



System of  
Environmental  
Economic  
Accounting

# *Virtual Expert Forum on SEEA Experimental Ecosystem Accounting 2020*

*Breakout session*

*Climate regulation service / carbon retention*

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# Outline

- Context and issue
- The carbon retention proposal
- Why carbon retention?
- Link with sequestration
- Testing efforts
- Discussion

# Context

- Agreement of the importance of compiling carbon accounts (in physical terms) that describe stocks and changes in stocks of carbon.
- Since 2019 Forum (and before) – ongoing discussion about how to reflect carbon related service(s) in the ecosystem supply-use table (on physical and monetary units), proper framing
  - > Is it a service or a process? Final or intermediate?
  - > Sequestration only? Storage only? Both?
  - > Range of other issues
- SEEA EEA TC (in May) discussed various options (with pros and cons) and broadly agreed with carbon retention approach, noting some further clarifications were needed.

# What is wrong with seq. / storage?

- Sequestration (only):
  - > Asymmetry: only deals with removals from the atmosphere, silent on situation on (net) emissions from peatlands (e.g. due to soil subsidence).
  - > Perverse policy incentives (e.g. replace a tropical old growth forest by fast-growing bamboo);
    - Loss of stored carbon would not show in degradation costs (only extent to which this would change future sequestration services;)
  - > Unclear what metric for sequestration would be most appropriate: NPP, NEP (net of soil respiration), NECB (net of timber harvest).
  - > Sequestration for how long in order to count?
- Sequestration + emissions
  - > Need to recognizing disservices in the account (with negative output)
- Sequestration + storage
  - > Unclear how to value a distinct storage service that avoids double



# Carbon retention proposal

- Retention can be defined as:
  - > (i) estimate carbon stocks,
  - > (ii) multiply this by a suitable carbon price, and
  - > (iii) turn this into an annual service flow by multiplying this value by a suitable rate of return (to create an annuity).
- This framing recognizes that the retained carbon stocks represent a value (avoided damages).
  - > In physical terms, the amount stored is a “proxy” for the service flow provided;
  - > in monetary units, the service flow is the annual annuity, with higher annuity flows reflecting higher levels of ecosystem services provision.

# Why carbon retention?

- Retention provides the 'right' signals to policy makers;
  - > if an ecosystem loses carbon, we have lower retention services;
  - > ecosystems with high carbon stocks (e.g. tropical rainforests) would get high retention values (even though oftentimes they have low sequestration (as they are in equilibrium / old growth); sending the signal that they are worth conserving;
  - > in case of logging, the accounts display the range of trade-offs of services;
- the focus on storage aligns well with REDD+ schemes;
- on the data availability side, getting estimates of carbon stored (needed for retention) seems to be easier for most countries than getting estimates for sequestration
- change in the level of service can be decomposed into changes due to sequestration and removal/loss of carbon.

# Retention and sequestration

- Retention records to the extent sequestration leads to permanent storage
- Example:
  - > Sequestration increases carbon stocks, and therefore also its return (in monetary terms) in the current period;
  - > If the sequestered carbon is released again the next period, we have lower retention value (but negative);
  - > However, if the sequestration leads to permanent storage, due to PV approach, its full value would be included (assuming rate of return equal to discount rate)
  - > Difference being that this would be recorded as an ecosystem enhancement (investment).
  - > “Solves” another problem with the sequestration approach

# Ongoing testing

- India
  - > Scope around carbon retention in forests (data from Forest Survey of India)
  - > Valuation: value of 2-3 % of GDP, larger than GVA of forestry sector
- Mexico
  - > Variation: sum of retention + sequestration
- Australia
  - > Test the approach also with longitudinal data from NSW

# Questions for discussion

- Does the carbon retention approach provide a meaningful pathway for accounting for the global climate regulation service?
  - > Do you have comments on the carbon retention proposal, specifically on its relationship with carbon sequestration?
- What measurement boundaries should be adopted for ecosystem accounting purposes?
  - > Where should the boundaries of carbon stocks be drawn (subsoil carbon, blue carbon, long-lived / short-lived biomass)