

On some forest-related carbon debits

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Sopron, 11 April 2017



Frucht, Familie & Natur. Seit 1919.

Frucht liegt bei uns in der Familie. Seit 1919 gilt unsere ganze Sorgfalt höchster Qualität – oder wie wir sagen: Schmeckt wie frisch vom Baum.

Fruit, family & nature. Since 1919.



Fruit is a part of our family. Since 1919 we care about its highest quality – or how we like to say "it tastes like straight from the tree".

(H) Paracicsomlé. Paracicsomlé tartalom: **minimum 100%** paracicsomlé-sűrítmenyből. Osszetevők: paracicsomlé paracicsomlé-sűrítmenyből, étkezési só (0,3%), étkezési sav: citromsav. Felbontás után hűtve tárolja és 3 napon belül fogyassza el! Minőségét megőrzi: lásd fent (nap/hónap/év).

Bitte ansch
genießen.

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minimum 100%



(CZ) 100% Rajcane
centratu. Slobeni
tu, jedli sú (0,3%)
vá. Po otvrení s
do 3 dní. Minimáln

**Forests are „minimum sinks”, so
we deserve carbon credits!**

**Wood is „renewable”, so
energy from wood is good!**

**Forests
are „minimum stable”!**

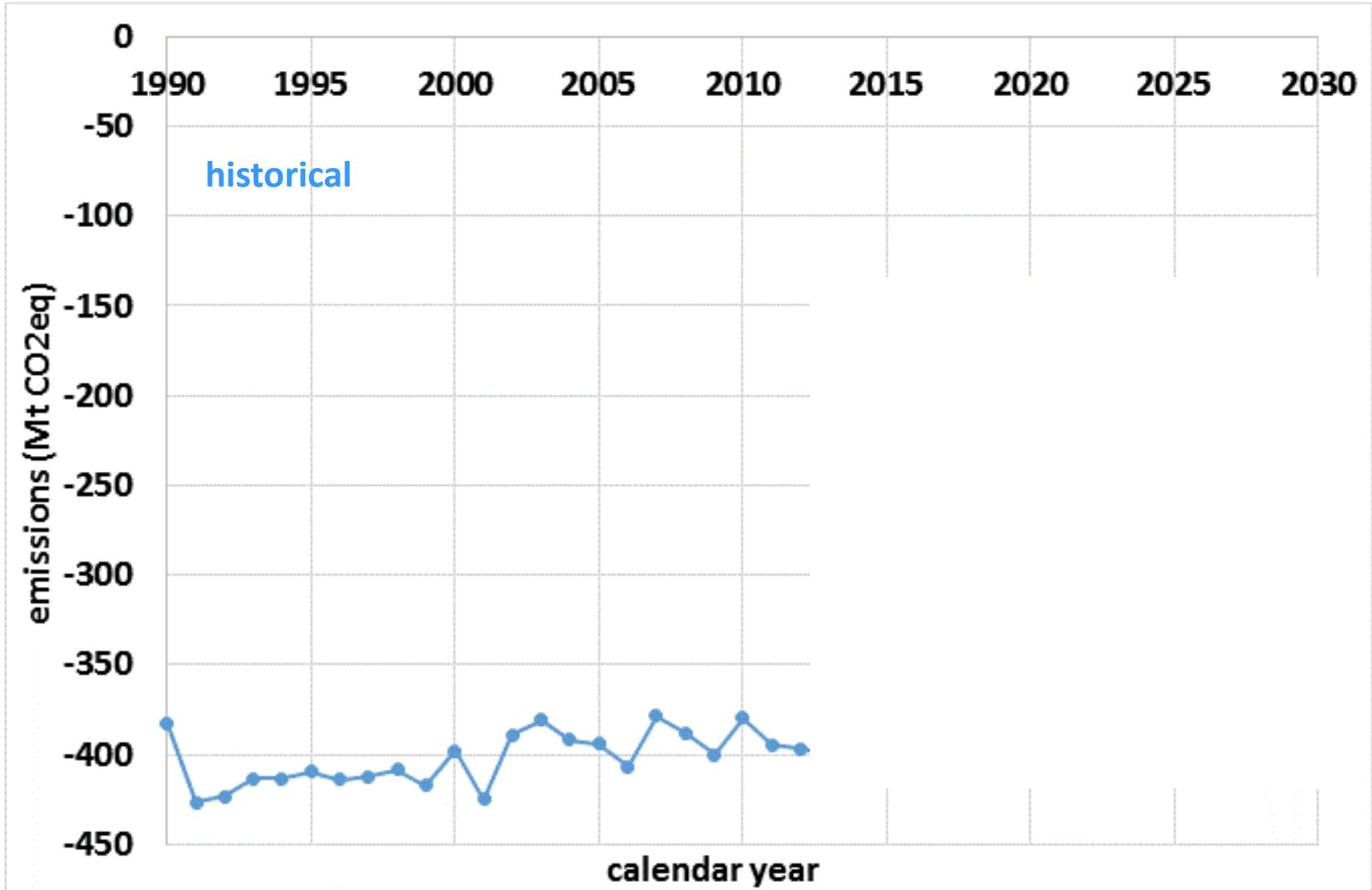
Are we sure??

Forests are „minimum sinks” because:

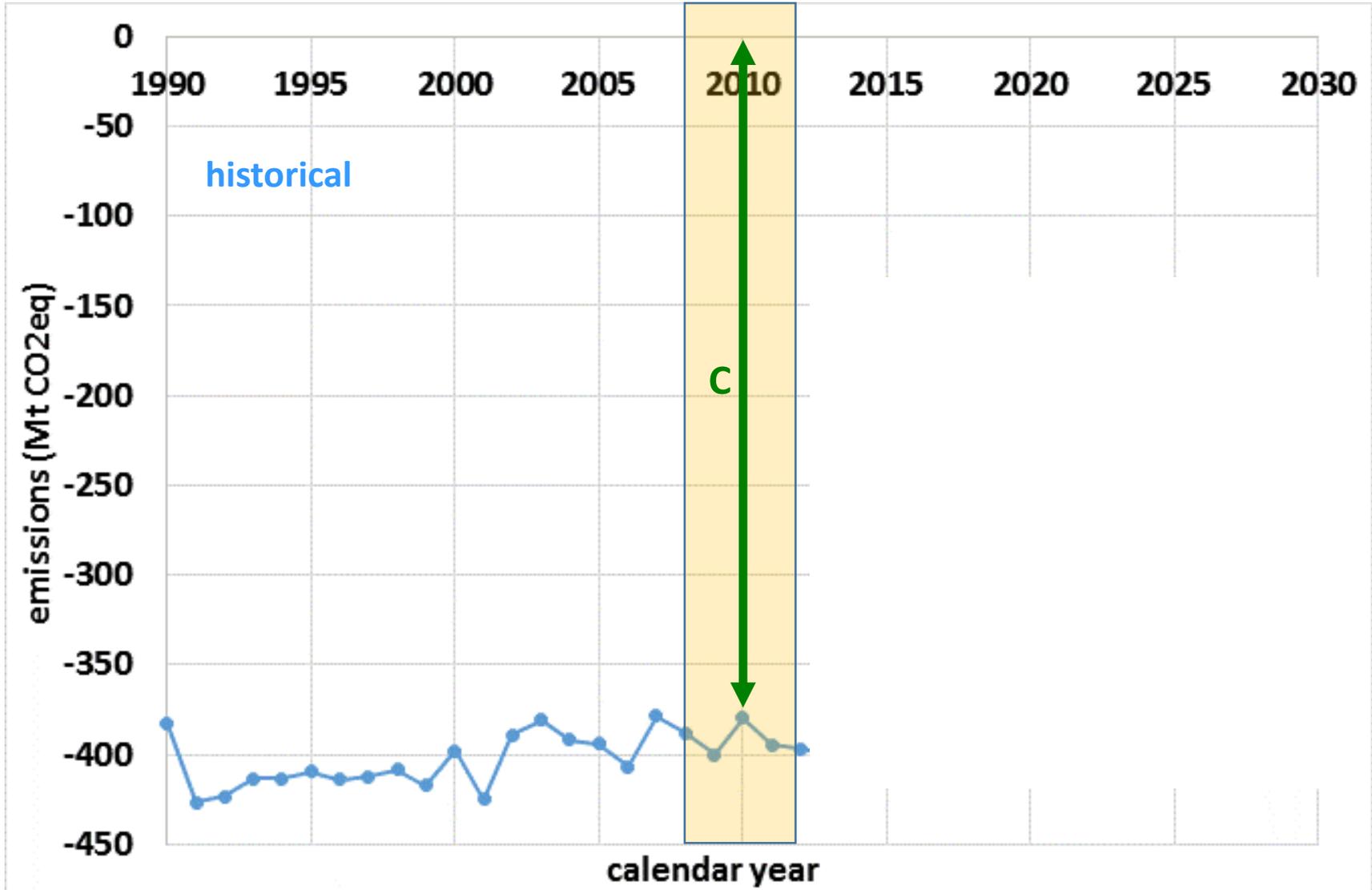
- harvests are less than the increment
- we have done a lot of afforestations
- *trees* keep growing
- ...

*but: trees grow without us,
so is our claim for credit justified?*

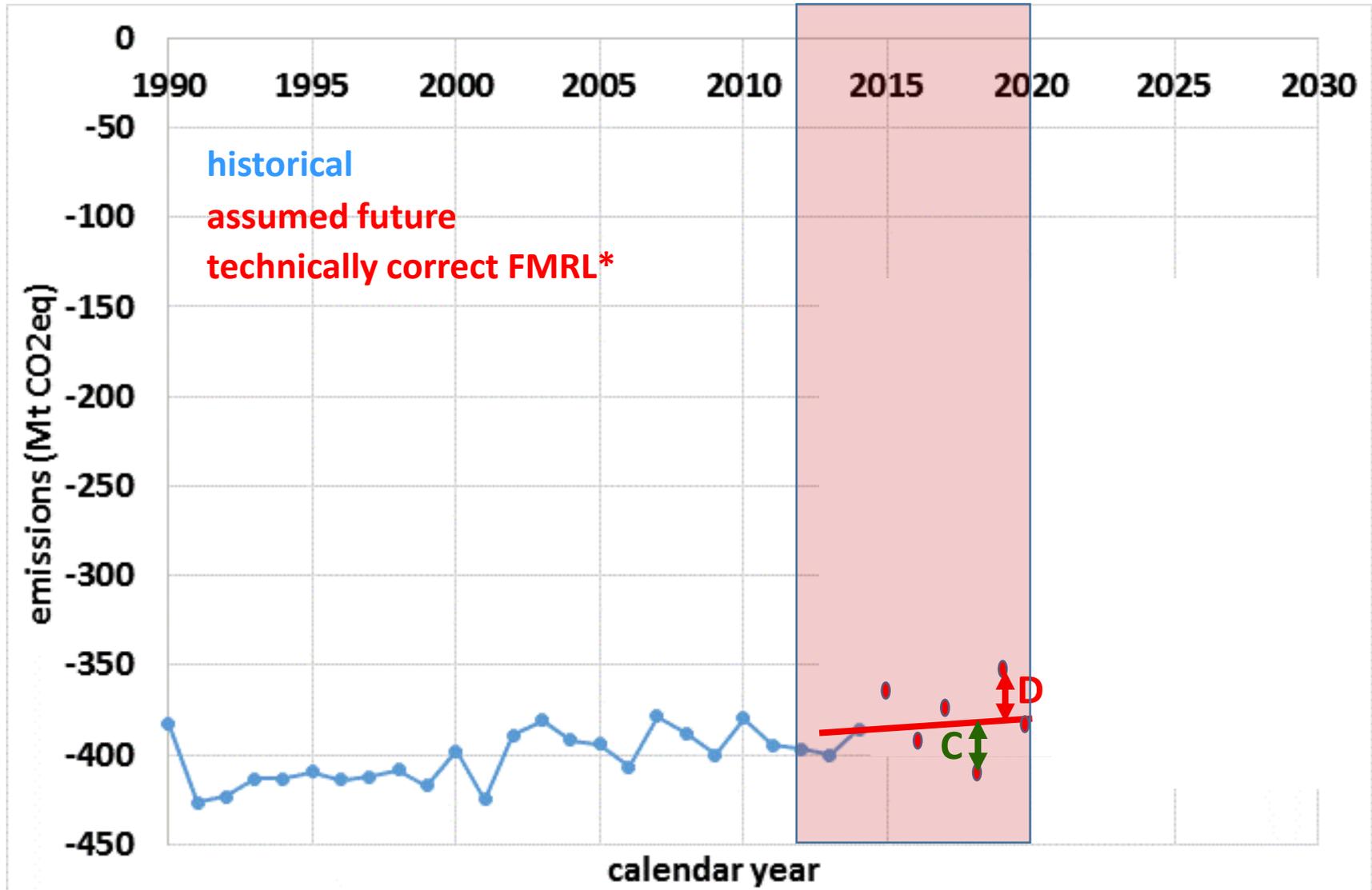
0. Forests in the EU have been (net) sink



1. Kyoto Protocol 1st Commitment Period: (capped) credits

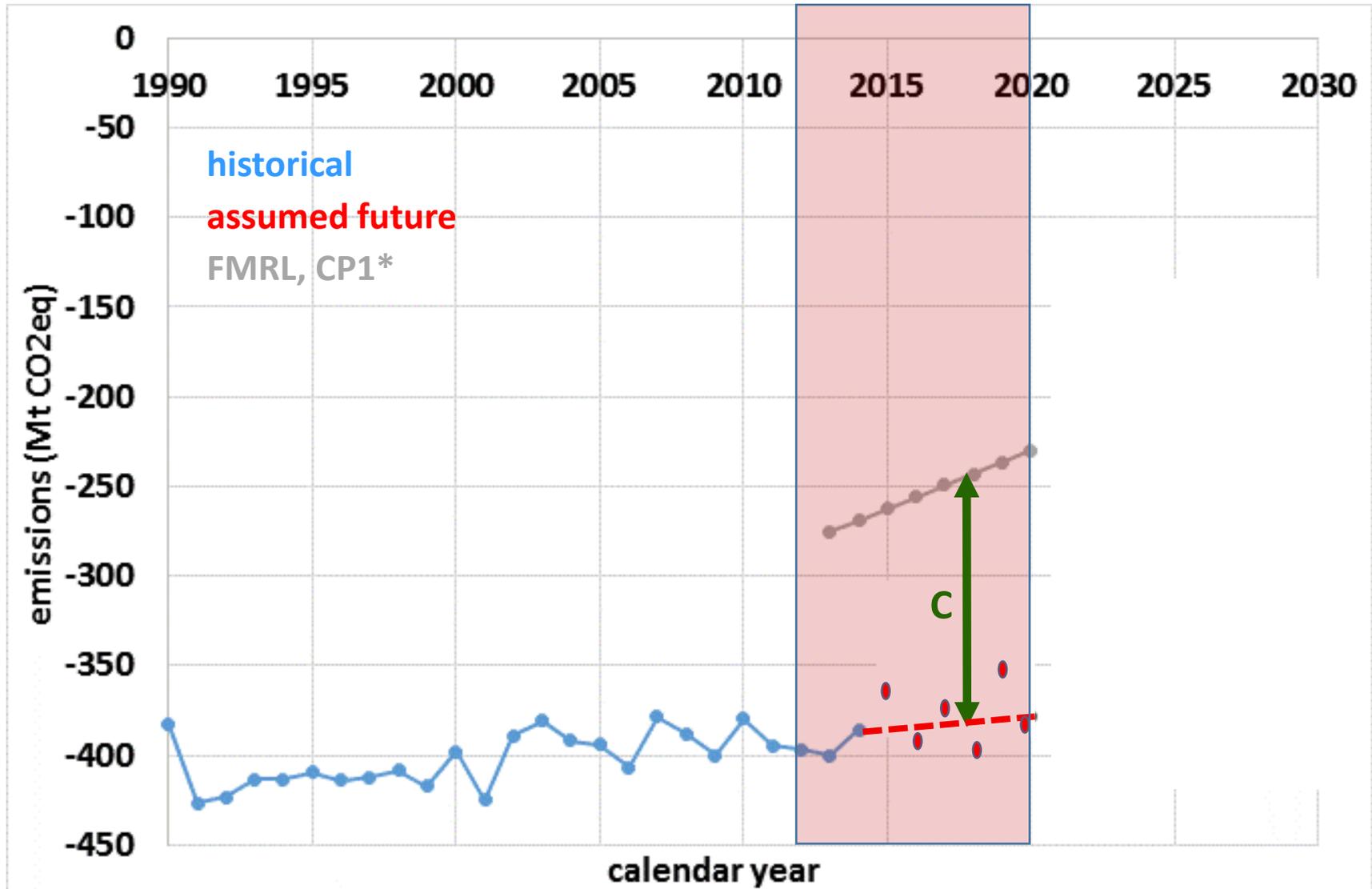


2. Kyoto Protocol 2nd Commitment Period - theory: credit / debit relative to a FMRL



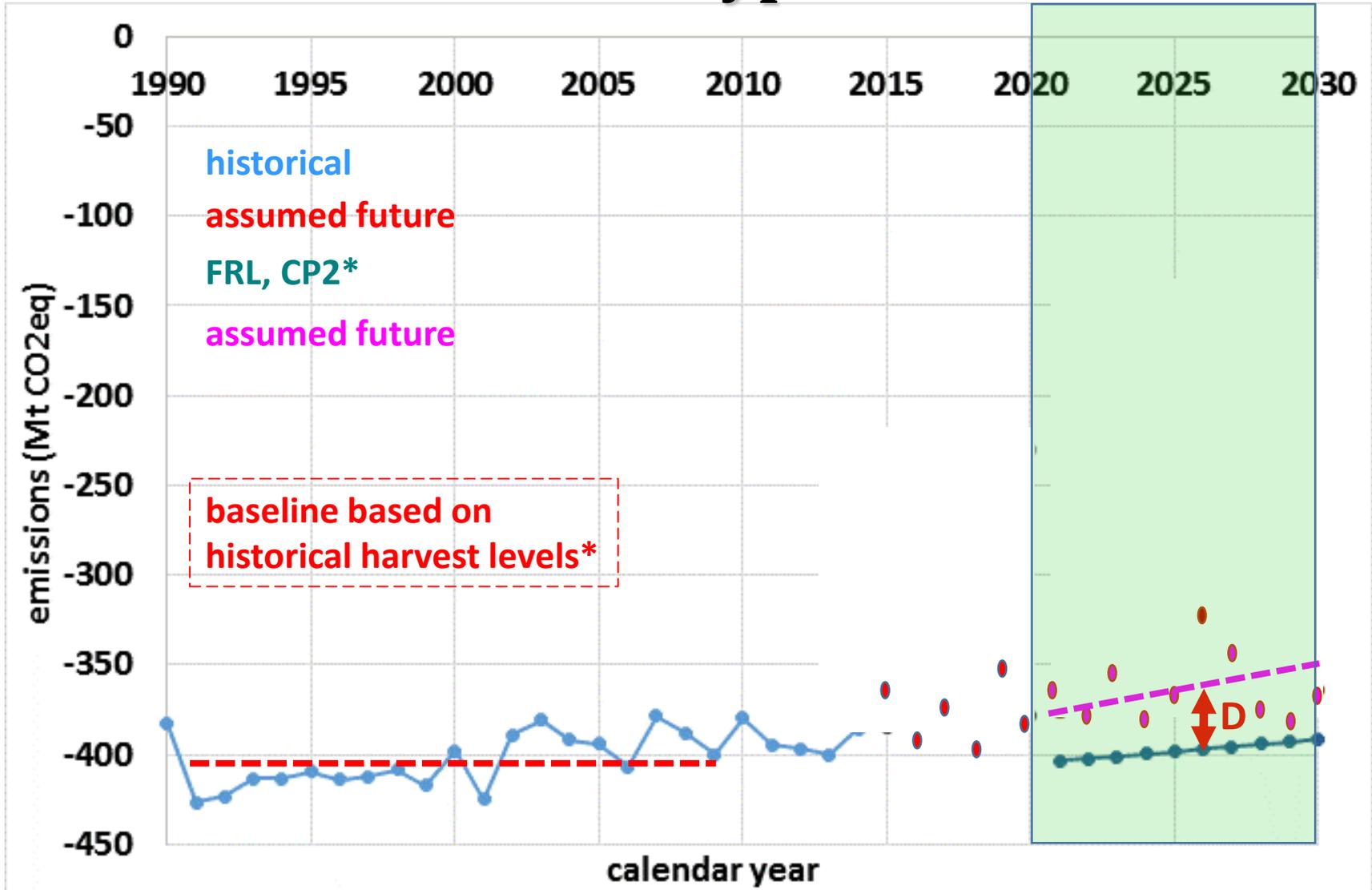
* for demonstration only

2. Kyoto Protocol 2nd Commitment Period - practice: credit due to incorrect (?) FMRL



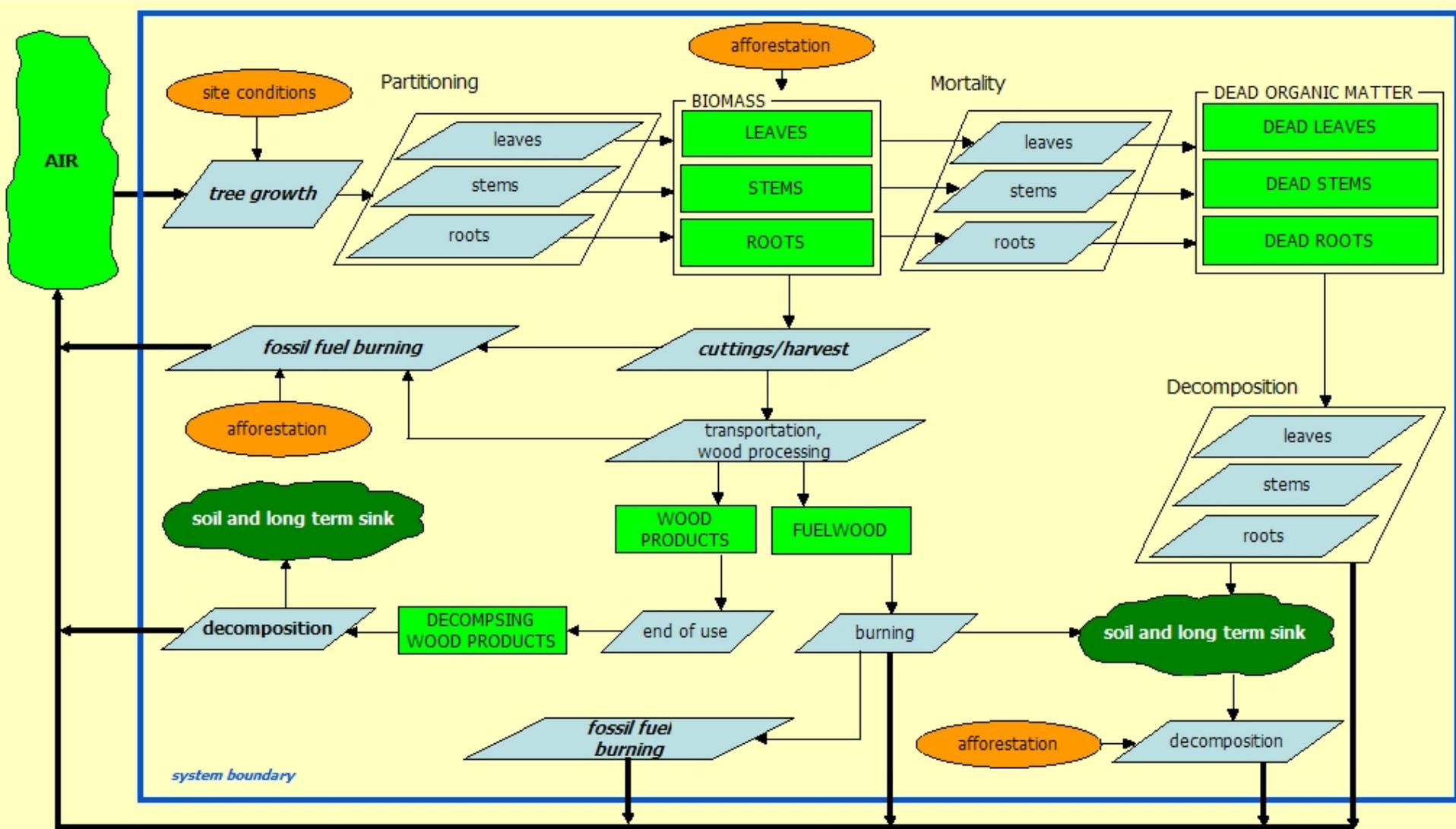
* for demonstration only

3. EU LULUCF Regulation for the Paris Agreement: probably **debit** relative to a baseline-type **FRL**

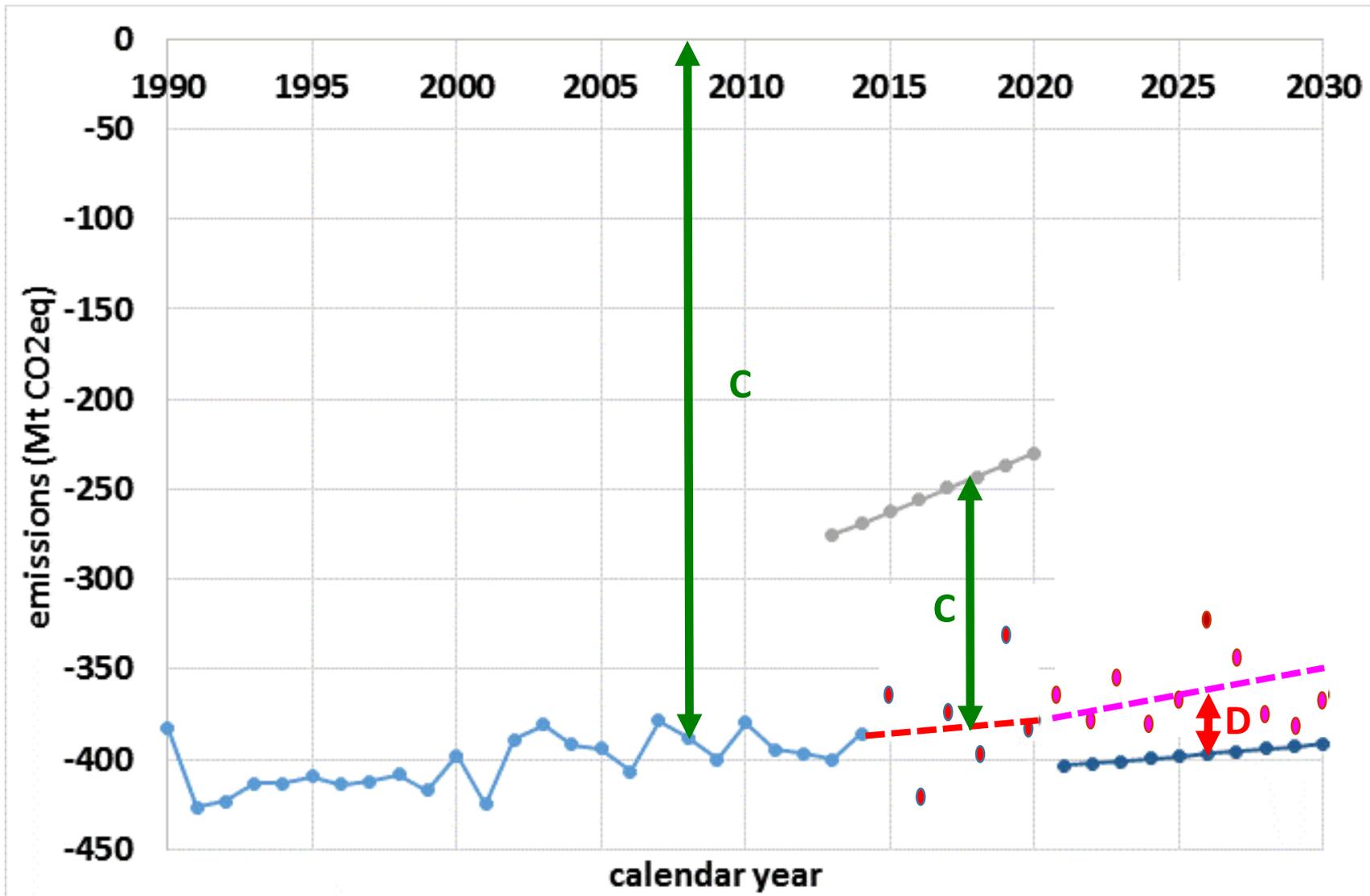


* for demonstration only

Extrapolating the baseline into the future will require modeling of stand development e.g. by www.scientia.hu/casmofofor



... so we are heading from **credits** to **debits**

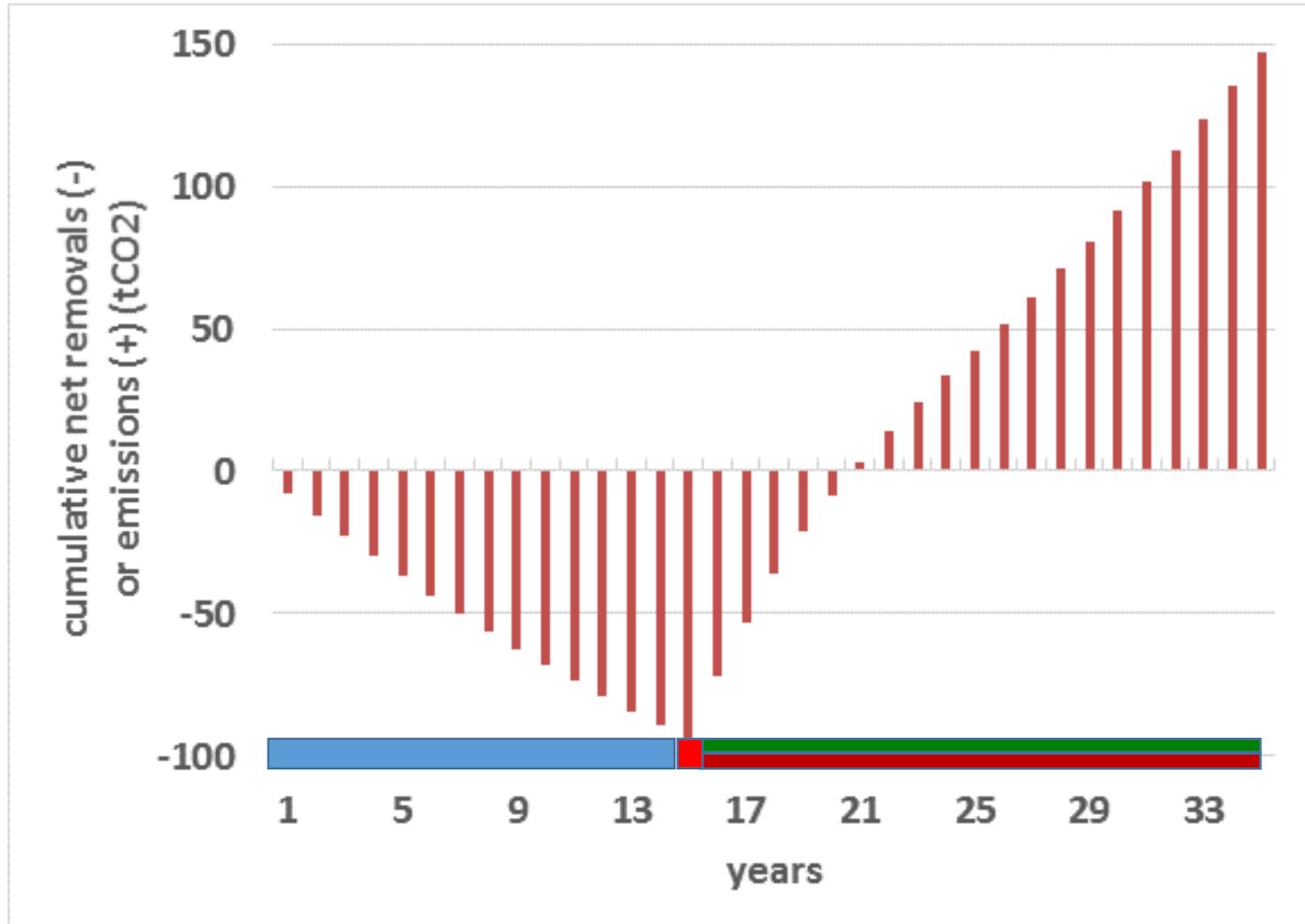


Energy from biomass is *good!*
because
wood is „minimum renewable”

BUT:

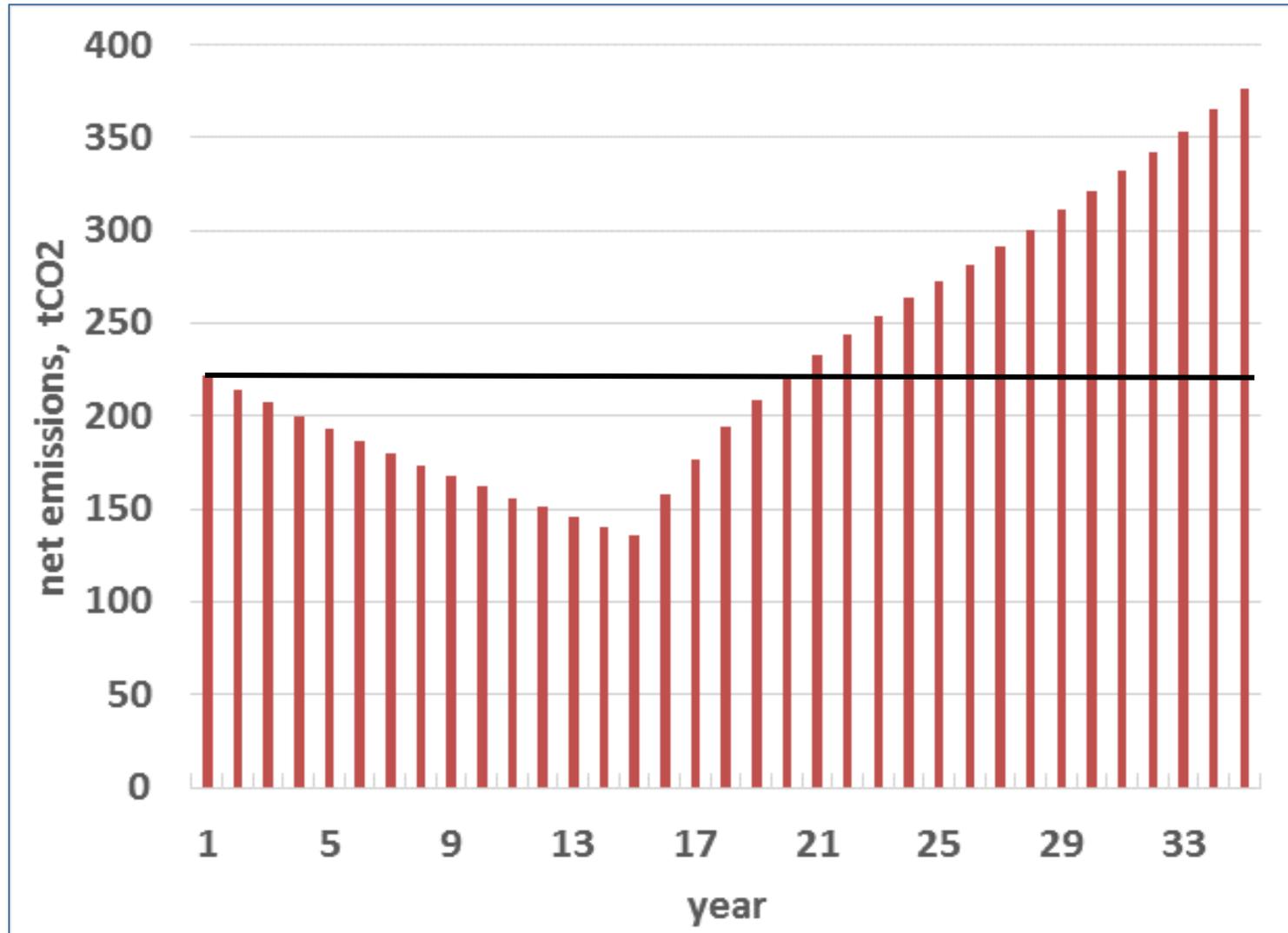
- ❖ timing is essential with climate change
- ❖ burning always produces GHG emissions, so it can only be better/worse *relative to* other methods

If we *have* a mature stand with **some more growth** before it **collapses**, and then immediately **regenerates itself**, with **wood decay** and **regrowth** afterwards

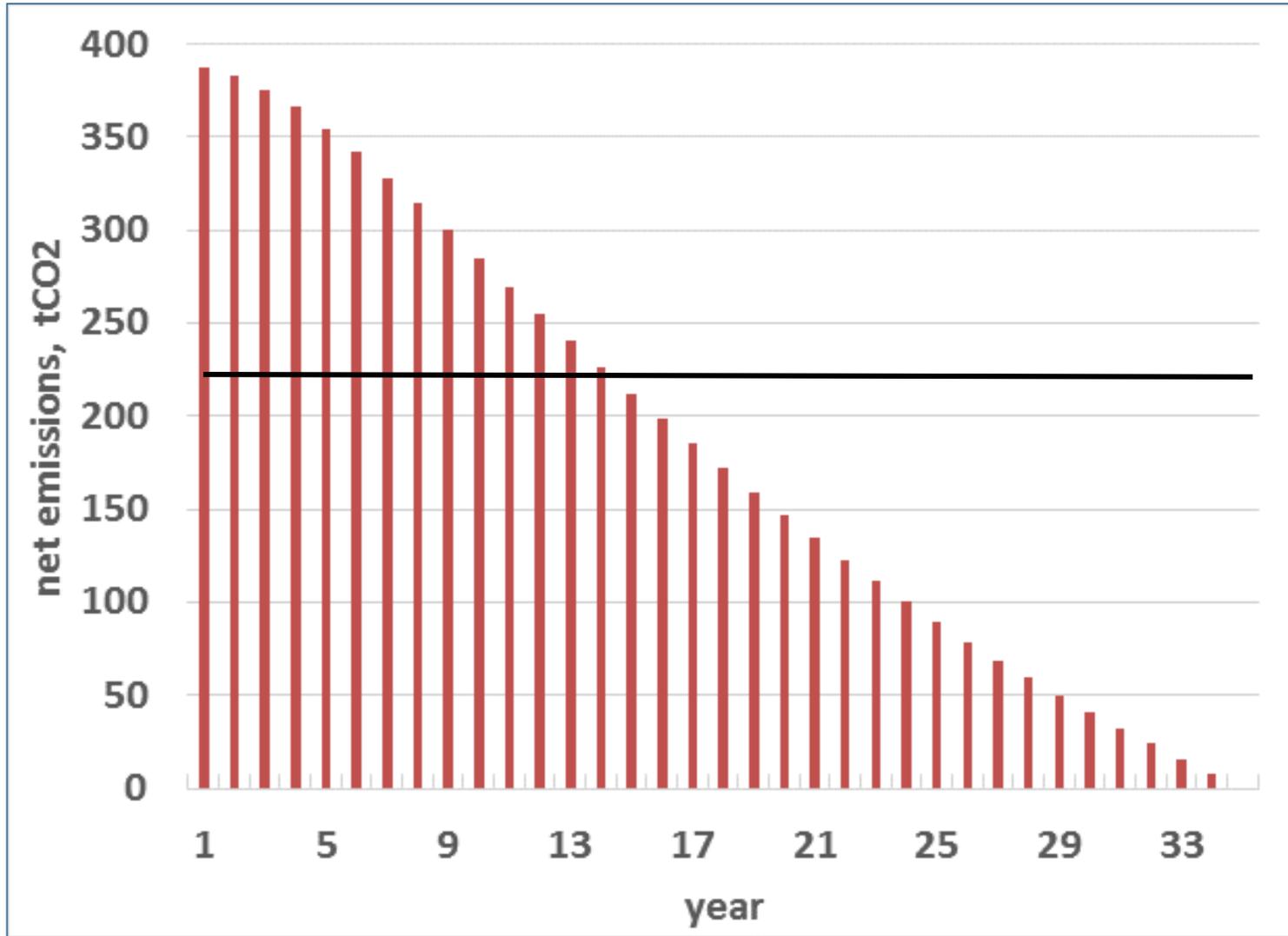


... should we burn it for energy or not?

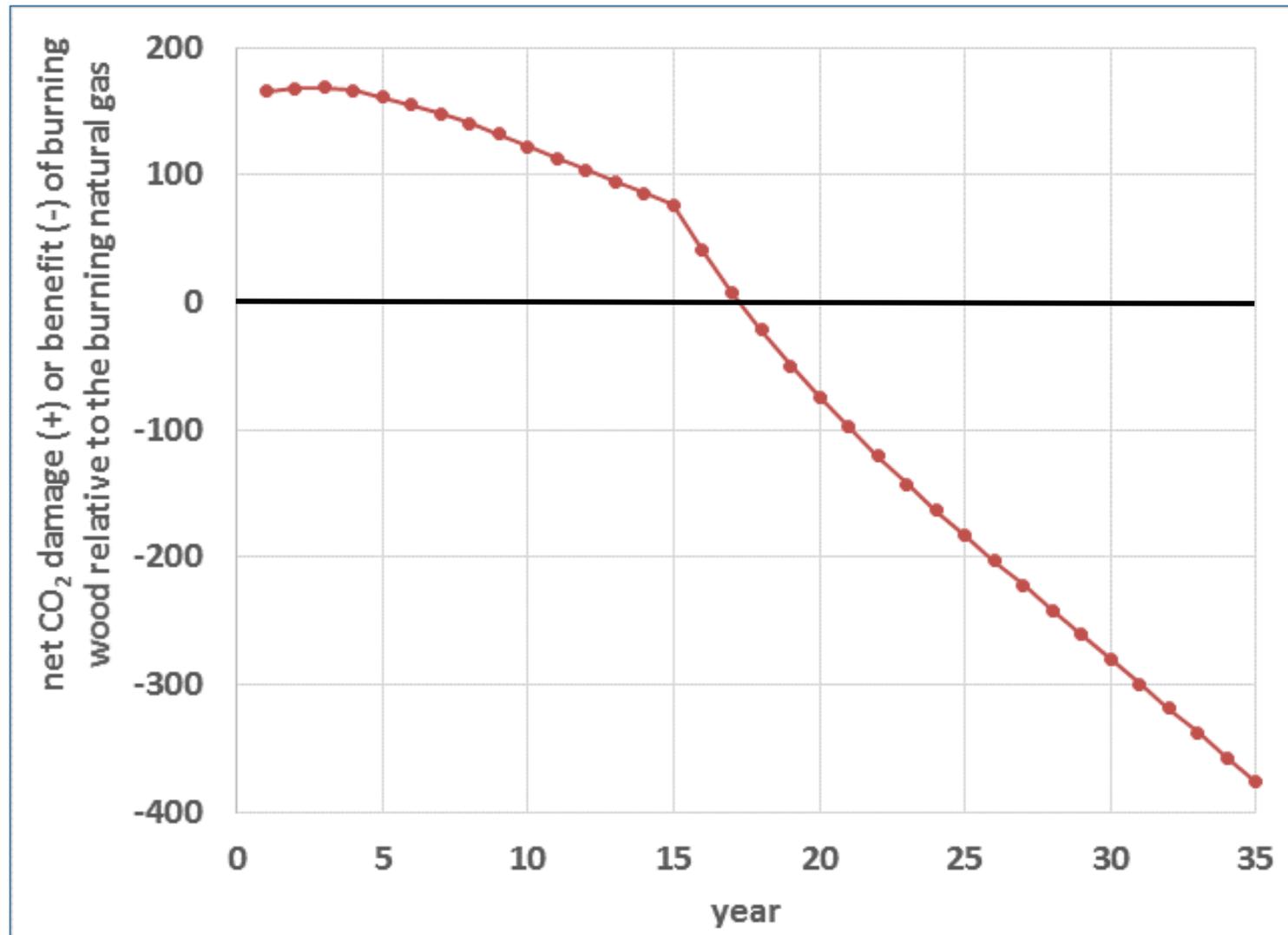
Net CO₂ emissions from burning natural gas *and not harvesting the stand*



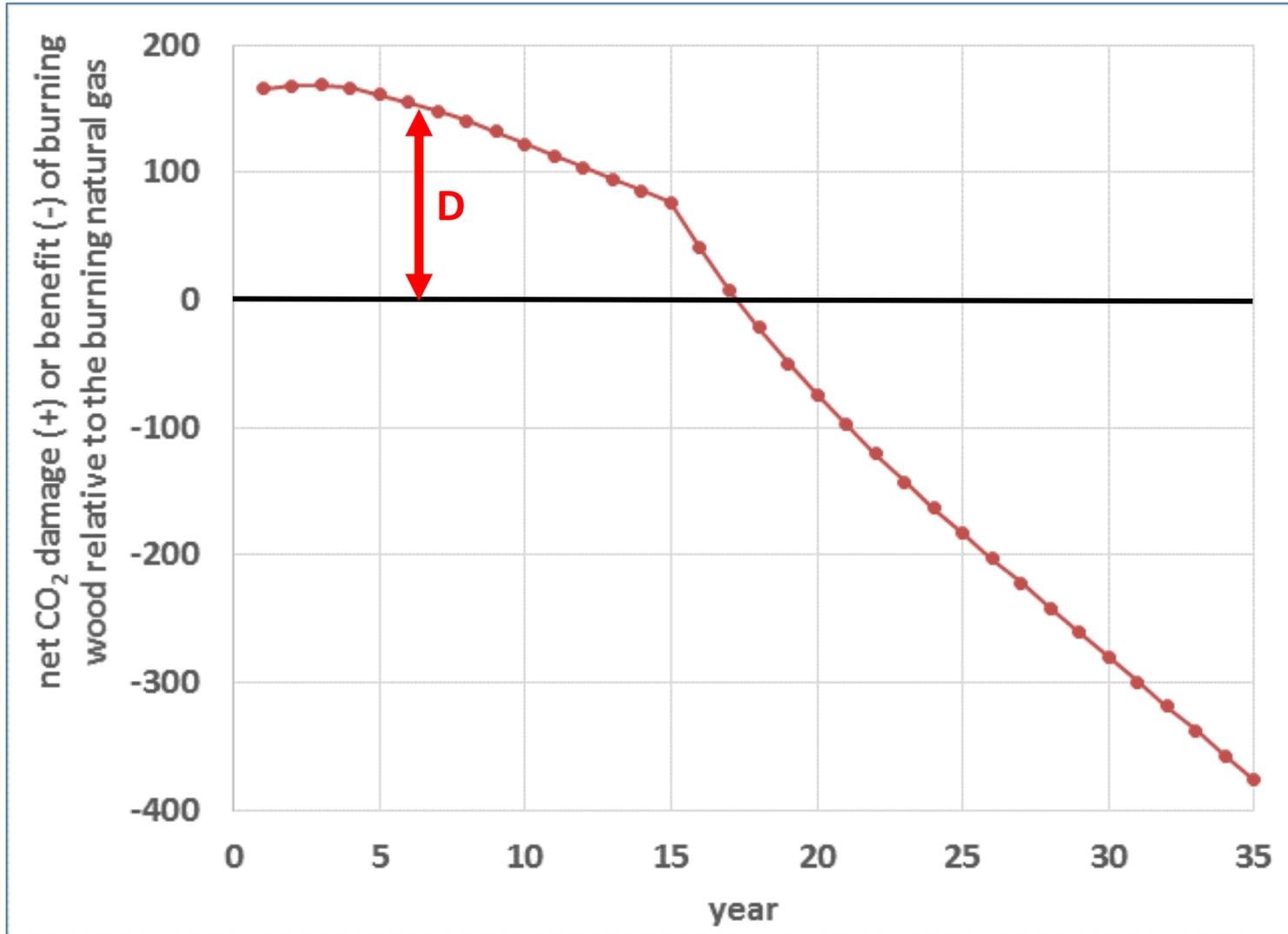
Net CO₂ emissions from all wood from the stand (to generate the same amount of energy)



Harvesting *existing* forests for burning wood produces extra emissions for some time!



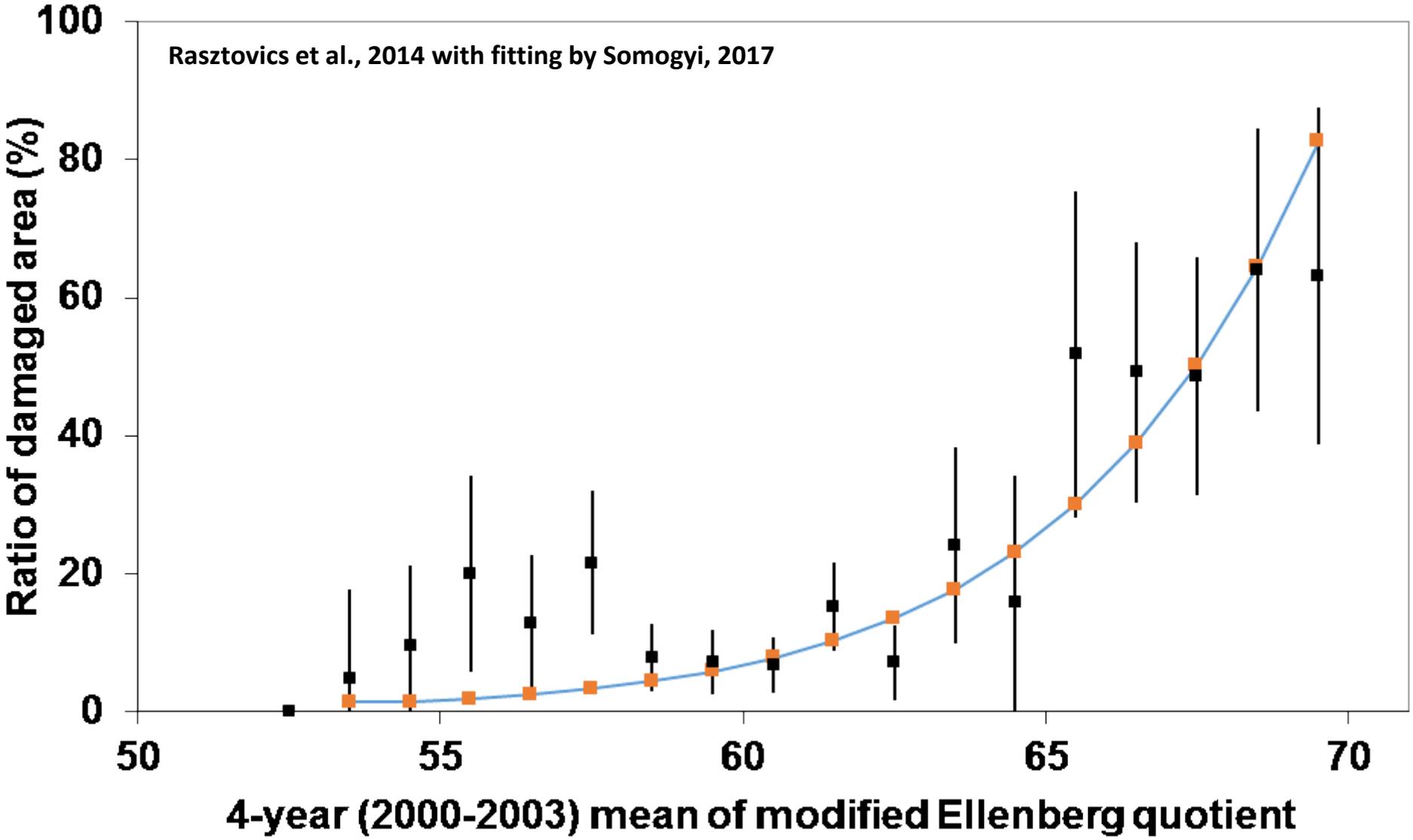
... so burning wood from *existing* forests creates **debits** (that, in theory, show up in GHG inventories)



What happens if stands cannot endure climate change?

- ❖ is it possible that stands cannot survive?
- ❖ (what can we do to mitigate this?)
- ❖ declining stands don't grow ... but also emissions may arise from their huge carbon stocks!!

Beach: the greater the cumulative drought, the larger the ratio of damaged area



The occurrence of droughts will most probably increase due to steep temp rise

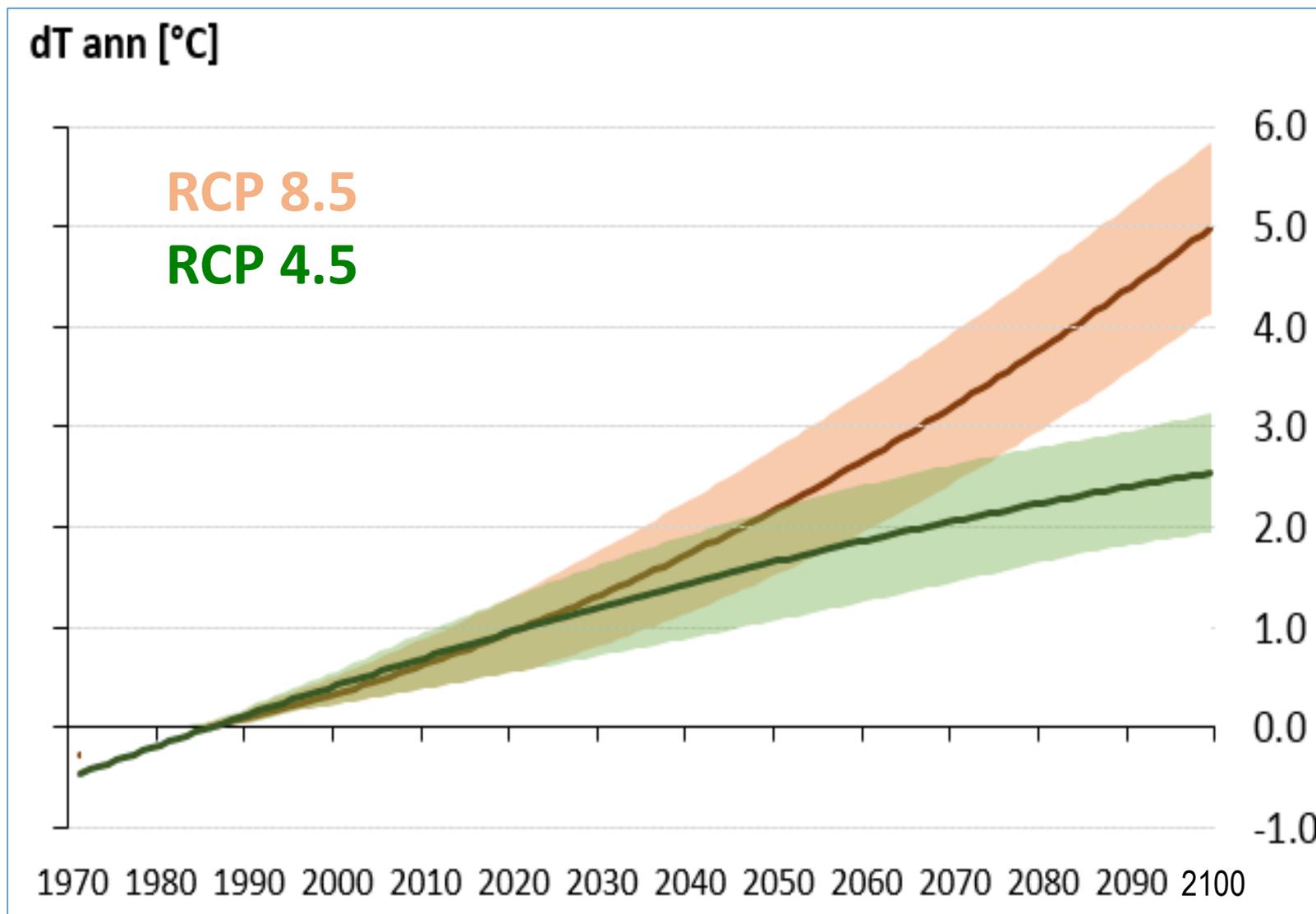
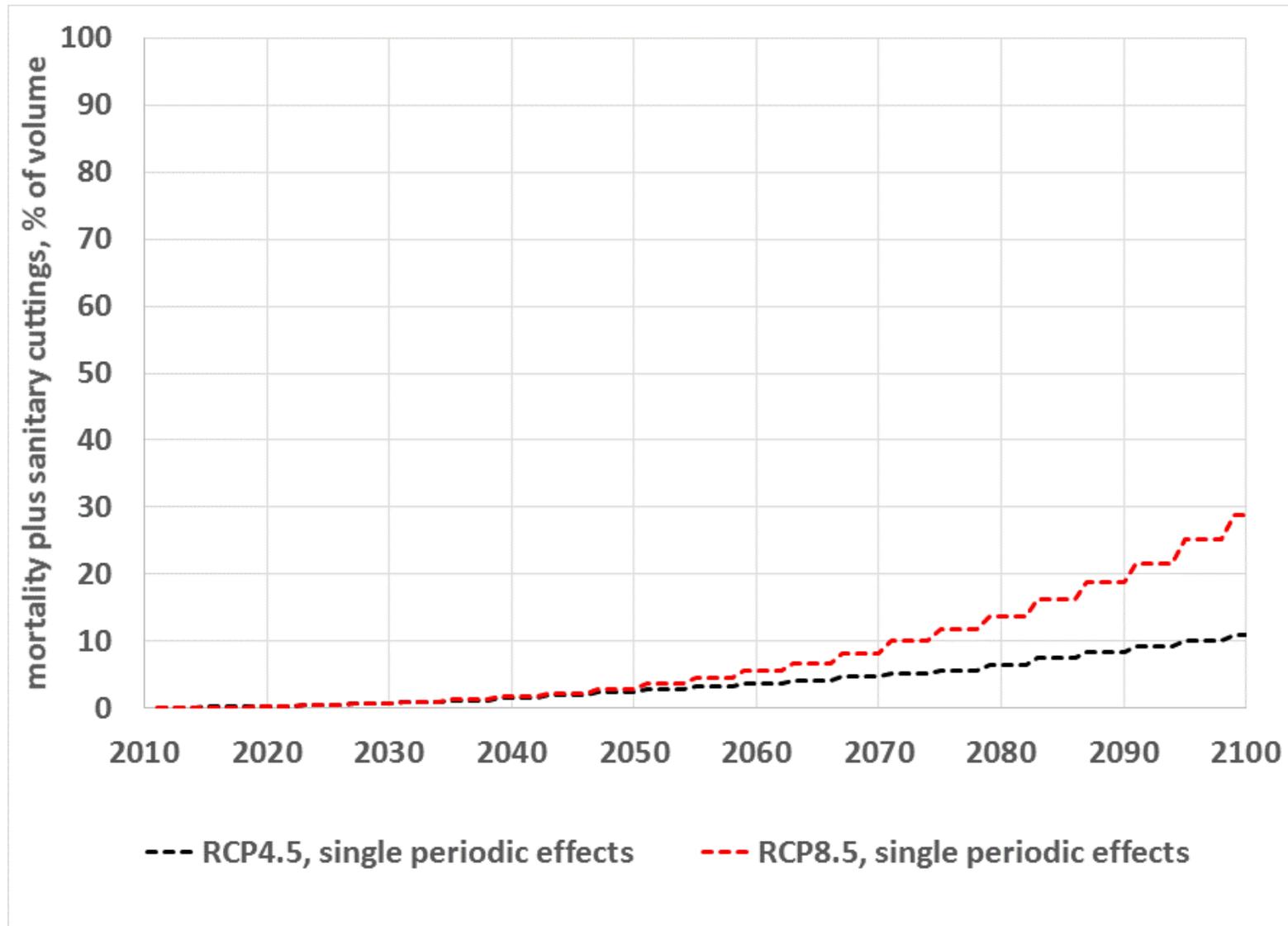
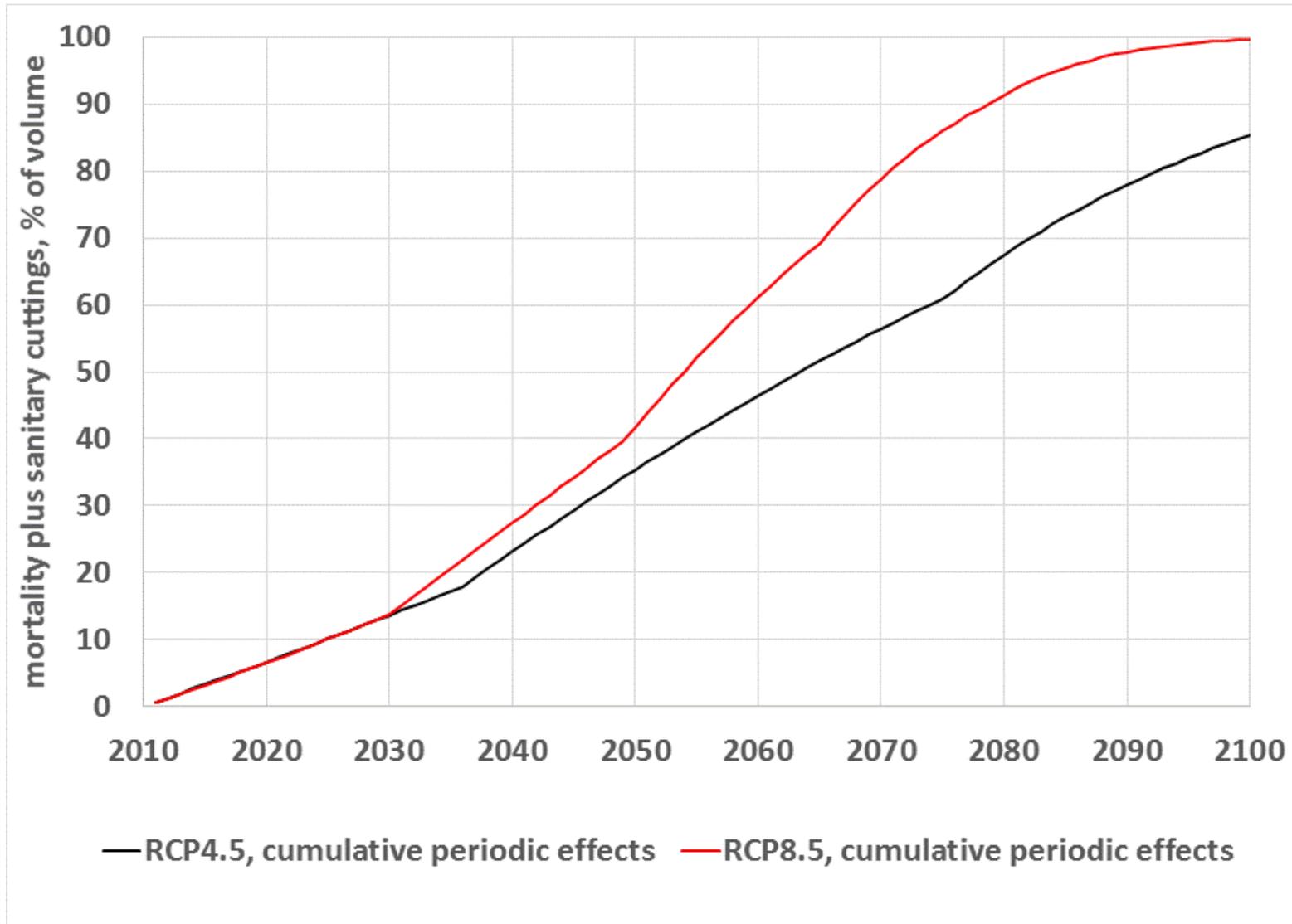


chart by Gálos, B. 2017: regional climate projections based on IPCC RCP trajectories

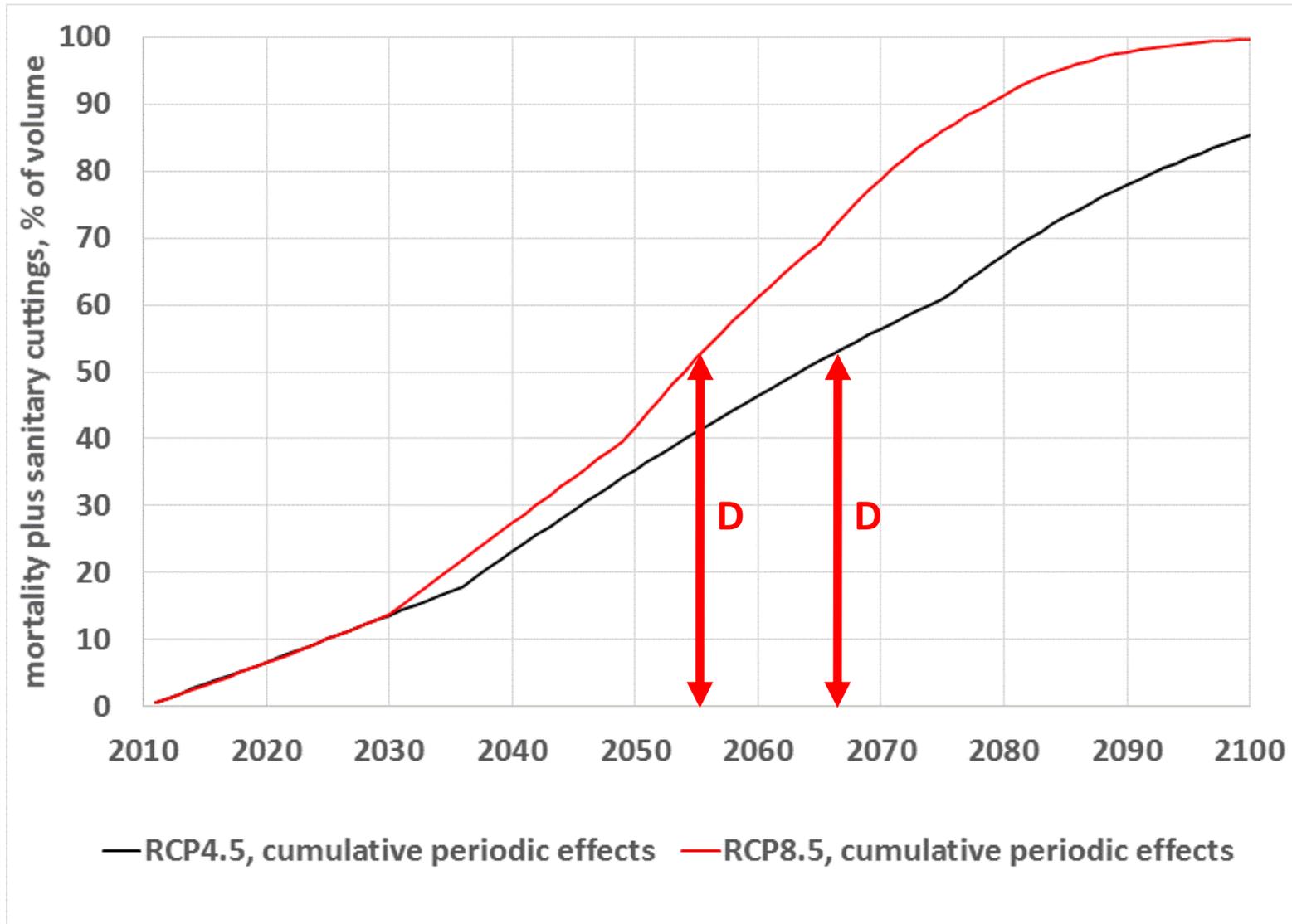
Expected cumulative mortality assuming drought risks *in consecutive periods only*



Expected cumulative mortality assuming *compounding* drought risk



... mortality will create **debits**



Instead of enjoying **credits -**

***as a minimum*, let's focus on
avoiding potential **debits****

both in practice and research!