalise legislation before it is implemented

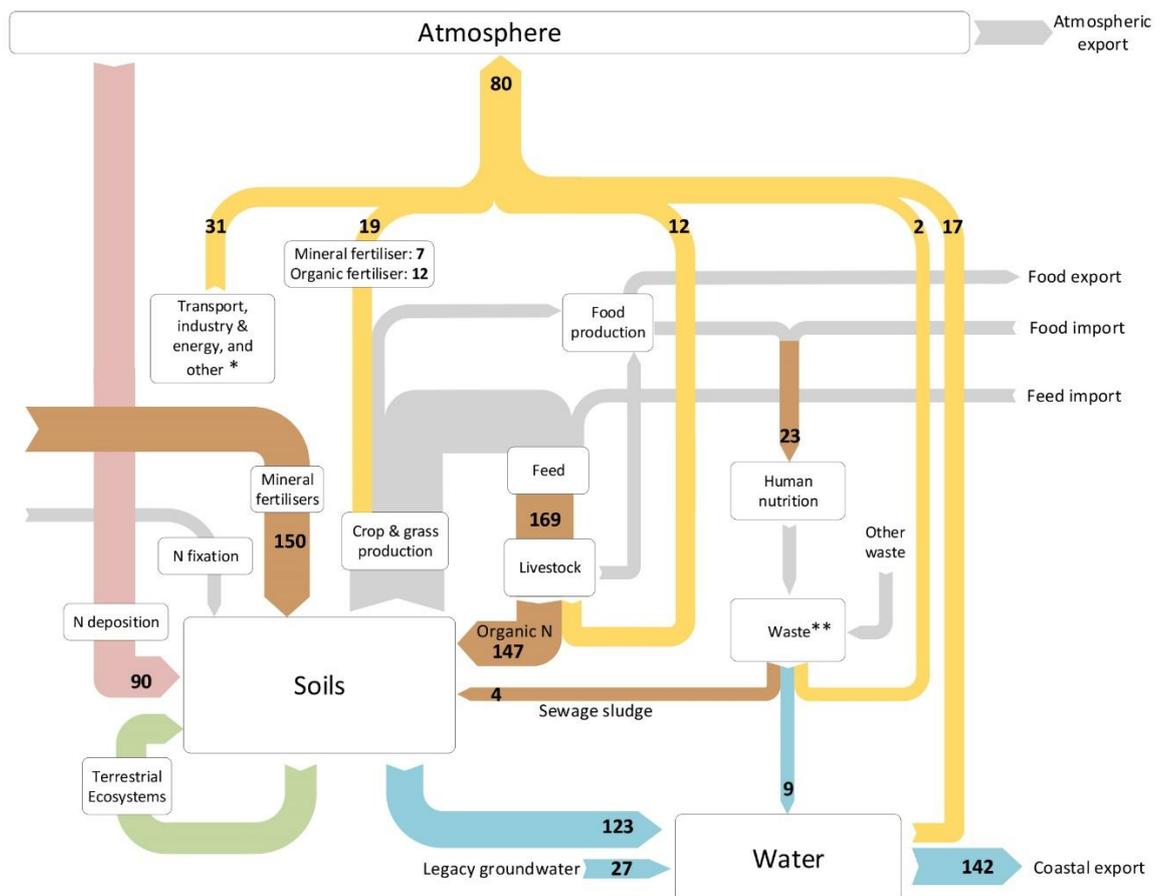
While details of particular circumstances described in a response to a consultation exercise may usefully inform the policy process, consultation exercises cannot address individual concerns and comments, which should be directed to the relevant public body.

## Technical Annex

### Summary of 2019 SEPA-commissioned report “A Nitrogen Budget for Scotland”

This [short report](#) commissioned by the Scottish Environmental Protection Agency (SEPA) from the Centre for Ecology & Hydrology (now UK Centre for Ecology & Hydrology (UKCEH), since 1 December 2019) provides the best currently available outline for a national nitrogen balance sheet for Scotland. The various arrows in the diagram below (copied from the report) represent the key flows of nitrogen, in a range of chemical forms, between different parts of the economy/environment and give an overview of the complexity of the system at a national scale.

The grey arrows show flows that the UKCEH project team could not fully quantify at the time, as that work was intended as part of a very limited evidence review for SEPA. The present Scottish Government project is now improving on this work. For example, there are large amounts of existing data to quantify many of the larger components within the agriculture sector’s nitrogen flows at a national level.



\* “Other” includes small contributions of N emissions from off-road vehicles, fishing, and fugitive emissions mainly in the form of NO<sub>x</sub>, and land use change mainly in the form of N<sub>2</sub>O.

\*\* “Waste” includes N flows from landfill, compost, sewage and anaerobic digestion. “Other waste” is shown in a very simplified way here, to avoid large numbers of arrows from food production, industry etc.



## RESPONDENT INFORMATION FORM

**Please Note** this form **must** be completed and returned with your response.

To find out how we handle your personal data, please see our privacy policy:

<https://www.gov.scot/privacy/>

Are you responding as an individual or an organisation?

- Individual  
 Organisation

Full name or organisation's name

Phone number

Address

Postcode

Email

The Scottish Government would like your permission to publish your consultation response. Please indicate your publishing preference:

- Publish response with name  
 Publish response only (without name)  
 Do not publish response

### Information for organisations:

The option 'Publish response only (without name)' is available for individual respondents only. If this option is selected, the organisation name will still be published.

If you choose the option 'Do not publish response', your organisation name may still be listed as having responded to the consultation in, for example, the analysis report.

We will share your response internally with other Scottish Government policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for Scottish Government to contact you again in relation to this consultation exercise?

Yes

No



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