



Subnational entity accounting for
sinks and carbon storage under
the Kyoto Protocol

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Challenges for LULUCF

- Establishment of relationship between international, national and subnational accounting
- Ensuring that ESD and SFM are taken into account.
- Managing the risk of default on obligations and liabilities over decadal timeframes
- Dealing with CO₂ fertilisation and climate change impacts on vegetation and soils
- capping (Qualitative or quantitative)
- CDM (inter and intranational leakage)

Outcomes from inappropriate carbon accounting and trade systems could include:

- Incentive to investment in short term and potentially unsustainable reforestation
- Unsustainable carbon liabilities developing
- Diminution of environmental and climate benefits
- High stakeholder risks

The Carbon Store approach

It is only credits which are sustainable in the long term which are worth claiming.

- For atmospheric benefit
- Because of rising permit prices

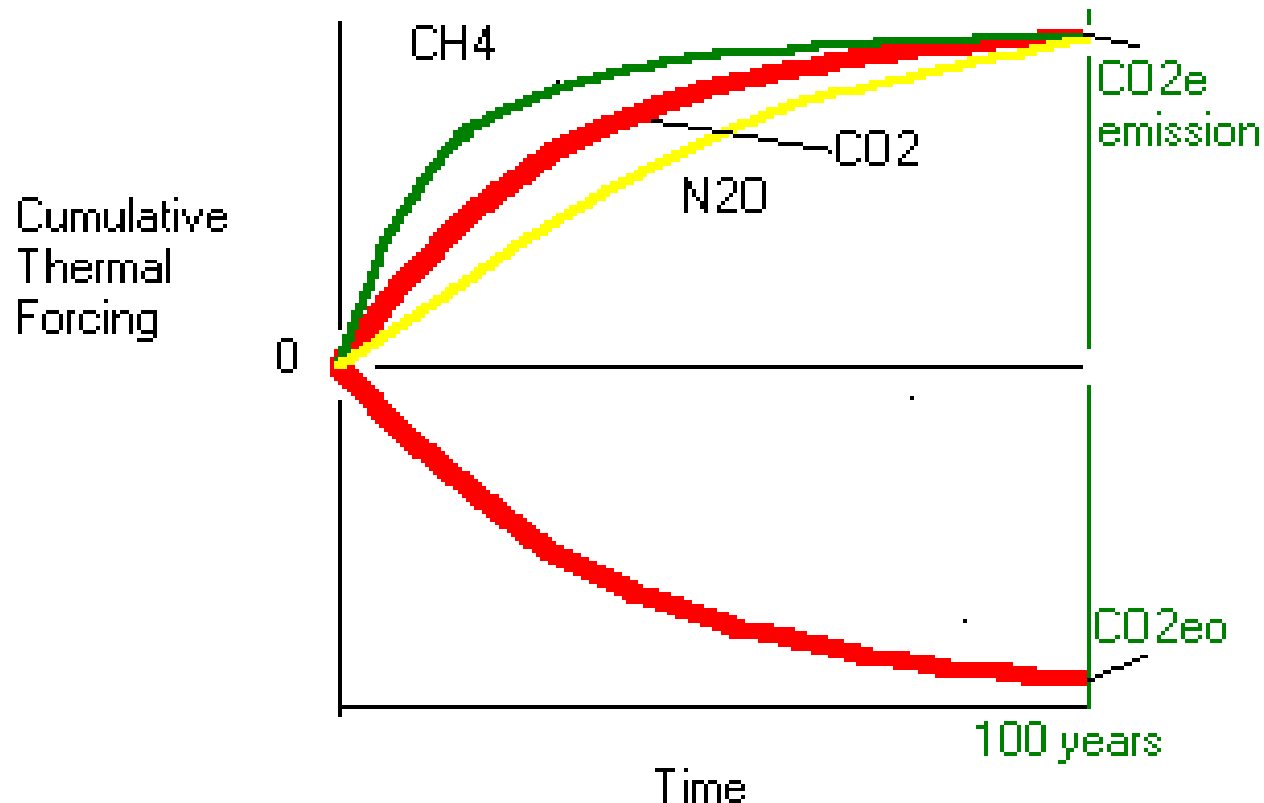
Need for an offset unit

Emissions counted in CO₂ equivalents

What is the opposite unit?

Mass and time both count

Positive and negative AGWPs of **CO₂** (*CO₂e* and *CO₂eo*)



Thermal forcing resulting from emission and sequestration of CO₂ at T=0, and emission of CO₂equivalent amounts of CH₄ and N₂O.

Kyoto Protocol Article 5.3

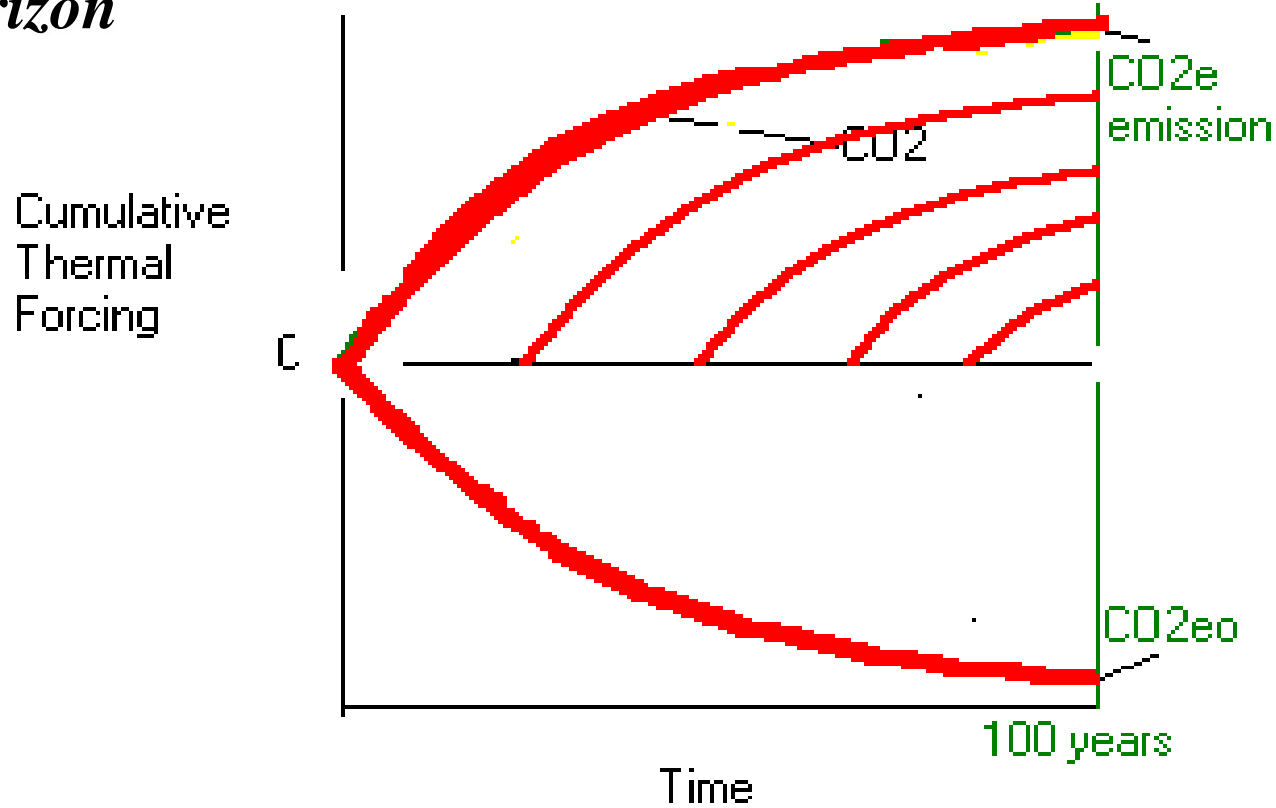
“The global warming potentials used to calculate the carbon dioxide equivalence of anthropogenic emissions by sources and removals by sinks of greenhouse gases shall be those accepted by the Intergovernmental Panel on Climate Change.....”

IPCC Special Report (P 88)

Credit as a function of project duration	
Project Duration (yr)	Percentage of Full Credit
0	0.0
10	7.4
20	15
30	22.9
40	31.2
50	39.9
60	49.3
70	59.4
80	70.6
90	83.3
100	100

Illustrates partial credit that would be received by projects that sequester carbon for various durations using the ton-year derived by analogy to 100 year Global Warming Potentials.....

Forcing from emissions at times up to a 100 year time horizon



A proposed rule for subnational sinks accounting

- Credit to be given upon demonstration of change in stocks in proportion to the duration of a verifiable guarantee to maintain the changed carbon stocks, discounted against the 100 year time horizon
- That is, 20 year guarantee, 0.2 credit
- Full reversal of credit if stocks re-emitted at any time

Benefits

- Sustainability over century timeframe becomes subject of third party verification
- ESD and SFM must then be demonstrable
- Minimises risk of default on obligations
- May enable qualitative rather than quantitative capping on sinks
- CO₂ fertilisation and climate change impacts can be netted off (over 100 years)

Legal arrangements

- Carbon pool managers must have enforceable rights over land management agreements
- Legislation must be focused on the ability to guarantee duration of storage rather than the fact of absorption
- Rights must be easily searchable on title
- Obligations pass to new owners

Carbon credits (as distinct from junk bonds) should:

- be underpinned by a binding and long term management plan
- be the subject of clear contractual arrangements between all parties to a project
- accrue in claiming only up to the sustainable biomass and soil carbon increase
- claim only net project benefits in any year
- be risk managed through pooling , hedging and insurance

This approach will

- minimise the risks in credit ownership
- give confidence in the durability of credits
- facilitate trading of future sequestration against emissions in future years, and perhaps
- Enable use of a qualitative rather than quantitative cap on sinks

Country sectoral baselines

Proposed rule: Credit for CDM projects in the LULUCF sector in a country should be no greater in total than credit due at a national level in improving on an agreed national LULUCF emissions baseline.

Major points

- enforceable commitment to retention of sequestered carbon should form the basis for credits
- credit should be reduced proportionally for guaranteed periods shorter than 100 years
- carbon pooling is a necessity for risk management and normalising carbon flows
- Carbon pools must have adequate rights to ensure that a specified management plan is carried out
- Credits should only be claimed up to the sustainable increase in landscape carbon density as it is measured