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Queensland, Australia
Climate Action Beacon

CARBON ACCOUNTING IMPROVEMENTS FOR OPERATIONALISING THE GLASGOW CLIMATE PACT ARTICLE 38

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INTEGRATING POLICY ACTION TO MITIGATE CLIMATE CHANGE AND CONSERVE BIODIVERSITY

The need for integrated policy action to mitigate climate change and conserve biodiversity has now been recognised in Article 38 of the Glasgow Climate Pact[1] which:

> **"Emphasizes the importance of protecting, conserving and restoring nature and ecosystems, including forests and other terrestrial and marine ecosystems, to achieve the long-term global goal of the Convention by acting as sinks and reservoirs of greenhouse gases and protecting biodiversity, while ensuring social and environmental safeguards."**

The case for integrated action is because of the feedbacks which make climate and biodiversity interdependent. Biodiversity underpins ecosystem integrity, which in turn is critical for maintaining stable carbon stocks in the biosphere and reducing the risk of their emissions to the atmosphere. Additionally, biodiversity is directly impacted by the climate crisis. For example, changes in rainfall and local temperature can cause habitat alterations that disrupt food chains and the web of life, beyond the capacity of species to adapt.

IMPROVING CARBON ACCOUNTING RULES TO SUPPORT INTEGRATED POLICY ACTION

The purpose of this briefing note is to outline how additional information can improve carbon accounting rules so that they better support the requirements of these new policy objectives. This information reveals the importance of ecosystem integrity for delivering low risk, long-lived climate mitigation outcomes in land, forests and other ecosystems. Doing this will help achieve synergistic climate and biodiversity outcomes and help deliver on the promise of Nature-based solutions. Adding value to current carbon accounting rules will enable the intent of decisions taken at CoP 25 and CoP26 to be operationalised so that the mitigation values of ecosystem protection, conservation and restoration are recognized, and their carbon stocks and changes in condition of the stocks are reported appropriately for the Global Stocktake.

Carbon accounting rules need to be appropriate to ensure that the mitigation outcomes of different land use management strategies are reported transparently, and decision makers can understand which policies and actions should be prioritised in order to be confident of achieving the desired mitigation outcomes while supporting the full range of ecosystem services.

AREAS FOR IMPROVEMENT

Five areas where carbon accounting improvements can be made are highlighted below: **comprehensive accounts** for all biosphere carbon, including for areas not under human management; reporting **all carbon stocks and stock changes** as "gross" as well as "net" levels; reporting the **condition of carbon stocks** relative to ecosystem integrity; reporting on the **time horizon** for carbon stock longevity; and **reference levels** that report on the carbon carrying capacity for specific ecosystems. Taken together, these improvements would provide a new and comprehensive approach to how carbon and emissions are accounted for, a key pathway for maximising the mitigation value of ecosystems through protection of their carbon stocks.

1 CoP 26, in CMA/3.para 21 and 1.CP/26 para 38; and CoP 25 1.CP/25 para 15

EXISTING UNFCCC RULES

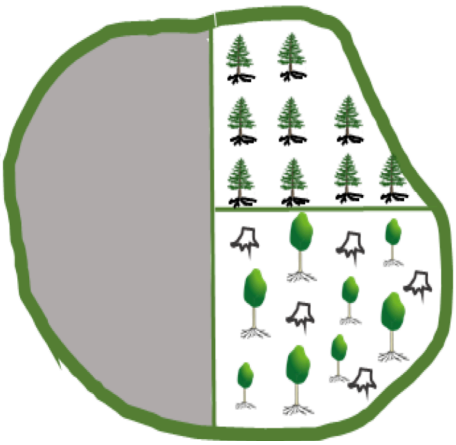
Additional information supported by the SEEA Ecosystem Accounting framework

COMPREHENSIVE CARBON ACCOUNTING

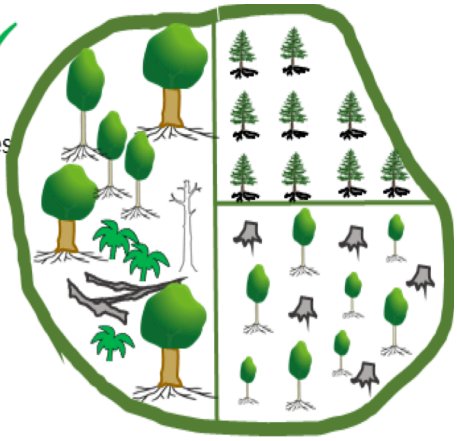
1. Comprehensive carbon accounting

- Carbon accounts need to be comprehensive for all lands, ecosystems, sectors and activities, not limited to those specified as managed by humans.
- Accounting for all stocks and stock changes allows the impacts on the global carbon cycle to be quantified and to track stock changes between the biosphere (i.e., natural forests and other ecosystems) and the atmosphere.
- All carbon pools in living and dead biomass and soils are included.
- Assessments are at landscape scales that incorporate different ecosystem types, composition and structure (e.g., age distributions in forests), and not just comparing individual stands or age classes.

✗
- managed lands
- human activities



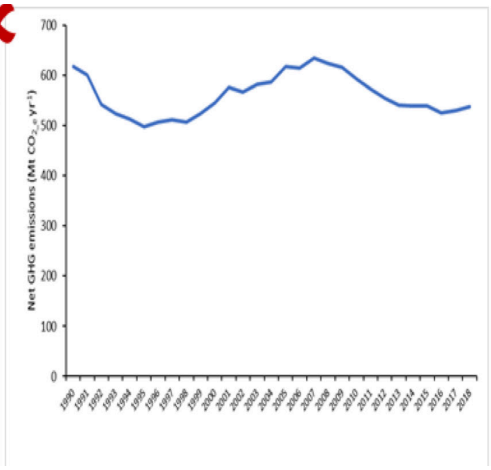
✓
- all lands
- all processes
- landscape scales



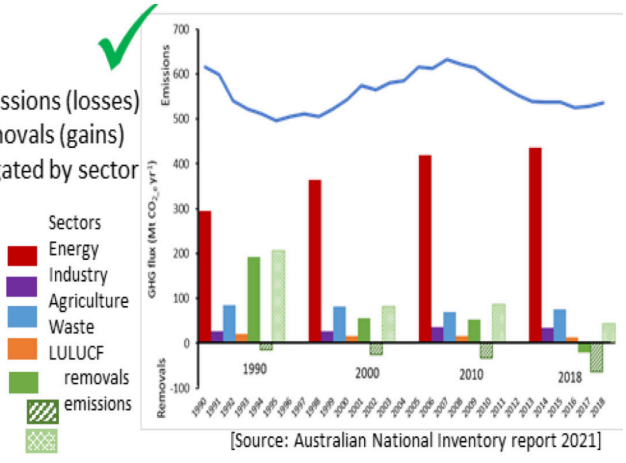
2. All carbon stocks and stock changes

- All carbon stocks and stock changes need to be reported as gross emissions (losses) and removals (gains), not just present annual net emissions.
- Data are disaggregated by sector, not the current "netting out" of emissions from human activities by the removals from plant growth, which makes the land sector appear "carbon positive".
- Reporting of carbon stocks allows the value of ecosystems as assets to be included on the balance sheet, as well as the profit and loss that only shows the annual flows.
- Policy makers need to see where the emissions are coming from, and removals going to, in each sector in order to identify and assess mitigation strategies.

✗
- annual net emissions



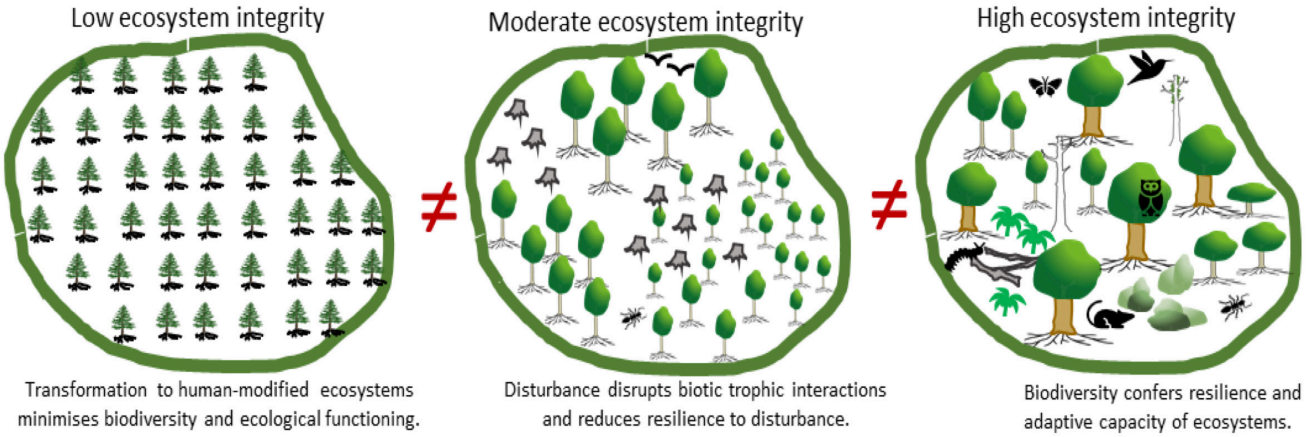
✓
- gross emissions (losses)
- gross removals (gains)
- disaggregated by sector



[Source: Australian National Inventory report 2021]

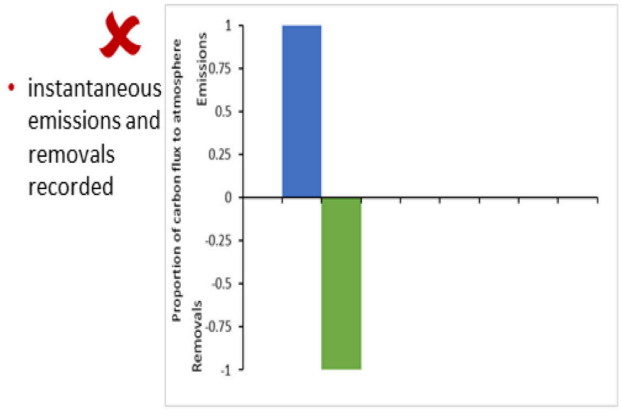
3. Condition of carbon stocks matters and depends on ecosystem integrity

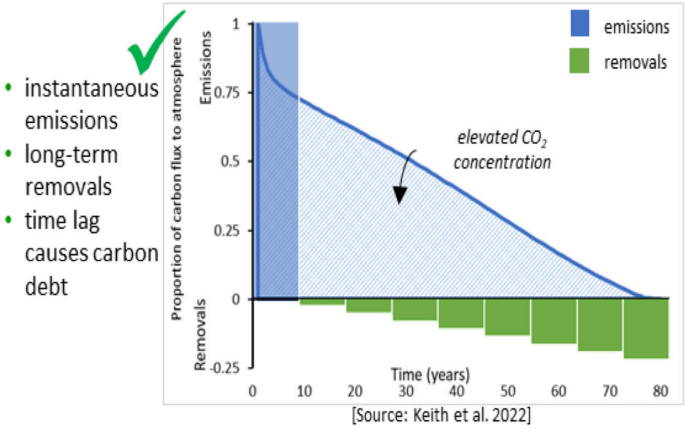
- The condition of carbon stocks in ecosystem reservoirs matters for assessing the capacity for carbon retention and conversely the risk of loss.
- Ecosystems vary in their condition due to human land use and related impacts. Ecosystems in good condition have a high level of ecosystem integrity[2], largely dependent on the role of biodiversity, and results in them being more resistant, long-lived and resilient compared to those in poor condition.
- All ecosystem carbon stocks are therefore not fungible – they are not equivalent or transferable as they vary in their quantity, stability, and longevity. Ecosystems in poor condition are at a much higher risk of loss.
- Therefore, the condition of ecosystems, in terms of the level of ecosystem integrity, needs to be classified and accounted for in assessing carbon stocks to ensure that these differences are transparent.
- It follows that carbon loss from an ecosystem in good condition should not be offset by removals into an ecosystem of poor condition as the risk of loss will be significantly greater in the latter.
- Furthermore, fossil fuel carbon and ecosystem carbon are not fungible. Therefore, fossil fuel emissions should not be offset with removals by ecosystems in reporting of inventories or markets.



4. Time horizon critical

- The difference in timing between instantaneous emissions from combustion, and the long-term (decades to centuries) of removals by plant growth, means the elevated atmospheric CO_2 concentration cannot be compensated by ecosystem removals in the critical decades (2022-2050) that matter for limiting global warming.
- It is the accumulated stock of carbon and its longevity in the atmosphere that are the critical metrics for the climate, not the annual rate of net emissions. Hence, emissions and removals that occur over different time horizons should not be allowed as offsets.
- Activities may be carbon neutral over many decades or centuries (if the carbon stocks of the reference condition are regained), but they are never climate neutral.



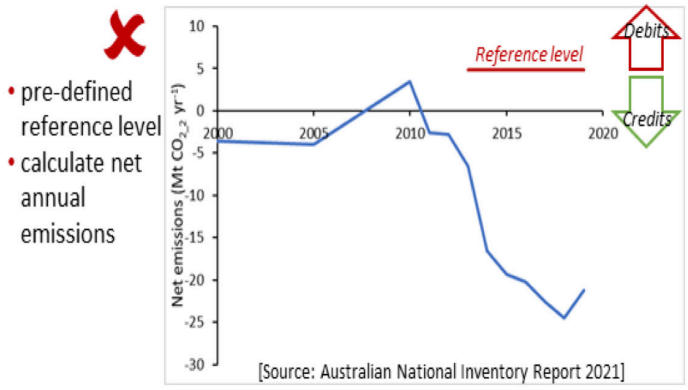


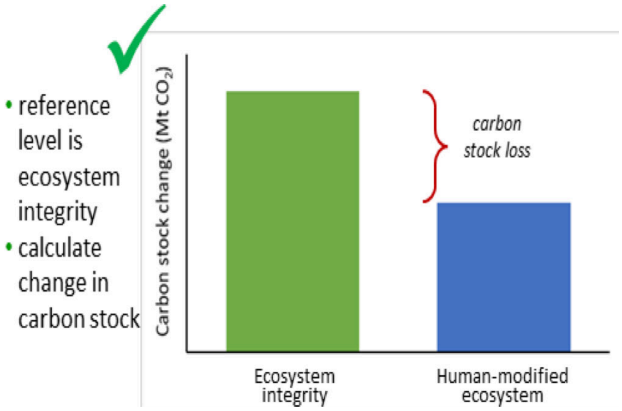
[Source: Keith et al. 2022]

2 Ecosystem integrity refers to the ability of ecosystems to maintain key ecological processes, recover from disturbance, and adapt to new conditions. Source: IPCC AR6 Working Group II Summary for Policy Makers (2022).

5. Reference level for accounting

- The reference level is used as the baseline for calculating change over time in carbon stocks.
- The current reference level is based on net annual emissions caused by current human activities and projected into the future.
- The reference level should represent the carbon stock of an ecosystem with high ecosystem integrity in its natural state, that is the carbon carrying capacity. Primary forest ecosystems have the maximum carbon storage at the landscape scale under natural disturbance regimes.
- Assessing change from this reference level reveals the true loss of carbon due to human activities, and the potential gain in carbon stocks through restoration.
- Reference levels should incorporate long time horizons that reflect the full extent of carbon dynamics at landscape scales.





WAYS FORWARD FOR INTEGRATED POLICY ACTION

A fundamental change is needed in how carbon and emissions are accounted for and reported if we are to maximise the mitigation value of ecosystems by protecting their carbon stores.

Comprehensive carbon accounting would enable closing the gap in the global carbon budget between reported country inventories and what the atmosphere sees. The United Nations System of Environmental-Economic Accounting Ecosystem Accounting (SEEA-EA)[3] provides the principles and framework that ensure carbon accounting is comprehensive, the condition of ecosystems and their carbon stocks are differentiated, and the risk of loss of carbon is identified. Linking carbon accounting to ecosystem condition would enable action on climate and biodiversity to be integrated. Ecosystem accounts provide comprehensive spatial data for the stocks of natural assets classified by their degree of ecosystem integrity, and the flows as provision of ecosystem services.

These objectives could be progressed through:

- Design of a work program for the CoP SBSTA to develop mechanisms for the Global Stocktake that are based on the comprehensive carbon accounting under the SEEA-EA framework.
- Recommend that all parties to the UNFCCC adopt the SEEA-EA to add critical information needed to inform low risk climate, biodiversity and climate resilient development outcomes.
- Align UN institutions in terms of their shared goals, integrated methodologies, and joint outcomes to maximise the benefits for planetary health.
- Integrate the expertise of the IPCC, IPBES, CBD and UN SEEA-EA.
- Develop separate accounting, reporting, targets, and financial mechanisms for the reduction of fossil fuel emissions and ecosystem emissions and incentivise reductions in all sectors.

Reporting carbon accounts under the SEEA-EA framework reflects the economic value of a country's natural assets. It encourages and enables State Parties to progressively bring the value of ecosystems and ecosystem services based on their level of integrity onto the balance sheet of their National Accounts.

The SEEA-EA helps reveal that high integrity ecosystems provide higher quality, more reliable and lower risk of loss ecosystem services, including the crucially important ecosystem service of global climate regulation assessed as carbon retention. This system of accounting facilitates synergistic climate and biodiversity action and holistic strategies for mitigation, adaptation, and climate resilient sustainable development.

3 For more information go to https://seea.un.org/ecosystem-accounting

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