# Measuring Environmental assets and impacts: an outline of sub-topics to be presented to NSCASE, and an introduction to the first sub-topic of "Negative Asset Values".

**NSCASE(23)26**

## Introduction – Outline subtopics for possible future consideration.

1. This paper is presented to the National Statistician's Committee for Advice on Standards for Economic Statistics (NSCASE) by the Office for National Statistics (ONS). It is the second paper relating to the Environment in the System of National Accounts (SNA) 2025. We can present additional papers if the committee requests them in the short term. When the SNA guidance is available, we will need to present at least one more. There are several ways in which the SNA will change in 2025 to reflect the environment. The ONS seeks to ensure the Committee is fully briefed on these so that they are prepared for detailed guidance when the final guidance is produced.

2. The first half of this paper lists potential changes to the 2025 SNA. The committee may wish to request further papers with more detail on these topics or carry out their own research. The second half of this paper introduces the sub-topic 'negative asset values in Natural Capital Accounts' and presents options on their recording.

3. Throughout this paper, any reference to "national accounts" concerns the central System of National Accounts excluding the satellite accounts and most notably the System of Environmental-Economic Accounting Ecosystem Accounts (SEEA EA, United Nations 2021).

4. The potential environment-related changes to the 2025 SNA fall into four broad topic areas:

    a. Changes in the way emissions trading and pollution taxes are treated in the national accounts (i.e., the atmosphere as an asset, comparability across countries);
    b. Changes in the way natural resources are treated in the national accounts to better reflect their use in the economy (i.e., rent changes, net measures).
    c. Improved classifications to make environmental exchanges more visible in the reporting of the national accounts.
    d. Changes to "provisions" to better reflect the cost of compensating or mitigating damage from industries, most notably mining. Where 'a provision is a liability of uncertain timing or amount' (WS.9, para 2.b, United Nations, 2023).

5. It should be noted that following the potential changes to the SNA described above will not fully capture the relationship between the environment and the economy. For instance, there is no aim to net off the damage from pollution. An oil spill in UK waters can still appear in the national accounts as a net gain in productivity from clean-up costs. The loss of life and working days from air pollution are not included. The atmosphere will tacitly be recognised as an asset but only at the cost of emission reductions, not the long-term liability that each tonne of carbon builds in the atmosphere.

6. It is worth considering that there remains the option to carry out experimental work that moves beyond the SNA guidance. NSCASE could consider whether it would like to see options for ambitious experimental changes to look beyond SNA 2025, potentially as part of a wider 'Beyond GDP' measurement.

7. We ask NSCASE to:

    a. Provide advice regarding whether they require a paper or papers on the topics mentioned in paragraphs 4a to 4d before the final guidance is set.
    b. Be aware of and familiar with the range of changes being put forward so that when options papers are presented on the detail in future, NSCASE are well briefed.
    c. Provide advice on the options presented in the negative assets section of the paper.

8. For 7c. these options are:

    a. Option 1 - Continue the current approach of using negative asset values in the Natural Capital Accounts.
    b. Option 2 - Follow SEEA Ecosystem Accounting (SEEA EA, United Nations, 2021) guidance within the Natural Capital Accounts and avoid negative asset values. For instance, we will restrict measurement to positive values of carbon sequestration, using a zero to denote where greenhouse gas regulation is negative.

9. The ONS recommends option 1.

## Background

### Possible Changes to the SNA Guidance

10. There are two publications which provide a more detailed overview of the range of changes expected in the 2025 SNA. The first is section 4.3 (pages 17-21) of

the United Nations publication titled 'Guidance on enhancing and broadening the SNA framework for household well-being and sustainability WS.1; Inter-secretariat Working Group on National Accounts' (United Nations, 2023). This paper highlights how 2025 SNA will seek to better capture well-being and sustainability. Within this framework, the economic well-being of households is acknowledged to be a complex multidimensional phenomenon. Five key areas for development in this area were identified and WS1 works through the key recommendations for each of those domains:

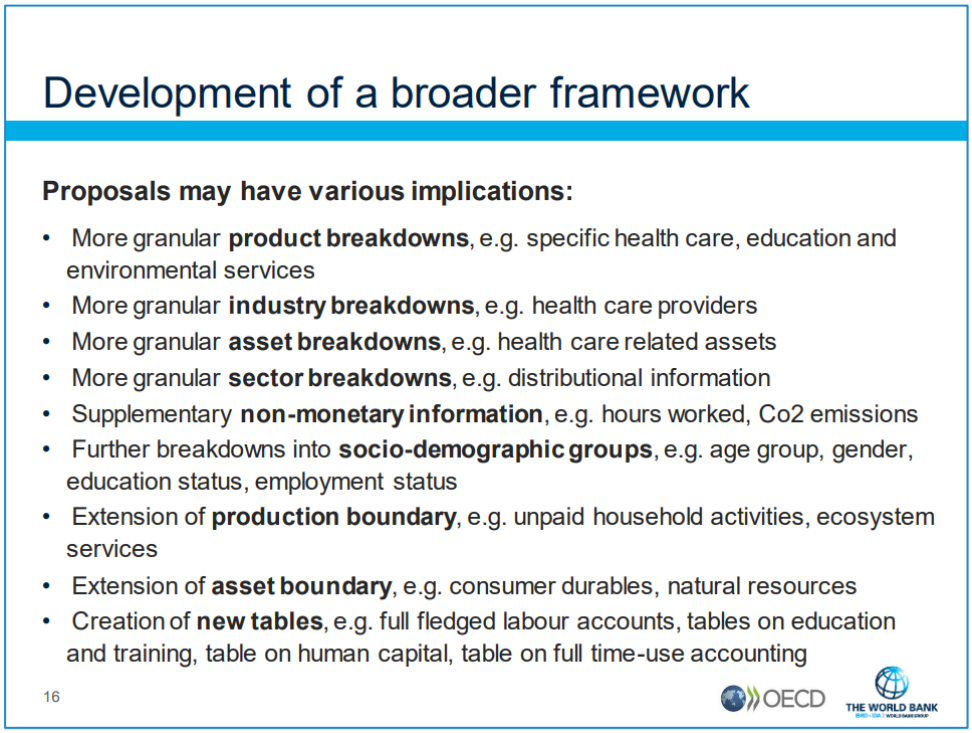
a. Distribution of household income, consumption, saving and wealth
b. Unpaid household service work
c. Labour, education and human capital
d. Health care
e. Environmental-economic accounting

11. Paragraph 2, from WS.1 shows what the framework sets out to do.

> *'The 'framework' is a set of tables based on coherent economic accounting concepts, in which each table, and every row and column of each table, contributes by design to a consistent and complete picture of a country's economy. It includes all economic activities, sectors, flows and stocks within the SNA boundaries. In this sense, it is like a complex piece of architecture in which everything has its place, and all parts are important although some, like Gross Domestic Product (GDP), are more often used than others. The framework is the key tool that countries use to measure their economies and changes in economic performance over time; and because the SNA is an international standard, the results are largely comparable between countries.'*
> (WS.1, para 2, United Nations, 2023).

12. The second publication is an OECD/World Bank briefing 'A Broader SNA Framework on Wellbeing and Sustainability' (Zwijnenburg, J. and Van Rompaey, 2021). The briefing paper and accompanying presentation outline the plans for future guidance on wellbeing and sustainability. Slide 16 (Figure 1) shows the potential implications of the changes in guidance.

*Figure 1 - Slide 16 (Zwijnenburg, J. and Van Rompaey, 2021)*




13. Both the above publications provide useful overviews of how Natural Capital will be more visible in 2025 SNA. Please find both publications in the supplementary reading pack.

14. Whilst we have not yet undergone any form of formal consultation, soft conversations with leading thinkers suggest a risk that the environmental policy community may be underwhelmed by the proposed changes, which may be seen as falling short of radical expectations. In part, this is because the biggest changes will affect Net measures which have had limited policy and political impact, but also because the proposed changes say very little concerning the economics of pollution, e.g. greenhouse gasses or water pollution, with a proposal in the latest update from the editorial team to explore the role of atmosphere as an asset.

**Environmental taxes and trading schemes**

Potential Guidance Notes that are Related to the Topic

WS.7 - https://unstats.un.org/UNSD/nationalaccount/aeg/2022/M21/M21_10_GN_WS7_Emission_Trading_Schemes.pdf

WS.14-

https://unstats.un.org/UNSD/nationalaccount/RADOCS/ENDORSED_WS14_Taxes_Gov_Rev_Boundary.pdf

15. Environmental economic policies such as emissions trading and carbon taxes are essentially two ways to realise the costs of negative externalities (e.g., putting a price on pollution). This includes the right to emit pollution and forcing producers of environmental pollution or damage to pay for it. The recommendations would mean that rather than recording them as taxes currently, they would be recognised as two different ways of purchasing access to an environmental asset. This change will better reflect the purpose of these policy levers.

16. There are two important implications of this:
    a. The atmosphere will be implicitly considered an asset.
    b. Where economic policies are employed for governing emissions then the national accounts will reflect that. Alternatively, “command and control” policies which have the same impact without recourse to markets (e.g., banning the burning of coal to generate power), will still reduce emissions but will not be reflected in the national accounts. If carbon taxes and permits become significant in scale, this may lead to international comparability issues.

17. If carbon trading is significant enough to shift estimates of Gross Domestic Product (GDP), countries that prefer non-economic emissions control policies may need to consider how to impute them. For instance, in the UK the Climate Change Levy raised over £2 billion in 2022 of visible disincentives to pollute. This rose from £666 million in 2010 (ONS, 2023). Another nation might instead rely on regulatory policies such as banning new coal power plants or equipment efficiency requirements. In those cases, the changes show only as a cost of production with the trade-off in atmospheric pollution purely implicit.

**Reflecting Natural Resources in the Economy**

Potential Guidance Notes that are Related to the Topic

WS.6 - https://unstats.un.org/unsd/nationalaccount/RAdocs/WS6_Accounting_Economic_Ownership_Depletion_Natural_Resources_Paper.pdf

WS.10 -

https://unstats.un.org/UNSD/nationalaccount/aeg/2022/M21/M21_13_WS10_Mineral_Energy_Resources.pdf

WS.11 -

https://unstats.un.org/UNSD/nationalaccount/aeg/2022/M21/M21_14_WS11_Renewable_Energy_Resources.pdf

AI.2 –

https://unstats.un.org/UNSD/nationalaccount/aeg/2023/M22/M22_18_AI2_Treatment_of_Rent.pdf

18. As previously discussed, (NSCASE (23)11) the inclusion of depletion as a cost of production is potentially impactful. This is especially true if other nations begin to focus heavily on net measures such as Net Domestic Product (NDP) as their headline economic measure. This could have consequences for individual countries, which may make them reticent to adopt NDP. For example, countries with major oil resources might find their NDP is substantially smaller than GDP, and so prefer to continue to focus on GDP.

19. Net additions of natural resources (regeneration) are currently recommended to be treated as a component of Gross Fixed Capital Formation (GFCF), and hence GDP. We are awaiting further detail on this point, but it would mean environmental 'investment' would be visible in GDP, but environmental depletion would only be visible in NDP and other net measures.

20. These changes are also referenced in the United Nations paper (AI.2, United Nations, 2023) which looks at resource rent changes more broadly in SNA2025.

**Improved Environmental Classifications**

Potential Guidance Notes that are Related to the Topic

WS.12 - https://unstats.un.org/unsd/nationalaccount/RADOCS/WS12_GN_Environmental_Classifications.pdf

21. Classification changes, alongside other classification reforms such as International Standard Industrial Classification (ISIC) and Central Product Classification (CPC), will make the decarbonisation of economies more visible. This should help to estimate the value of the shift to net zero in terms of jobs and growth. The Climate Change Committee (CCC) explain that the pathways to 2050 should see "A critical moment … in the early 2030s, as sales of most high carbon goods are phased out altogether." (CCC, 2020)

22. To illustrate the problem, currently, we do not estimate the net value of the renewable electricity generation industry. The ONS includes this value within all electricity generation and supply. The electricity network itself will undergo large changes in the coming years. Electrical storage facilities will play a large role in the coming changes but have no separate classification for that in the systems of industrial classification. The UK has been supportive of such changes in engaging with these review processes so far as the suggestions aligned with the statistical integrity of the classification system. Additionally, differentiating electric and combustion engine producers will also better support the transition.

**Changes to Provisions to Better Reflect the Cost of Compensating or Mitigating Damage from Industries**

Potential Guidance Notes that are Related to the Topic

WS.9 - https://unstats.un.org/UNSD/nationalaccount/RAdocs/ENDORSED_WS9_Recording_of_Provisions.pdf

23. Decommissioning old mining facilities requires environmental damage clean up and often for the site to be restored to some form of natural habitat. All redundant infrastructure will need to be removed while restoring and remediating any environmental contamination, including hazardous material removal, soil and groundwater remediation.

24. Decommissioning of old mining equipment at the end of its life is likely to become increasingly important in the coming years. WS.9 on "Recording of

Provisions" does not suggest any significant changes but does provide more guidance. Notably it "includes recommendations on the recording of terminal costs, the recognition of compensation costs, and the recording of stranded assets." (WS.9, para 1, United Nations, 2023)

## Negative Asset Values

### Background

#### Current issue and current practice

25. Negative asset values in this context are when an asset is projected to produce a stream of costs into the future unless investments are made to rectify this. Negative asset values exist when the net present value of activities is negative due to the inclusion of depletion.

26. The new SNA guidance might allow negative asset values. SEEA guidance suggests that negative values should be avoided (SEEA CF, page 35, United Nations Statistical Division, 2012). We do not believe this is appropriate for the Natural Capital Accounts for reasons that will be explained in the following paragraphs. We therefore currently do not follow this recommendation, and we currently allow negative asset values.

27. The ONS is already having to address this challenge in the UK Natural Capital Accounts. Carbon sequestration in nature will need to play a role in the move to net zero emissions. However, the net flux of carbon from the UK's land is currently positive. For example, poorly managed peatlands are estimated to emit more carbon than UK forests remove. The asset value concerning greenhouse gas regulation is therefore negative.

#### International Guidance

28. SEEA-EA guidance (adopted in 2021) states:

> *"An appropriate metric is the net ecosystem carbon balance. Where net carbon sequestration is zero or negative, the level of service supplied by an ecosystem will be zero."*
> *(SEEA EA, para 6.114, United Nations, 2021)*

29. However, we believe that decision to be arbitrary. To record the degradation of habitats as they produce less and less beneficial service but stop measuring as

it becomes negative might even appear misleading. We believe that we better support policymakers and the public by presenting the full picture as clearly as possible by allowing negative asset values to occur. We are not aware of other nations doing the same.

**Relation to Economic Concepts**

30. If the national accounts are to work with matters external to the market, negative values are inevitable. While a functioning market will eventually shed a loss-making venture, unregulated markets do not consider externalities. This means that companies engaged in activities that produce negative externalities can continue to appear profitable because they are not required to address the negative costs of their actions. Giving externalities a monetary value or equivalent makes it easier for the market to take them into account.

31. Further explanation of our thinking around negative asset values can be found in the 'Natural Capital Principles Paper' in the greenhouse gas regulation section of the paper (ONS, 2023).

32. The Natural Capital Accounts team has been presenting negative values for greenhouse gas regulation as an asset value of natural habitats in the natural capital accounts. We also believe that our current approach to carbon accounting aligns with the HM Treasury-commissioned 'Dasgupta Review of the Economics of Biodiversity' (Dasgupta, 2021) recommendations to create inclusive wealth accounts. In inclusive wealth accounts, damage to the environment is netted off.

33. The SNA 2025 review Wellbeing and Sustainability team did briefly discuss negative asset values. It was noted that there is no such thing as a non-financial liability. It was also noted that a financial liability is balanced by an asset. Instead, an environmental liability would have no balancing item. The idea that something might have to be created such as a non-financial liability was considered but not acted upon in guidance. As such there lies the possibility that changes to the accounts in 2025 might produce something it has not provided guidance for.

## Options

34. The options are:
    a. Option 1 - Continue the current approach of using negative asset values in the Natural Capital Accounts.

b. Option 2 - Follow SEEA EA guidance within the Natural Capital Accounts and avoid negative asset values. For instance, we will restrict the measurement of greenhouse gas regulation to positive values, using a zero to denote where greenhouse gas regulation leads to emissions.

**International comparability**

35. We do not believe other countries have adopted our approach of presenting negative “asset” values in their Ecosystem Service accounts. The UK Natural Capital Accounts already diverge with other countries in other ways such as the inclusion of mineral and fossil fuel resources. If international comparison became more of an issue, present Ecosystem Service accounts that would be comparable could be implemented at very little analytical cost. Further research will be carried out as this issue becomes more prevalent.

**Data Continuity**

36. No issues since a full back-series are producible for either option.

**Practicality**

37. Option 1 is already implemented and presents no practical obstacles and neither would option 2 though given the timing of this meeting option 2 (if chosen) might not be implemented until 2024.

**Designation**

38. The UK Natural Capital Accounts are currently designated as experimental statistics.

**Stakeholders**

39. The current use of negative values was presented in the Principles in Natural Capital Accounting paper. That paper was linked to an online seminar to which key stakeholders were invited. The decision and explanation were given and no feedback on this issue was given.

**Summary of Options**

| | Benefits | Disbenefits | Relation to SNA/ESA |
|---|---|---|---|
| **Option 1** | By continuing our current practice of presenting negative asset values in the Natural Capital accounts, we can represent the actual status of the natural environment within the Natural Capital accounts in a way which will make sense to stakeholders. In 2020 the asset value greenhouse gas regulation in the UK was £-81 billion which would fall to zero if we followed guidance. | We would be ignoring international guidance which may lead to some minor comparability issues. However, our Natural Capital Accounts already differ from guidance in several ways (to better support UK policy work) which would require small adjustments to be directly comparable with other nations. | |
| **Option 2** | We would be aligned with international guidance. | If we followed guidance. It may appear to be cherry picking or an attempt to hide bad news. It is likely to confuse stakeholders who are aware of the actual data on carbon sequestration for the UK. | |

## Conclusion

42. The ONS recommends option 1 As this would most accurately reflect what is happening in the environment.

## References [1]


**United Nations List of Guidance Notes for the 2008 SNA Update**

United Nations. (2023) *AI.2 - Treatment of Rent in the National Accounts*.*

United Nations. (2023) *WS.1 - Guidance on enhancing and broadening the SNA framework for household well-being and sustainability*. *

United Nations. (2021) WS.6 - Accounting for Economic Ownership and Depletion of Natural Resources.

United Nations. (2022) WS.7 - Guidance Note on the Treatment of Emission Trading Schemes.

United Nations. (2023) WS.9 - Recording of Provisions. *

United Nations. (2022) WS.10 - Valuation of mineral and energy resources.

United Nations. (2022) WS.11 - Renewable energy resources.

United Nations. (2023) WS.12 Environmental Classifications.

United Nations. (2023) WS.14 – Guidance Note on The Borderline Between Taxes, Sales of Service, and Other Government Revenue Boundary Issues.

**Other references**

Climate Change Committee. (2020) The Sixth Carbon Budget – The UK's Path to Net Zero. *

Dasgupta, P. (2021), The Economics of Biodiversity: The Dasgupta Review. (London: HM Treasury) *

ONS. (2023), Principles of UK natural capital accounting: 2023

ONS. (2023), UK environmental taxes: 2022


[1] Asterisks mark papers available in the supplementary reading pack

Zwijnenburg, J., & Van Rompaey, C. . (2021) A Broader SNA Framework on Wellbeing and Sustainability. *Presentation by* Jorrit Zwijnenburg, OECD and Catherine Van Rompaey, World Bank as part of the ICP Technical Advisory Group May 17-19, 2021. A full report to accompany this presentation can also be found at here.

United Nations Statistics Division. (2012) System of Environmental Economic Accounting 2012— Central Framework. *

United Nations. (2021) System of Environmental-Economic Accounting Ecosystem Accounting (SEEA EA).