# Foreste e clima - da Parigi al Regolamento LULUCF

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*The views expressed are purely those of the writers and may not in any circumstances be regarded as stating an official position of the European Commission*

# OUTLINE

1. The forest mitigation opportunity: from science to policy

1. From Paris to the EU: the new LULUCF Regulation and the Forest Reference Levels

# 1. The forest mitigation opportunity: from science to policy

# The Global Carbon Budget (2007-2016 average from **Global Carbon Project 2017**)

34.4 $GtCO_2/yr$ **88%**


**+**

4.8 $GtCO_2/yr$ **12%**


17.2 $GtCO_2/yr$
**46%**

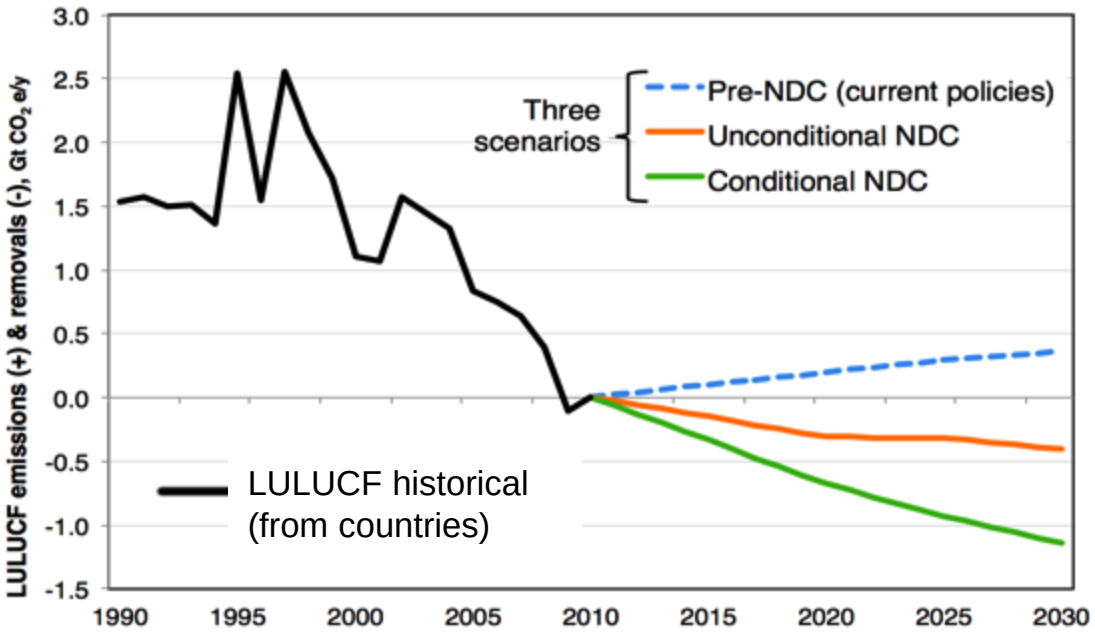

11.0 $GtCO_2/yr$
**30%**


**24%**
8.8 $GtCO_2/yr$


Forests are part of the **problem** and part of the **solution**

Despite a large mitigation potential, till recently forests have often been ignored by climate policy

***like Cinderella excluded from the ball…***




*(Grassi et al. Role of forests in the PA, NatureCC, 2017)*

**Paris changed everything:** according to countries' Nationally Determined Contributions (**NDCs**), **forests expected to provide 25% of *planned* global emission reductions by 2030**

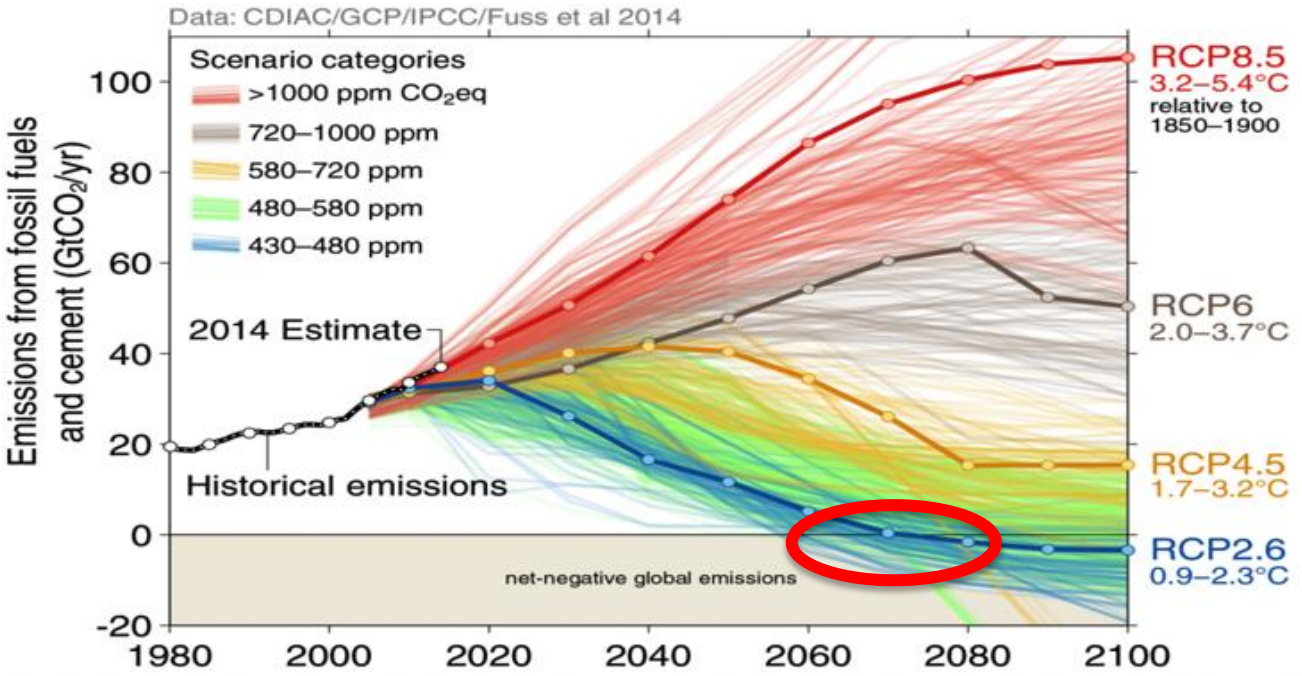
≈ 0.8 $GtCO_2e/yr$

≈ 0.7 $GtCO_2e/yr$

→ **apparently Cinderella shined at the Paris ball…**

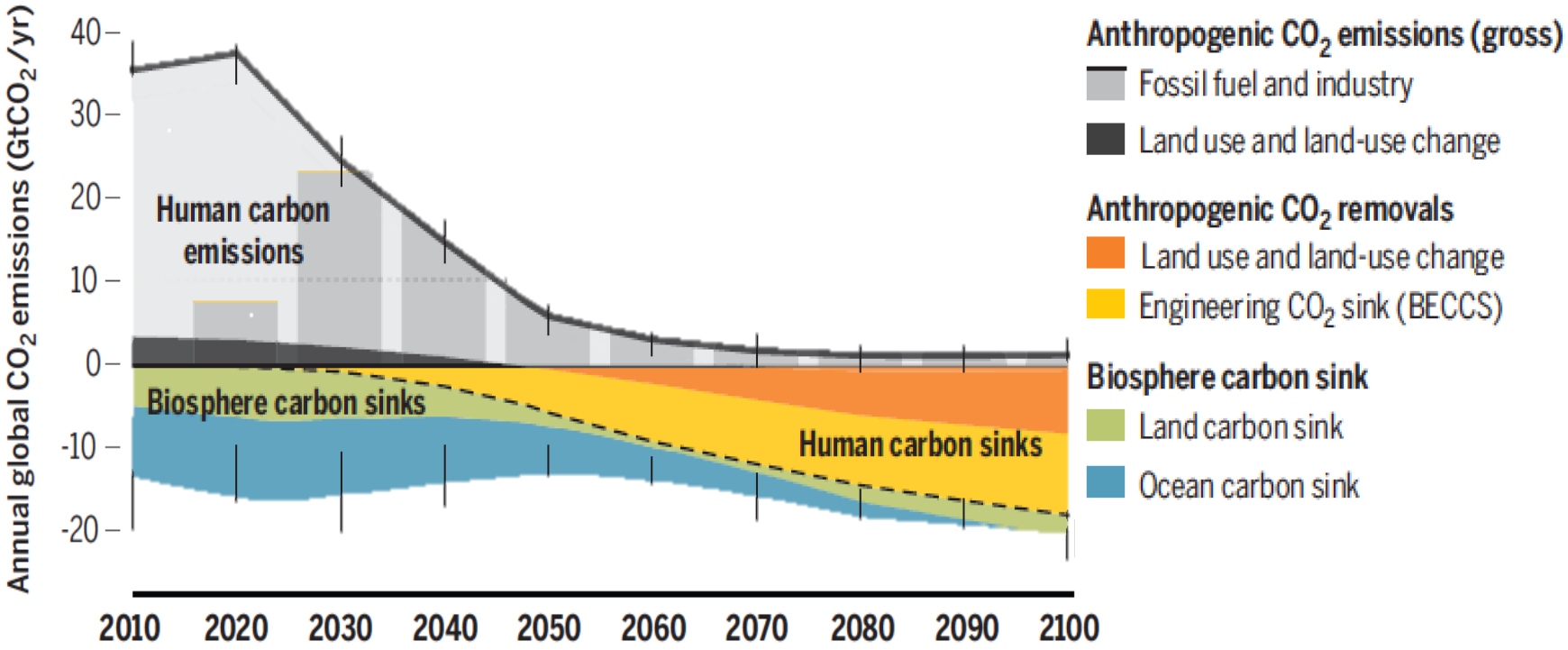
# The Paris Agreement is a game changer for forest mitigation

The goal to limit the increase in global Temp. <<2°C requires reaching a balance between *anthropogenic* emissions and *removals* in the 2nd half of this century.




Countries are asked to *reduce deforestation* and *conserve and enhance sinks*

## Decarbonization pathway consistent with the Paris agreement




(***Rockström et al***. *A roadmap for rapid decarbonization. Science, 2017)*

New scientific studies (e.g. Griscom et al. 2017) further highlight the large potential of forest mitigation

# Conclusions (1)

**Science leaves no doubts: we can't achieve the Paris goals without a significant contribution from forests.**

**Countries are starting to respond to this challenge**

**However**, something is still missing…

- **Increasing confidence in forest-related emission & removal estimates**
- **More trust on accounting of forest mitigation**

More on forest as Cinderella : https://www.wri.org/blog/2018/04/forests-cinderella-climate-solutions

# 2. From Paris to the EU: the LULUCF Regulation and the new Forest Reference Levels

Grassi *et al. Carbon Balance Manage (2018) 13:8*
https://doi.org/10.1186/s13021-018-0096-2

Carbon Balance and Management

RESEARCH Open Access

## Science-based approach for credible accounting of mitigation in managed forests

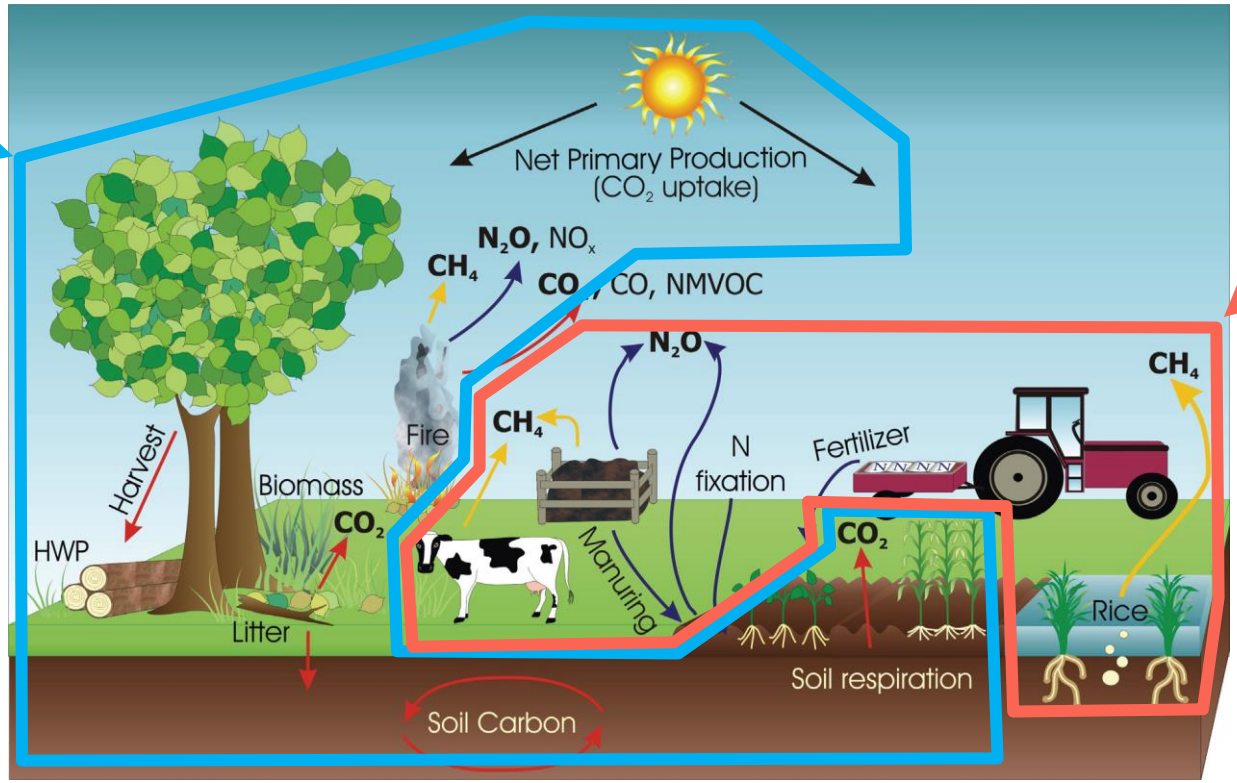
Giacomo Grassi[1*], Roberto Pilli[2], Jo House[3], Sandro Federici[4] and Werner A. Kurz[5]

Land Use, Land Use Change and Forestry (**LULUCF**): mainly $CO_2$

**AGRICULTURE**: *non-*$CO_2$ ($CH_4$, $N_2O$)

*Partly* human induced (linked to global natural carbon cycle)

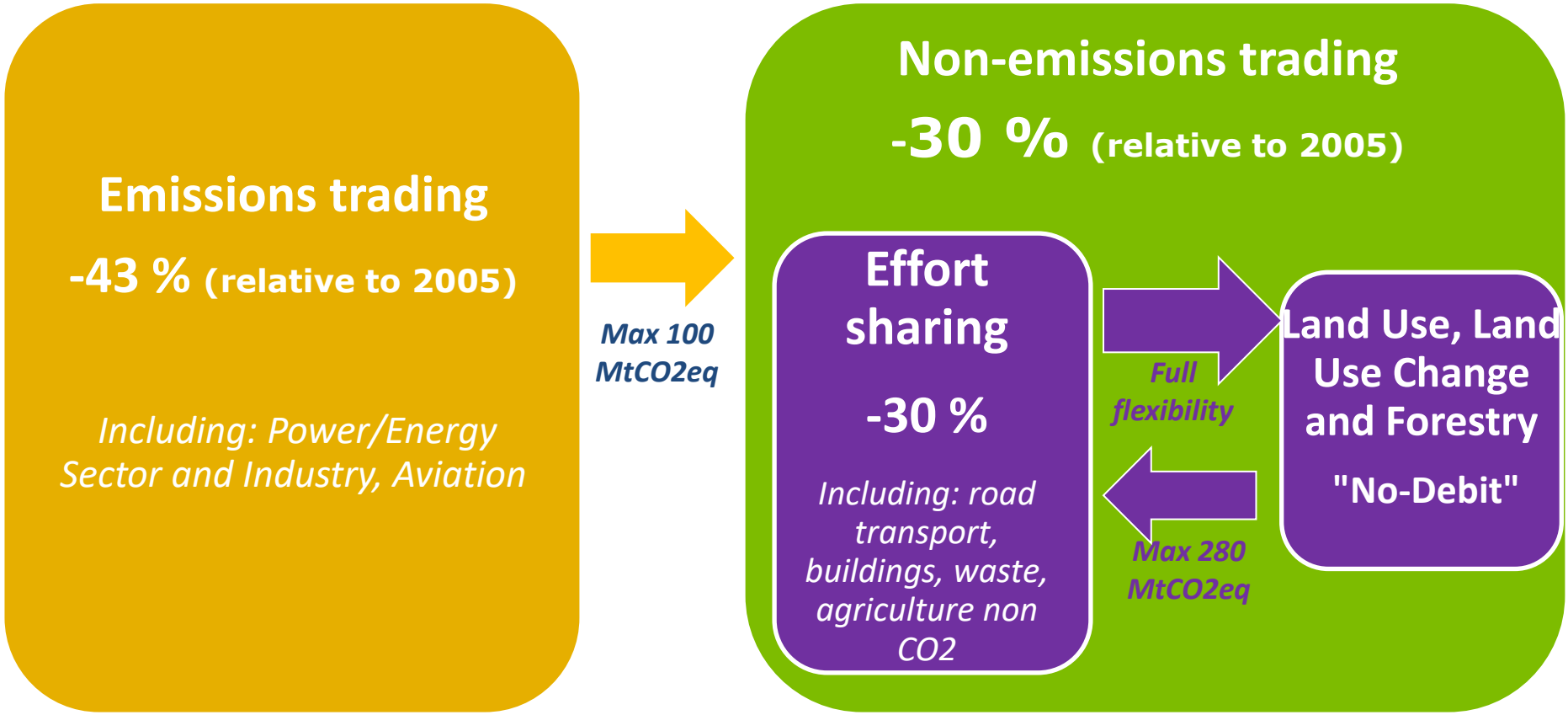
*Uncertainties? Additionality?*




All human-induced

# Three pillars of EU 2030 climate policy

## -40% emission reduction in 2030 relative to 1990




The LULUCF Regulation brings LULUCF in the climate framework for the **first time**, as *a **stand-alone policy pillar**, with **flexibility** toward ESR*

***No debit rule:** LULUCF accounted emissions to be entirely compensated by removals*

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# Key elements of the LULUCF Regulation

## Simplification, continuity and changes of accounting rules

- Simplification: accounting will be based on **land use categories** only
- Continuity / changes:
  - Agricultural lands (**cropland** and **grassland**) accounted with "**net-net**" (difference in net emissions relative to a base year), but base year updated from 1990 to 2005-09.
  - **Wetland** to be accounted from 2026 onward (relative to 2005-2009)
  - Forest conversions **(aff./reforestation and deforestation)** accounted with "**gross-net**" (full incentive to increase sink/reduce emissions). Land converted to forest may stay in this category for 20 or 30 years
  - Existing forests ("**managed forest land**") accounted with "**Forest reference levels**" but criteria changed significantly relative to Kyoto.

# Options for mitigating climate change through forest management

| Option | | current offset of total EU emissions (%) | Short-term *relative* impact of > harvest | *Reported/accounted in:* |
|---|---|---|---|---|
| **Increase in C stock** | **in existing forests ($CO_2$ sink or "removal")**  | ≈ 10% | << | *LULUCF* |
| | **in wood products**  | ≈ 1% | > | |
| **Substitution effects by wood** (approximate figures) | **Material**  | ≈ 1-2% | > | *Other GHG sectors* |
| | **Fossil-fuel energy**   | ≈ 4-5% | * | |

Forest !

* when wood replaces fossil fuels the emissions saving highly depends on the context, assumptions and time frame

**Trade-offs** exist between options, each with its **temporal dynamics** of emissions. E.g. *more harvest may mean less forest sink in the short term but more substitution effects.*

**The most effective forest mitigation strategy is the one that optimizes the sum of the above options** in a given time frame.

# The Paris Agreement and the challenge of forest sink accounting

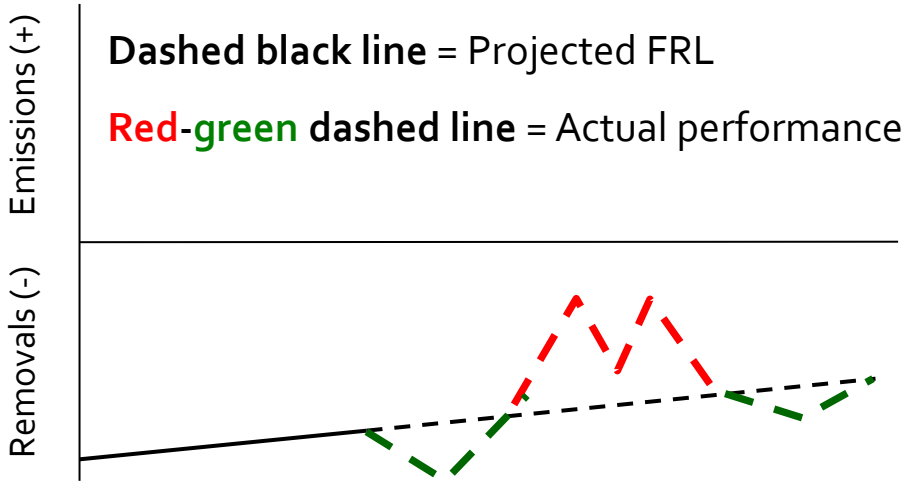

The PA calls for **economy-wide mitigation targets** → most cost-effective, no displacement of emissions. The implied **fungibility** across sectors requires that **mitigation contributions from all GHG sectors are comparable**.

The "**accounting**" of the impact of mitigation actions towards their NDCs should reflect **genuine efforts to reduce net emissions**.

**This is challenging for the forestry sector**, as the future net emissions can change irrespective of actual management activities, **because of age-related stand dynamics**

# The Kyoto Protocol approach to forest accounting

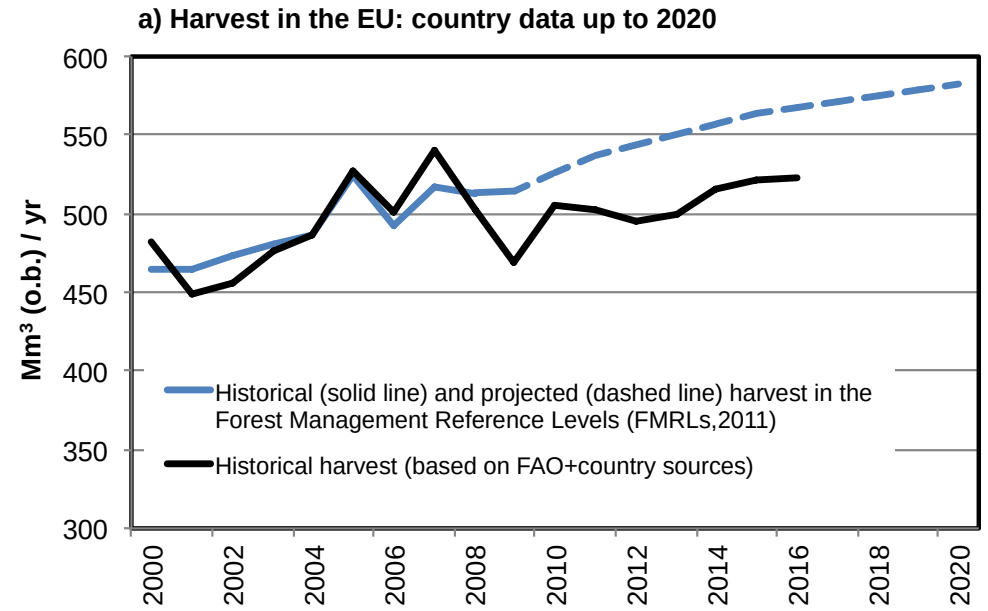
To factor out age-related dynamics effects from the accounting, the idea of projected "**forest reference level**" (**FRL**) was developed, i.e. benchmark against which future net emissions will be compared.

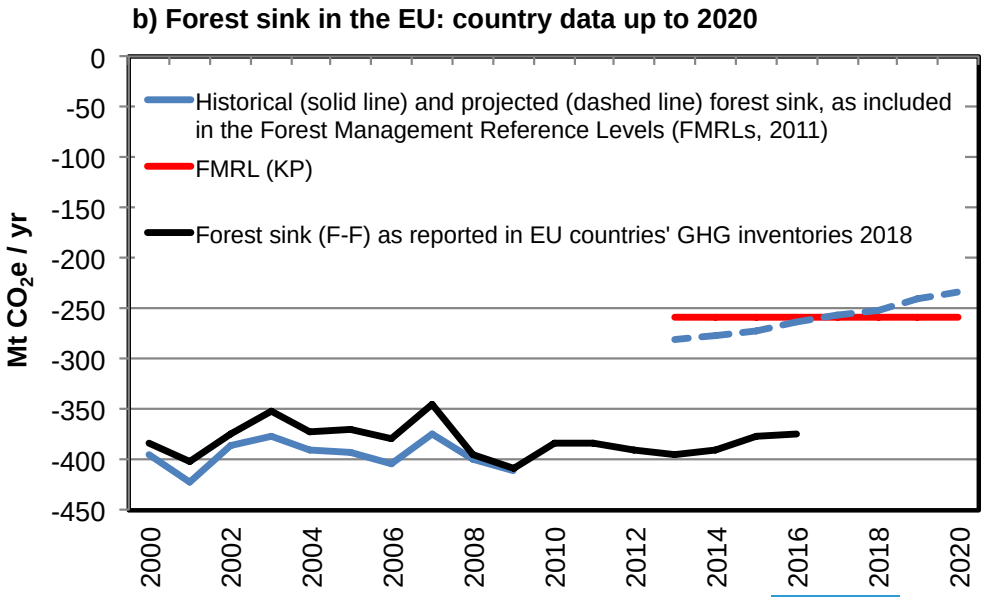



The credibility of this approach depends on **HOW** the FRL is set.

Developed countries submitted FMRLs in 2011, including age-related dynamics and (in many cases) the assumed future implementation of pre-2009 **policies**.

# The EU FRL under Kyoto (2013-2020)




Why reality so different from projections?

(*impact of policies deviating from Business-as-usual? impact of economic crisis underestimated by models? projections inflated with harvest?*)

Which are the potential consequence of this approach?

# Possible impact of including policies in FRL

**Risk of "windfall" credits, i.e. for no activity** (e.g. deviation from assumptions).

**Risk of "hiding emissions", i.e. omitting policy-driven increases in emissions:** For the atmosphere, reducing the forest sink is equivalent to increasing emissions.

If this reduction is due to a policy-driven harvest increase, including it in the FRL means that new emissions "seen by the atmosphere" would disappear from the accounts. **No other GHG sector is allowed to do this**. This holds true even if the extra harvest policies are sustainable and justifiable for adaptation, bioeconomy...

While higher harvest rates may reduce the sink, it leads to extra emission reductions in other sectors, which are fully counted.

**Lessons learnt:** policy assumptions in the FRL hamper the comparability of accounting with the other sectors, where the atmospheric impact (positive or negative) of any policy after the base year is fully reflected in the accounts.

Principle behind the **new FRL approach:** **accounting of forest mitigation should reflect fully the atmospheric impact of changes in forest management relative to a historical period** → greater comparability with other sectors.
**The FRL is NOT a "plan", nor a "binding limit"!**

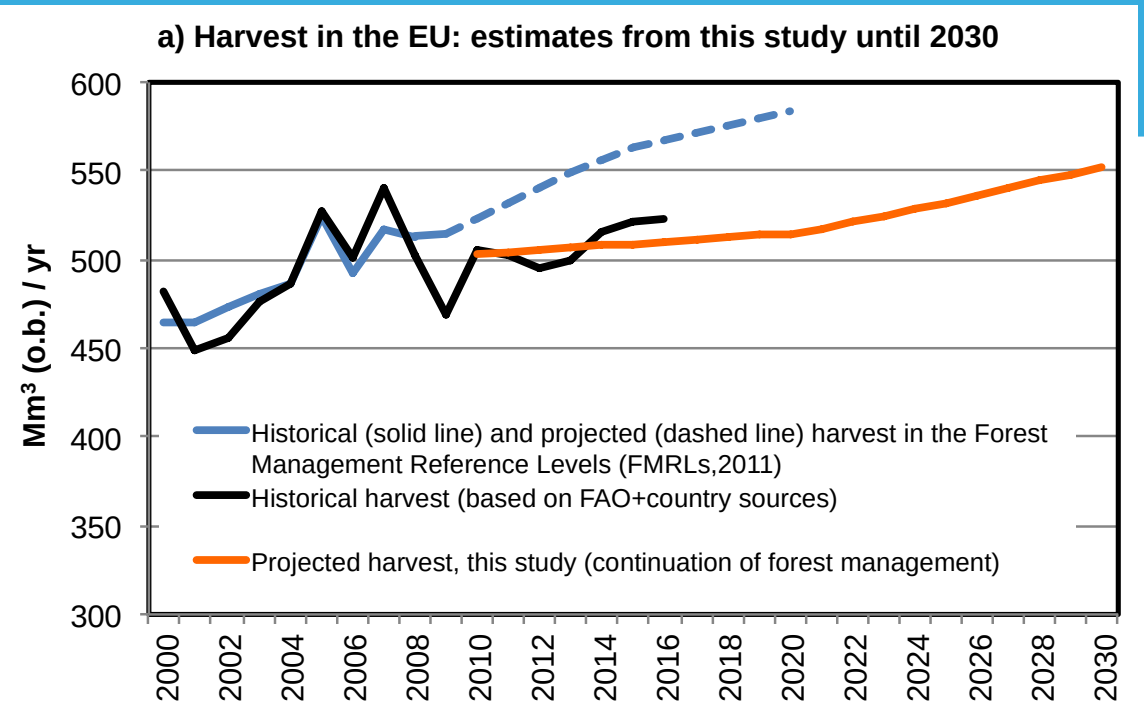
To this aim, the projected FRL is estimated assuming the "**continuation of documented historical forest management practice**", based on three concepts:

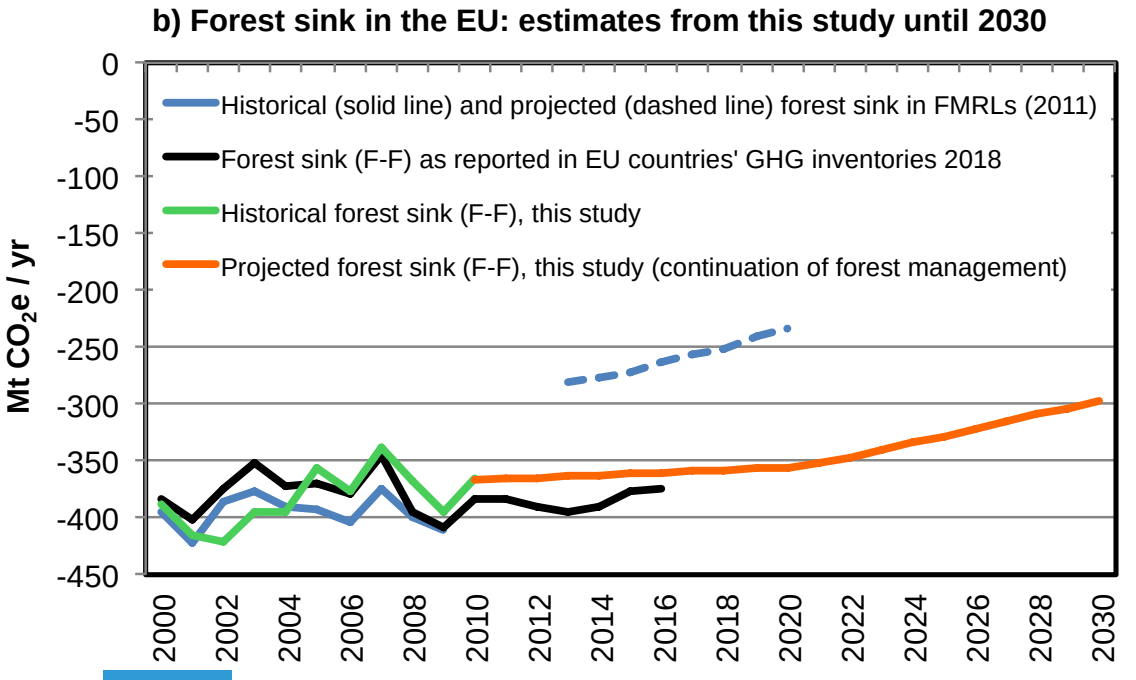
1) The historical FM practices are defined by the country based on best-available, documentable and quantifiable information
2) It fully considers the impact on management of age-related expected changes in forest characteristics (e.g. biomass, increment..)
3) The projection does not include the assumed impact of existing/future policies

→ the approach is flexible to accommodate country-specific circumstances, and avoids potentially "unfair" outcomes associated with age-related dynamics

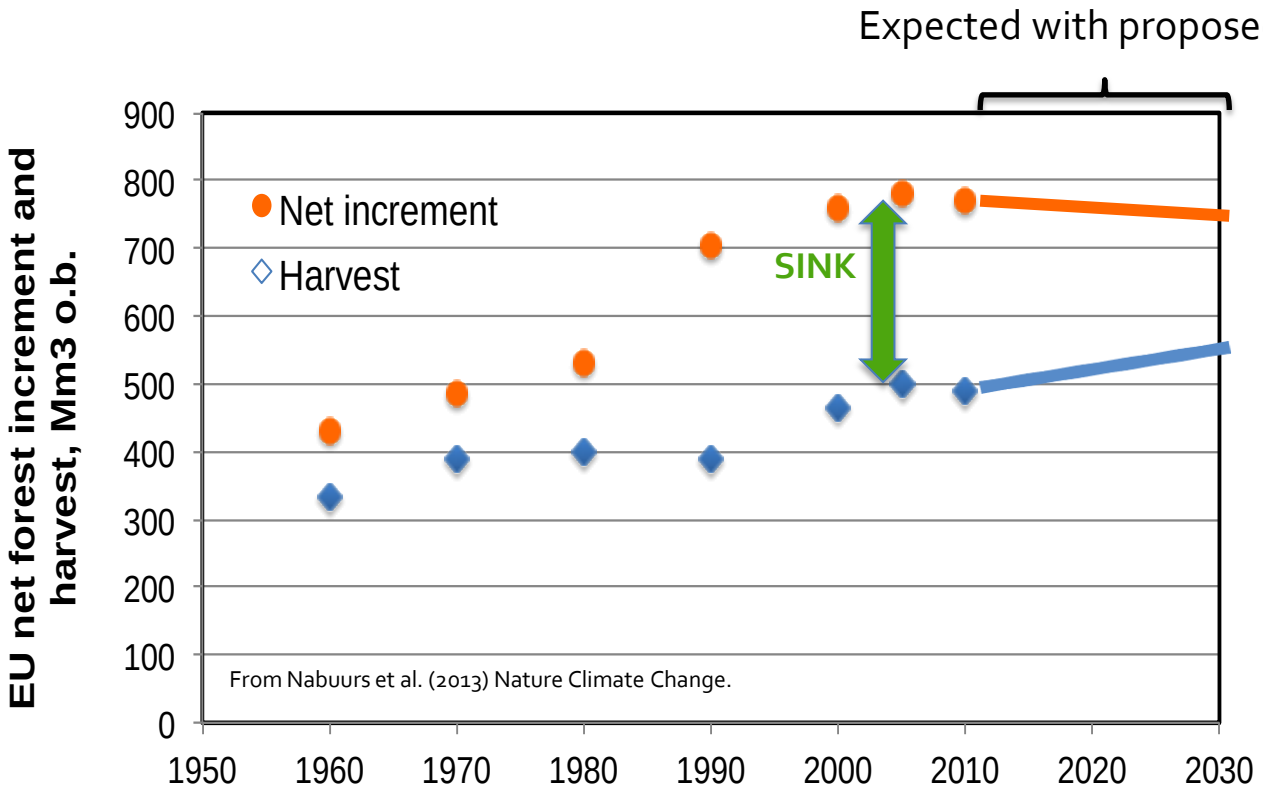
# Results

Due to age-related dynamics, **harvest volumes expected to increase by 12% in 2030** relative to 2000-2009, and sink reduces by 15%.



# The impact of the proposed FRL is consistent with the EU long-term trends




- **The % of increment that is harvested increases in the FRL**
- **More harvest in FRL generates benefits in other sectors**
- **Extra harvest above FRL** *do not necessarily* leads to LULUCF debits: it may be compensated by extra increment

# Conclusions (2)

This science-based approach to set FRL:

- **Acknowledges fully the country-specific forest dynamics**
- **Does not "penalize" countries  if forests get older**
- **Is compatible with an active management** → at EU level, extra harvest due to forest aging → extra GHG savings in other sectors.

At the same time, the **comparability with other GHG sectors is guaranteed**.

## Spunti per la riflessione:

Come sviluppare una strategia di mitigazione forestale "integrata", che massimizzi l'effetto di tutte le opzioni possibili?

Come valorizzare i benefici climatici derivanti dall'uso di legno per usi energentici e non?

Come favorire a scala locale iniziative di "climate-smart-forestry" anche attraverso la gestione forestale attiva?

Puo' l'analisi delle dinamiche di crescita delle foreste italiane basata sulla continuazione delle pratiche gestionali correnti costituire un utile strumento di valutazione anche per la pianificazione forestale?

Che sinergie possibili tra Regolamento EU e il nuovo Testo Unico?

# Forests have always been central in climate negotiations

## Thanks !


Forests emerged as an <u>essential</u> element of the Paris Agreement,
as long as the *credibility* of mitigation efforts is ensured
(credibility is not a easily renewable resource)

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