

Harvest data as interface between the forest and HWP

JRC LULUCF Workshop 2024

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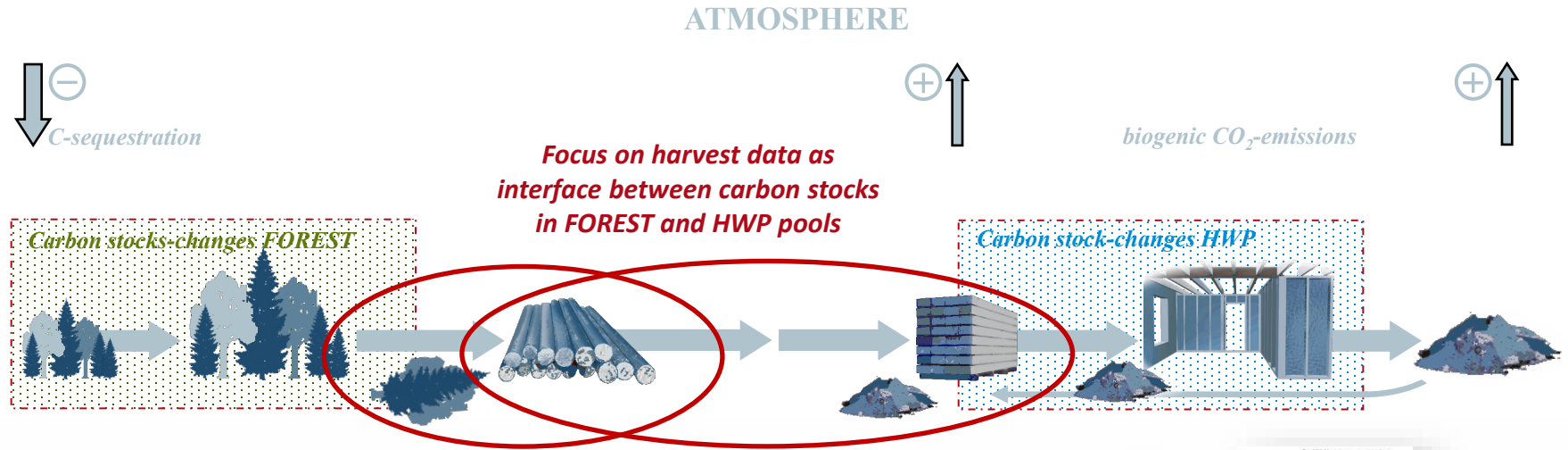


This is a follow-up of a presentation from 06/2021 at JRC LULUCF virtual workshop, providing an update on...

- **Upcoming recalibration of harvest data due to new NFI (2022) information**
- **Conducted analysis of NFI information on harvested wood**
- **Conducted category-specific recalculations in the course of annual GHG reporting since the submission of NFAP in 05/2019**

Conceptual and methodological background

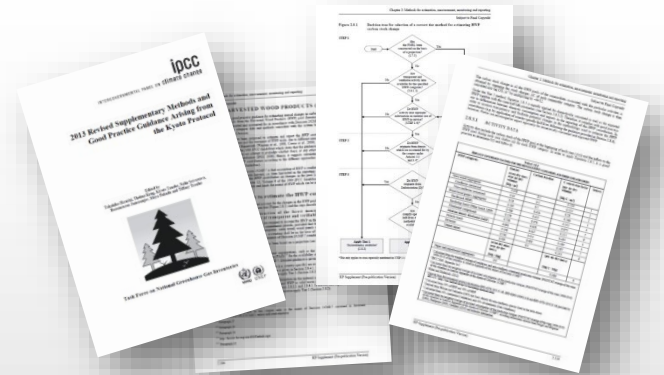
...for estimating emissions/removals from FORESTS and HWP along the value chain



■ Estimating annual 'CO₂ emissions by sources and their removals by sinks' from **FORESTS** (incl. living biomass & DOM) and **HARVESTED WOOD PRODUCTS** in line with the IPCC methodological guidelines

■ IPCC 2006 GL (and 2019 Refinement), Volumes 4:

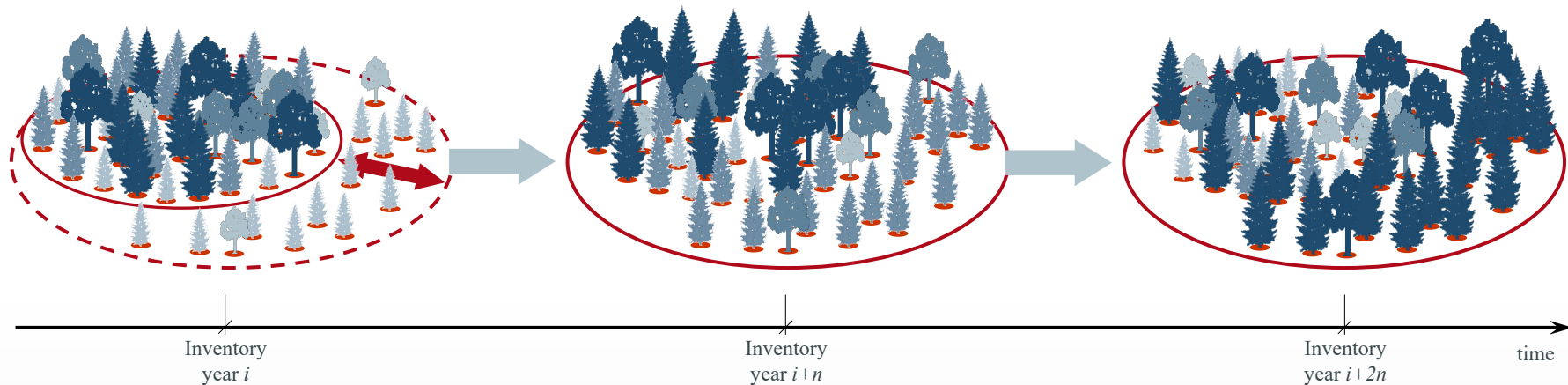
- Chapter 2 GENERIC METHODOLOGIES APPLICABLE TO MULTIPLE LAND-USE CATEGORIES
- Chapter 4 FOREST LAND
- Chapter 12 HARVESTED WOOD PRODUCTS



Conceptual and methodological background

Estimation methods: FORESTS

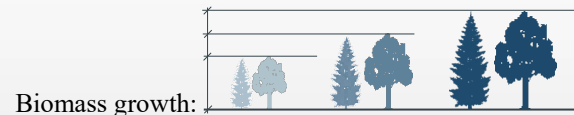
- The **stock-difference method** for estimating carbon stock-changes of living biomass & DOM is based on information from **National Forest Inventories (NFI)**...



...covering:

- remaining forest lands (FLrFL) (*Land Use, Land Use-Change and Forestry*)
- forest-associated land use-changes (*Land Use, Land Use-Change and Forestry*)

Age classes

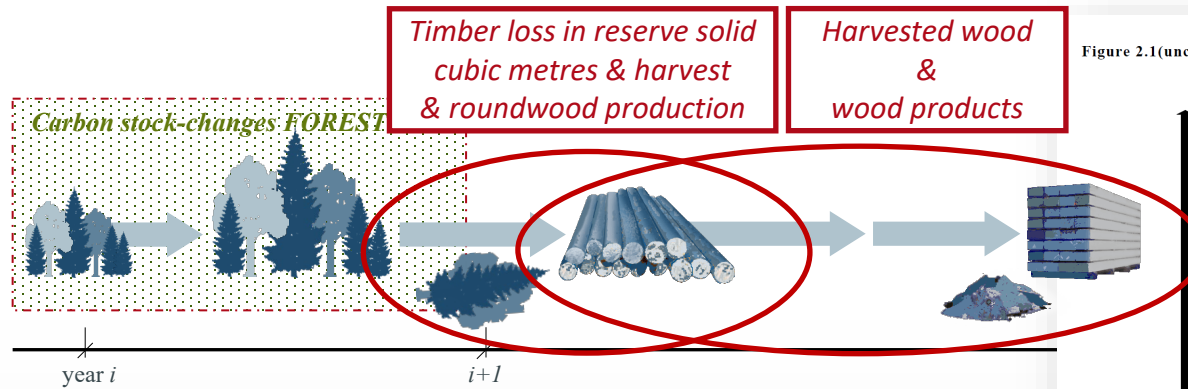


- Timber stock losses from living biomass (i.e. standing trees) are shown as totals for the whole inventory period as well as annual values **in reserve solid cubic metres** (*volume of the stem with a diameter > 7cm*)

Conceptual and methodological background

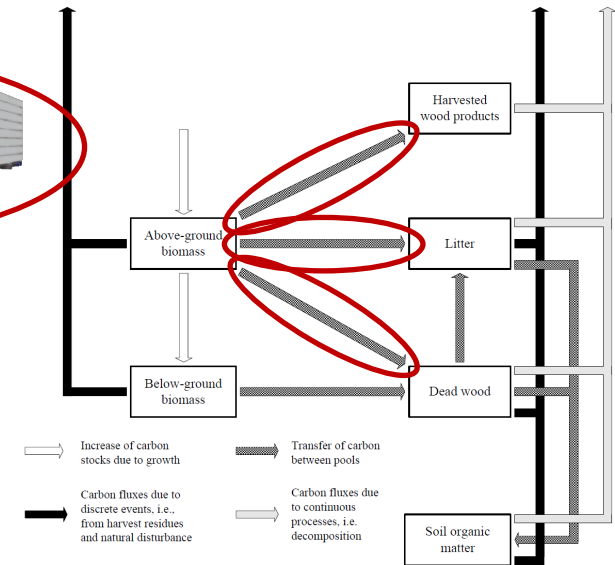
Estimation methods: FORESTS

- The **gain-loss method** for estimating carbon stock-changes of living biomass & DOM is to be based on activity data that are available annually



Challenge ► very **different sources** of data with **heterogenous quality**, **varying temporal representativeness** and **validity**

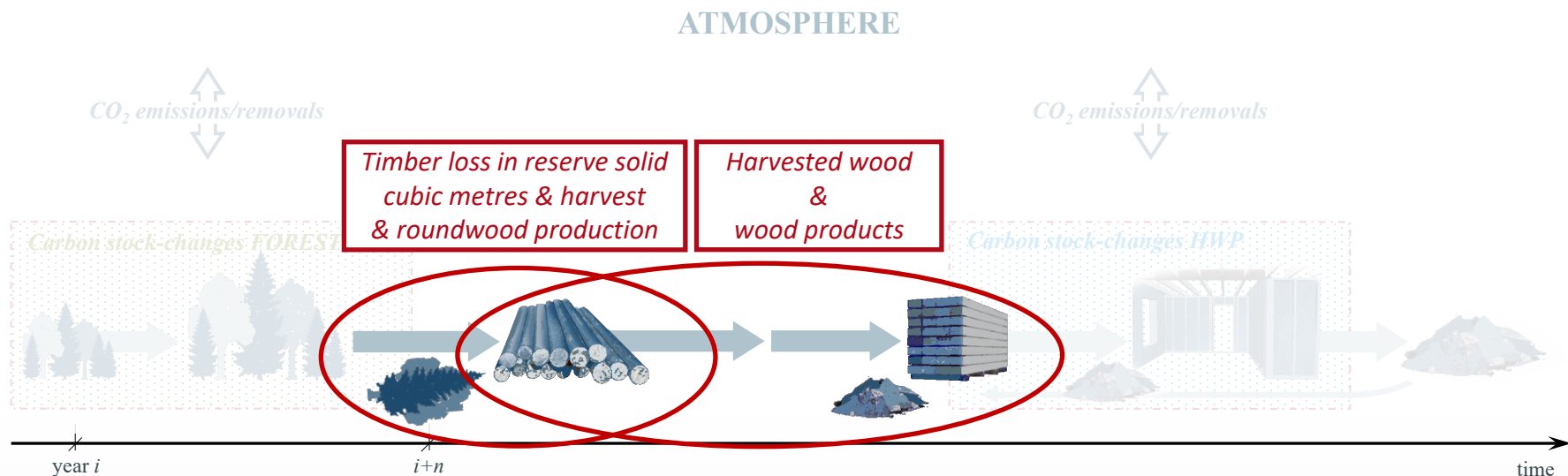
Figure 2.1 (unchanged) Generalized carbon cycle of terrestrial AFOLU ecosystems showing the flows of carbon into and out of the system as well as between the five C pools within the system.



Source: IPCC (2019) R Vol 2 Ch2, p. 9

Conceptual and methodological background

Biomass loss & harvest data: carbon loss from FOREST and feedstock for wood products



- **Timber losses in reserve solid cubic metres (RSCM)**: information derived from **National Forest Inventories** every few years
- **(Industrial) roundwood production**: information derived from forest management units (on sold timber) or from **annual industry statistics** on the consumption of timber feedstock for manufacturing purposes (> country-specific)
- Manufacturing of **semi-finished wood products (HWP)** (representing the material use of wood): production statistics of manufacturing (forest-based) industries (sawn mills, wood-based panel & paper mills) from statistical offices (BL and federal level)

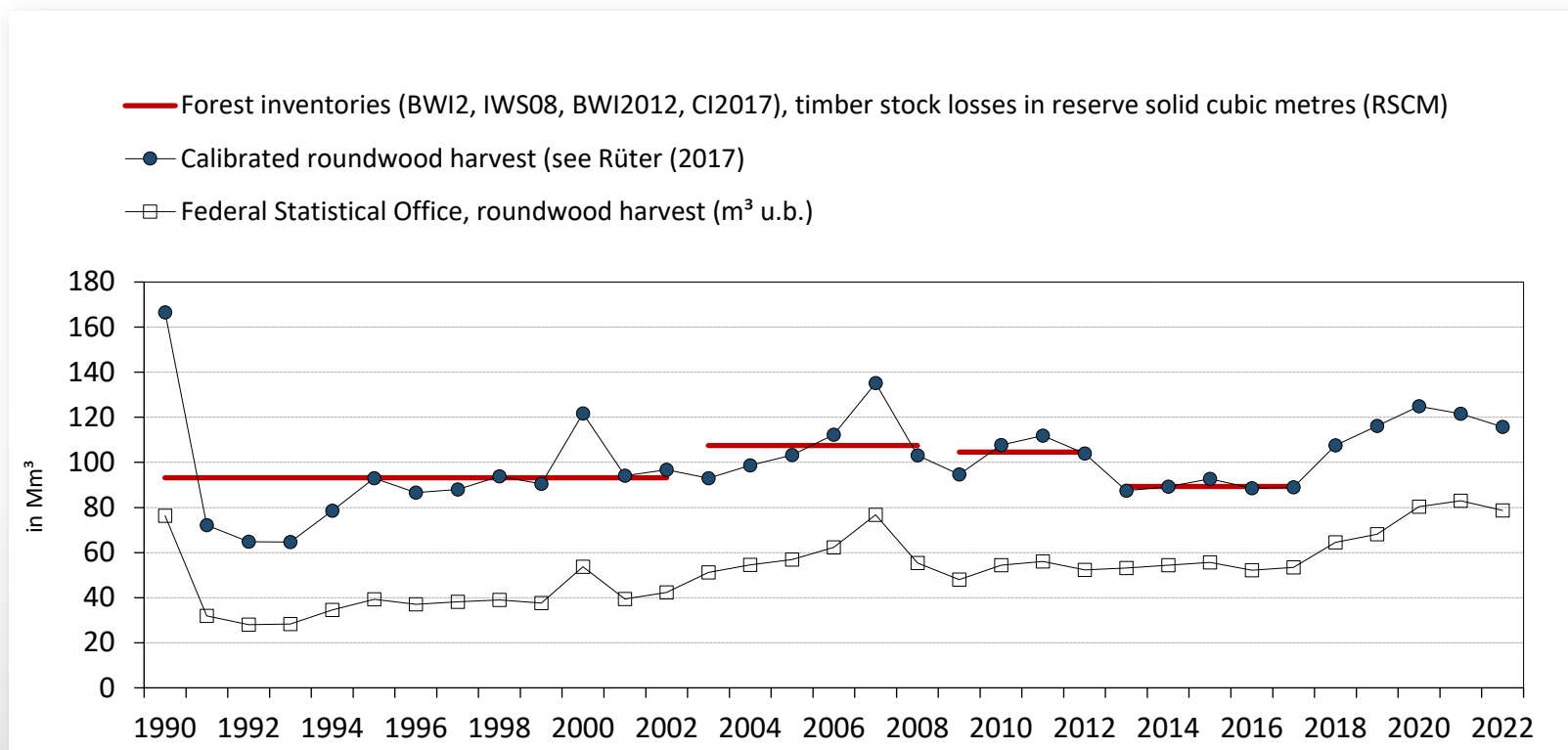
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Calibration of NFI information with annual harvest data

Time series on harvest as part of HWP reporting requirements

- Since NIR 2015, Germany applies this calibrated harvest time series for HWP estimates (allocation to LU & exclusion of wood from deforestation in line with EU LULUCF-Regulation) and reported it as part of KP reporting (*Table 4(KP-I)C*)



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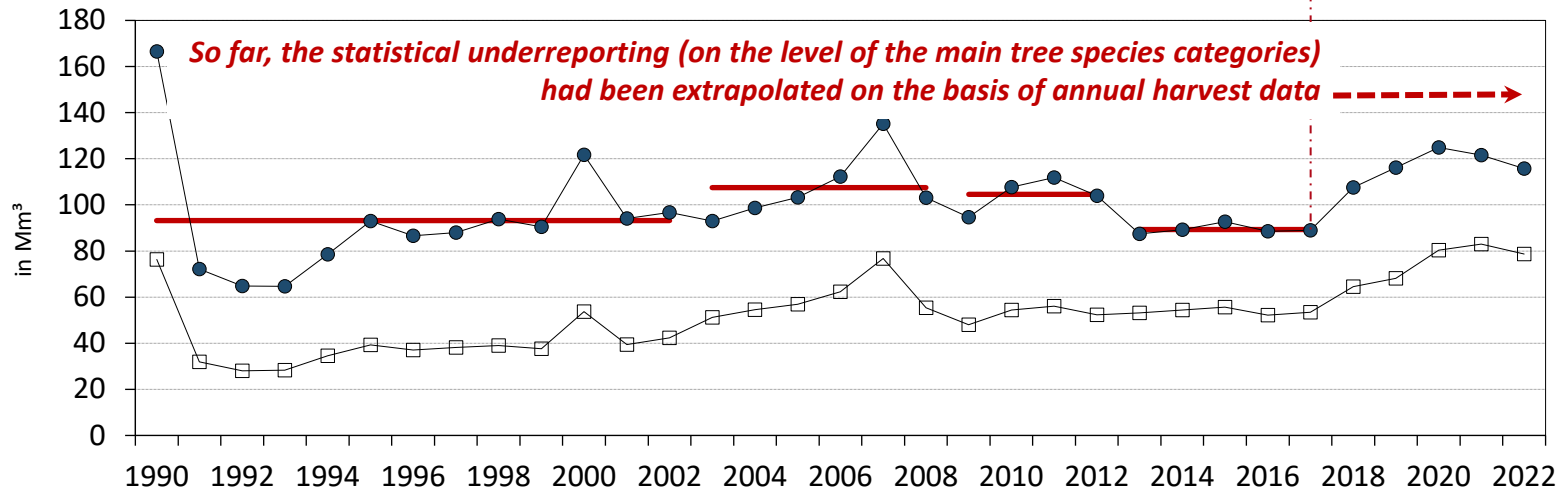
→ **there is currently no CRF table containing this crucial information (no HWP from deforestation)**

— Forest inventories (BW12, IWS08, BWI2012, CI2017), timber stock losses in reserve solid cubic metres (RSCM)

● Calibrated roundwood harvest (see Rüter (2017))

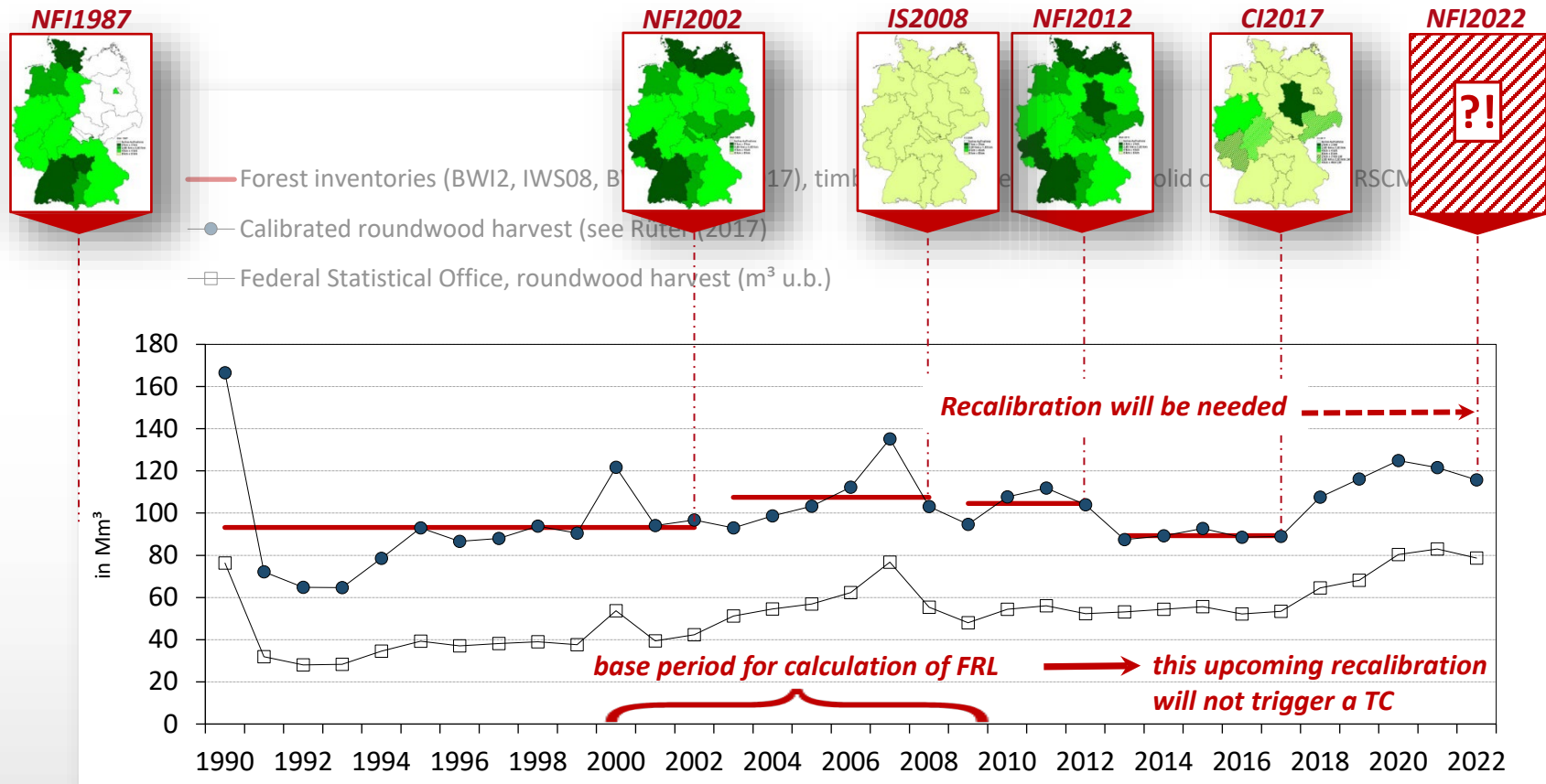
□ Federal Statistical Office, roundwood harvest (m³ u.b.)

last inventory information



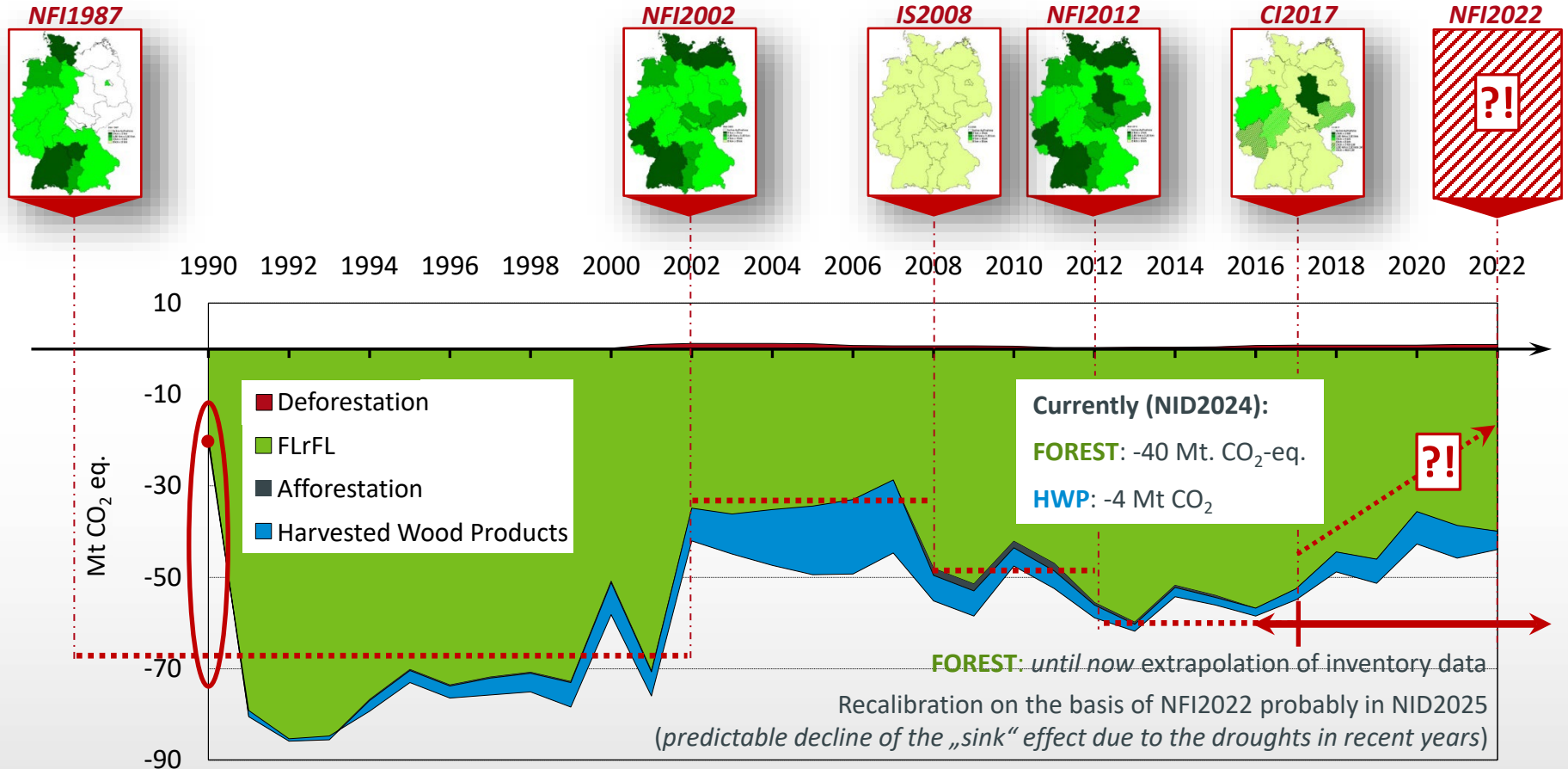
Calibration of NFI information with annual harvest data

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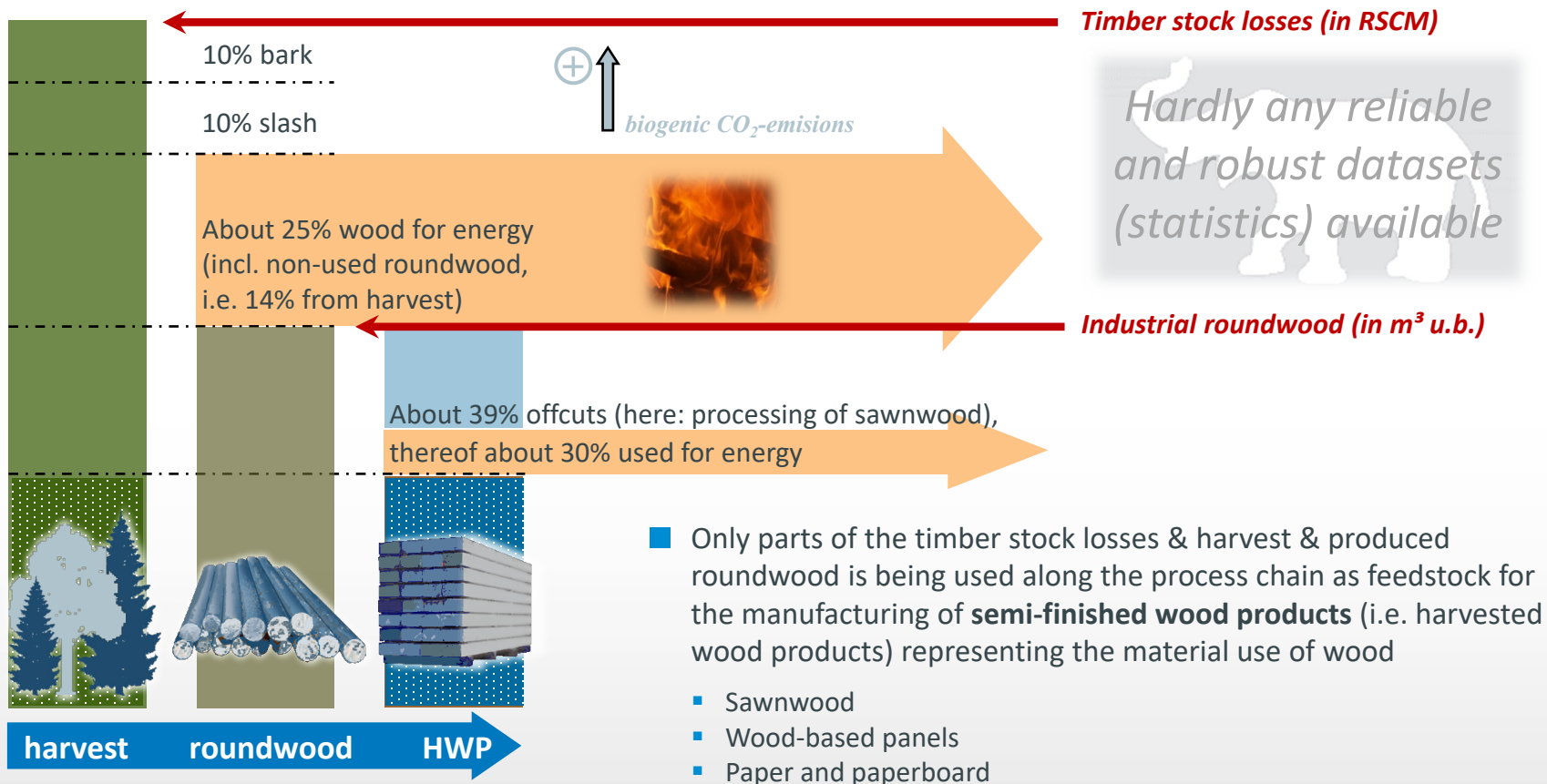
Calibration of NFI information with annual harvest data

Harvest time series for calibration of net emissions from living biomass with annualized values



Calibration of NFI information with annual harvest data

Example of woody material flow from harvest to wood products (Germany)



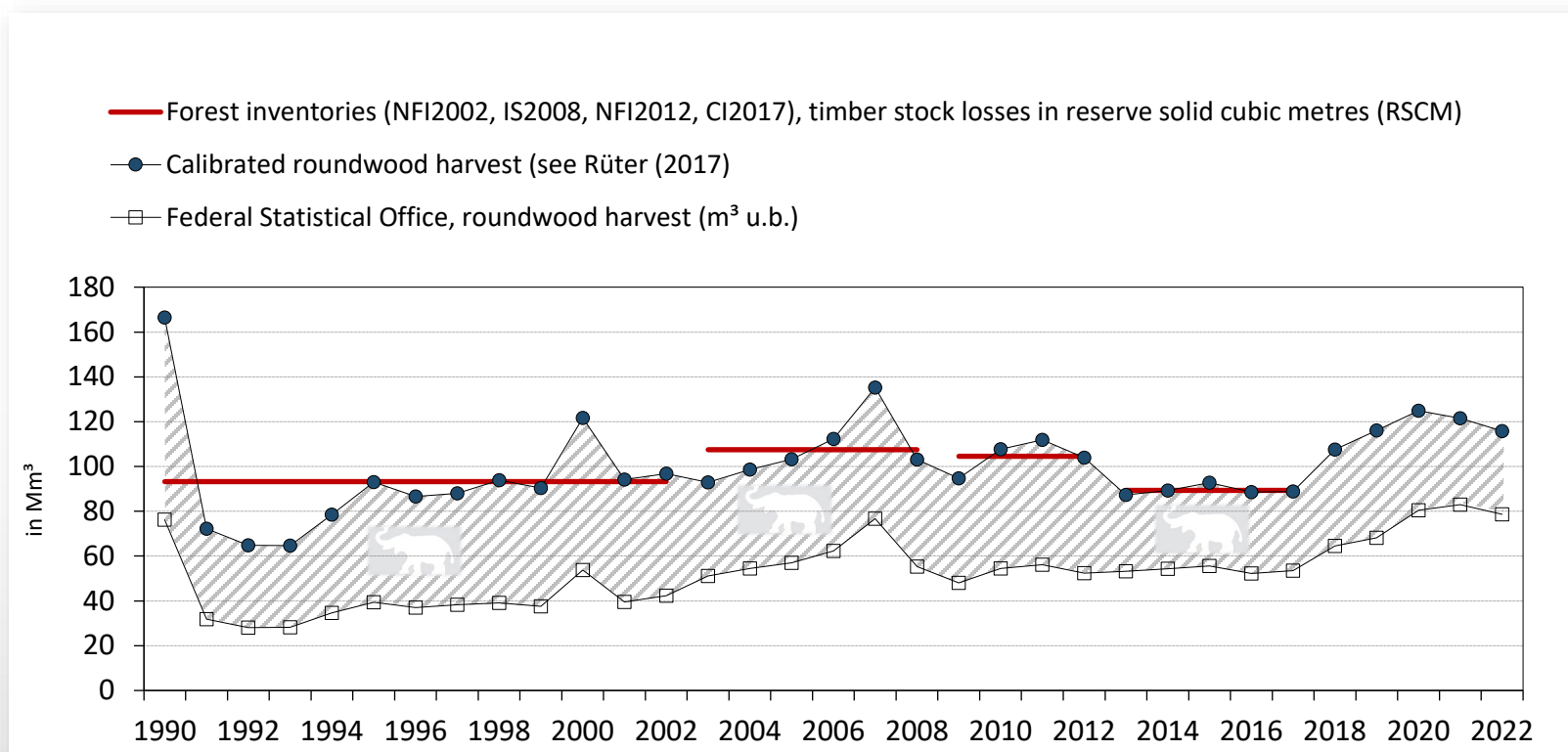
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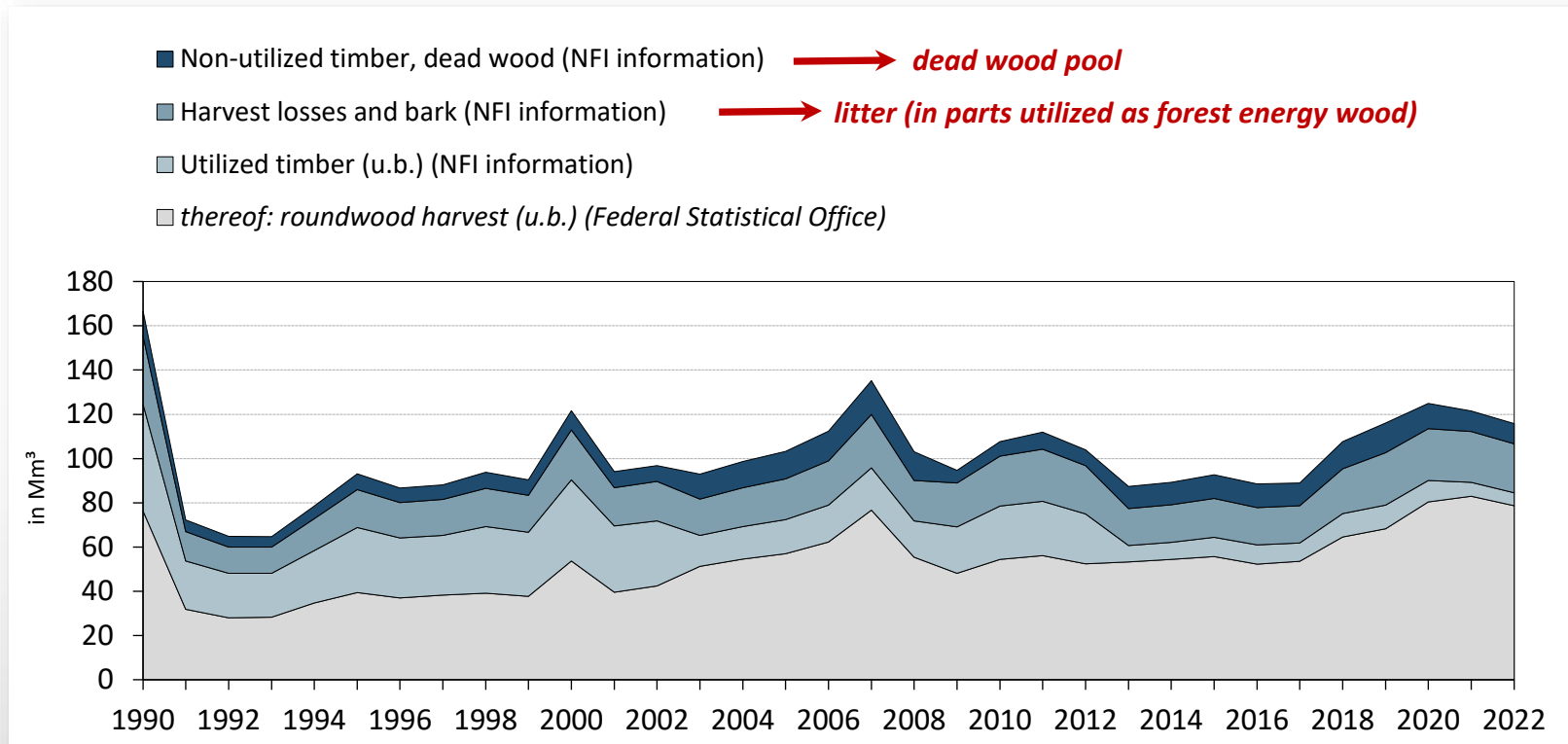
- In order to improve GHG estimates, all available NFI data on timber losses & harvest had been analysed in detail



Detailed analysis of NFI information on harvested wood

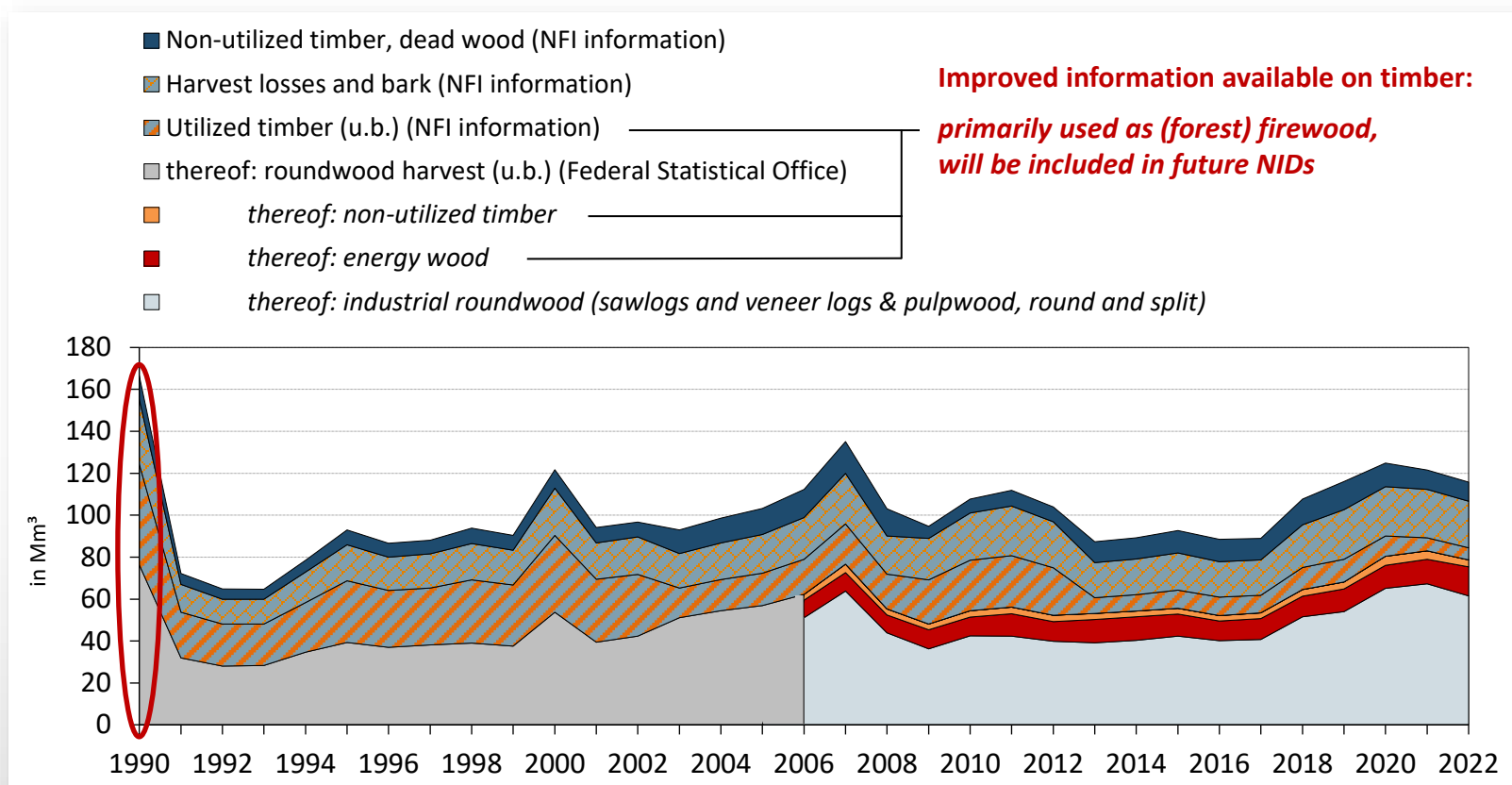
Timber stock losses in reserve solid cubic metres

- In order to improve GHG estimates, all available NFI data on timber losses & harvest had been analysed in detail, with the result that **further information is now available for the calibration of:**



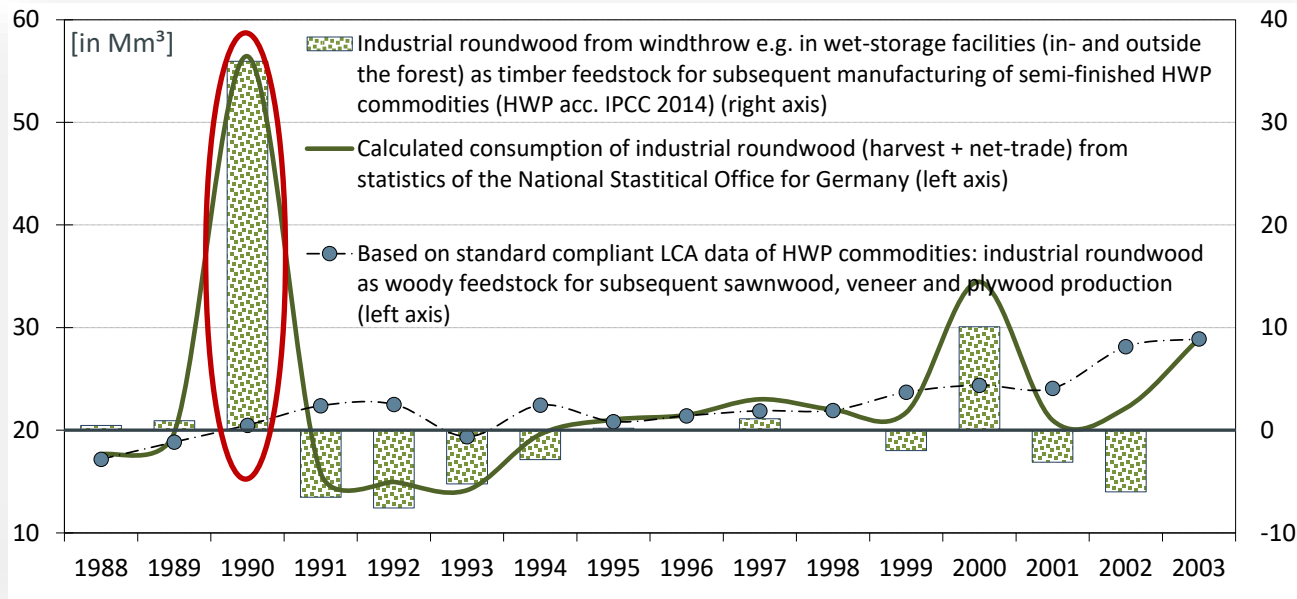
Detailed analysis of NFI information on harvested wood

Timber stock losses in reserve solid cubic metres



Detailed analysis of NFI information on harvested wood

Comparison of calculated harvest consumption with feedstock demand for relevant HWP production



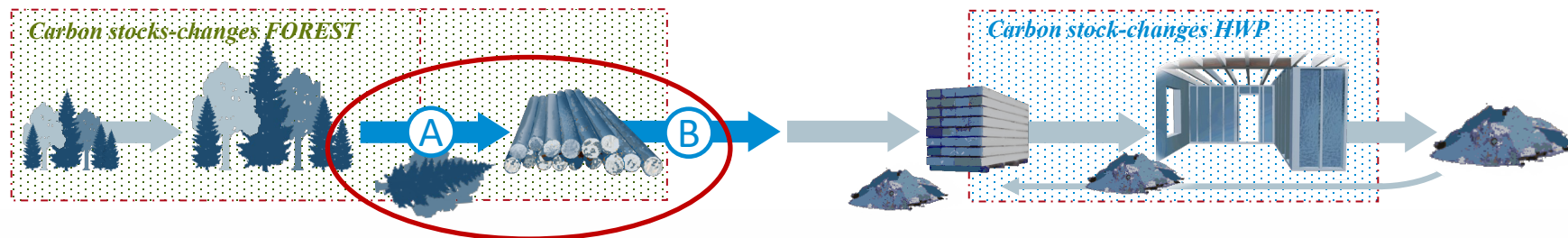
Source: Rüter (2017)

- **Due to windthrow** (in 1990 “Wiebke” and 2000 “Lothar”), there was a tremendous **surplus of industrial roundwood** as feedstock for subsequent HWP production: the **timber was salvage logged**, stored and **in subsequent years further processed**, whilst this **overharvest got compensated by reduced fellings** in the years after the disturbances
- In line with IPCC KP Supplement and 2019 Refinement, industrial roundwood enters HWP estimates as **feedstock commodity** only (production approach), *inter alia* to **avoid double counting**

Detailed analysis of NFI information on harvested wood

Comparison of calculated harvest consumption with feedstock demand for relevant HWP production

- In order to improve GHG inventory on forest and HWP with annual estimates and report GHG emissions when they occur (see Session 3), **Germany currently evaluates the opportunity to establish an intermediate feedstock pool** as subcategory of dead wood



- **Core requirement:** consistency with relevant IPCC guidance (esp. on dead wood and HWP, *inter alia* in order to avoid double counting)
- **Gains** (A) would be the domestically produced HWP feedstock commodities (sawlogs, pulpwood etc.), provided in annual statistics and as part of utilized timber from NFI information (see page 14)
- **Losses** (B) would be the calculated consumption of those domestic HWP feedstock commodities, which are required for the manufacturing of HWP commodities sawnwood, wood-based panels and paper and paperboard in the respective year according to their annual production (statistical time series reported in CRF Table 4Gs2)

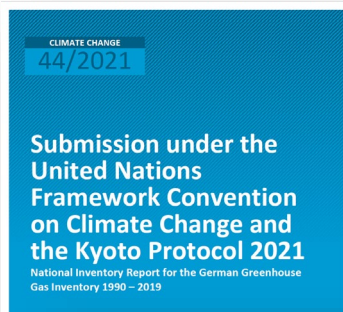
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Category-specific recalculations in the annual GHG reporting

Changes affecting the FRL base period (2000-2009) must entail a Technical Correction

- Conducted category-specific recalculations for HWP in the course of annual GHG reporting since the submission of NFAP in 05/2019 (i.e. NIR2020) affecting the base period 2000-2009 for calculating the FRL, i.e. HWP data/time series prior to 2009, must entail a Technical Correction (see Draft JRC Technical Report on Technical Corrections)



6.10.5 Category-specific recalculations (4.G)

In the current reporting year, as in past years, the FAOSTAT data (in this case FAOSTAT 2019) used in the previous year were corrected for several product categories (cf. FAO (2020b)), since the values contained in production statistics for the current reporting year (i.e. for 2019 in FAO (2020b)) are always only provisional; they do not become available as final values until the following year. **In addition, the time series for roundwood production in the FAOSTAT data was corrected retroactively back to the year 1995 (cf. Chapter 6.4.2.1.1).** This has had an effect on the calculation of the raw-material factor for roundwood ($f_{raw}(i)$, cf. Figure 69) and, thus, on the net-emissions time series obtained.

The relevant changes with respect to the previous year are shown in Table 461.

Table 461: Comparison of HWP net CO₂ emissions as reported in the 2020 and 2021 submissions

	Net emissions [kt CO ₂]							
	1995	2000	2005	2010	2015	2016	2017	2018
From exported wood materials	-389	-2,707	-5,136	-1,769	-1,838	-1,769	-1,996	-1,870
From domestically used wood materials	-694	-1,102	-1,486	2,667	2,598	2,268	2,277	2,231
From exported paper and paperboard	-1,017	-1,248	-2,190	-817	-417	-91	40	-154
Sub.2020								
From domestically used paper and paperboard	-188	-346	-359	264	434	567	602	609
From exported sawn lumber	-408	-1,922	-4,410	-3,181	-2,589	-3,027	-3,339	-3,823
From domestically used sawn lumber	7	122	-1,462	-454	29	142	-39	-233

6.10.5 Category-specific recalculations (4.G)

In the current reporting year, as in the previous years, the data used in the previous year, from the last available year in the FAOSTAT database (here: 2019) have been corrected for several product categories. This takes account of the fact that the production-statistics values for the relevant current reporting year are always provisional; they do not become available as final values until the following year (i.e., the 2019 values are available as final values in FAO (2020)). **At the same time, the time series for the semi-finished product category fibreboard, a subset of the wood-based panels data in the FAOSTAT database, has been corrected retroactively, back to the year 1995.** This has an effect on the estimated net-emissions time series, and on the recalculations of the HWP feedstock categories used for calculating the feedstock factors for the year 2018 (cf. Figure 81).

The relevant changes with respect to the previous year are shown in Table 440.

Summary

- The upcoming recalibration of harvest data (timber stock losses in reserve solid cubic metres) due to the **release of new NFI2022 information will probably not trigger a Technical Correction** since it will not affect the HWP numbers as submitted in NFAP in 05/2019, calculated based on the reference period 2000 – 2009 (Rock et al. 2021)
- **Detailed analysis of NFI information on harvested wood** further improved knowledge on the forest wood chain and provides the **opportunity to also improve the GHG estimates** on forest and HWP
- We currently **evaluate the opportunity to establish an intermediate feestock pool as subcategory of dead wood** in order to improve GHGI on forest and HWP with annual estimates and report GHG emissions when they occur (see Session 3)
- **Conducted category-specific recalculations** as submitted since 05/2019 in annual GHGIR (i.e. NIR2020) affecting HWP relevant data/time series prior to 2009, **must entail a Technical Correction** (in line with Draft JRC Report on TC)
- ...

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