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Methodological Review of the LULUCF Inventory of Portugal

JRC LULUCF Workshop 2022 “Towards ‘fit for 55’:
updates in LULUCF reporting and accounting

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In depth revision of LULUCF Inventory

- Reporting structure used until now (implemented in 2012) needed changes to:
 - Implement a “lighter” calculation structure with more automation to minimize chances of error
 - Integrate new information made available recently
 - Implement recommendations made by the review teams that required structural changes to the calculation procedures
 - Improve the fit between the information produced by the NFI and the GHG Inventory



Main Changes Implemented in Data and/or Methodologies

- In depth revision of **land-use and land-use change data**
 - **Reclassification of "Shrublands"** as "Grassland" and not "Other Land";
 - **Split of "Wetlands"** into "Flooded Areas" and "Wetlands";
 - **New category "Oceans"**, but only to allow for land-use changes between land and ocean (keep national totals constant)
- Insertion of **NFI6 results** and **revision in the methodology related to the use of NFI Data** in GHG Reporting
- Revision of **emission and sequestration factors in permanent crops** (living biomass)
- Change in the methodology to estimate **burnt area per land-use**
- New estimation: **CO₂ emissions from burnt areas in shrublands and permanent crops** (and CO₂ removals from post-fire recovery)



A teal-colored icon consisting of three vertical lines.



Review of Land-Use Data

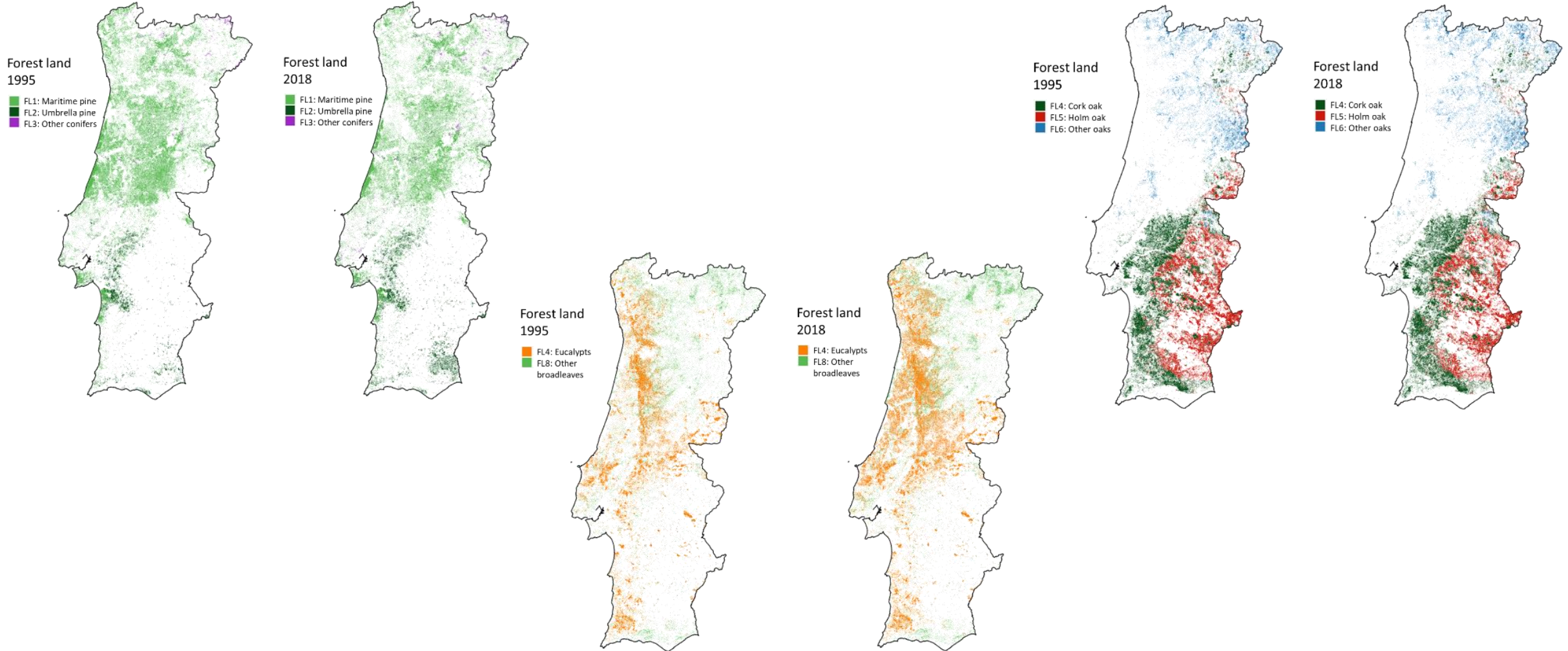
- New wall-to-wall map for 2018 fully consistent with previous maps (1995, 2007, 2010, 2015)
- Interception of all existing maps to determine land-use change history of each polygon
 - Correction of mistakes and revision of previous maps based on improbable land-use changes

1995	2007	2010	2015	2018
Q. suber	Q. suber	Q. suber	Q. rotundifolia	Q. suber
Annual crop	Annual crop	Fruit Trees	Olive Trees	Olive Trees

- Confirmation of the decision between “temporarily unstocked” or “land-use change”



Example: Changes in Forest Land by Forest Type 1995/2018



Challenges in Reporting Using Gains / Losses Method

- NFI Data in Portugal
 - Good estimates of total volume / age class / basal area / etc.
 - But statistical design does not include permanent/repeated sample plots
 - No “direct measurement” of growth rate of trees (repeated measurements over the same trees)
 - No “direct measurement” of harvest or mortality rate of trees (record of cut/dead trees)
- Gains / growth
 - **Expert judgement** values
- Losses
 - Industrial Harvest: from industrial wood consumption **statistics**
 - Fire: based on NFI average biomass data and expert / default EF
 - Other losses (other harvest, mortality, etc.): **expert judgement**

Challenges in Reporting Using Gains / Losses Method

PROBLEM (until now)

$Total_C_Stock_{NFI_1995}$

Forest
Inventory

+

GHG
Inventory

$$\sum_{1996}^{2005} Gains_x - \sum_{1996}^{2005} Industrial\ Losses_x - \sum_{1996}^{2005} Fire\ Losses_x - \sum_{1996}^{2005} Other\ Losses_x$$

≠

$Total_C_Stock_{NFI_2005}$

Forest
Inventory



Challenges in Reporting Using Gains / Losses Method

SOLUTION

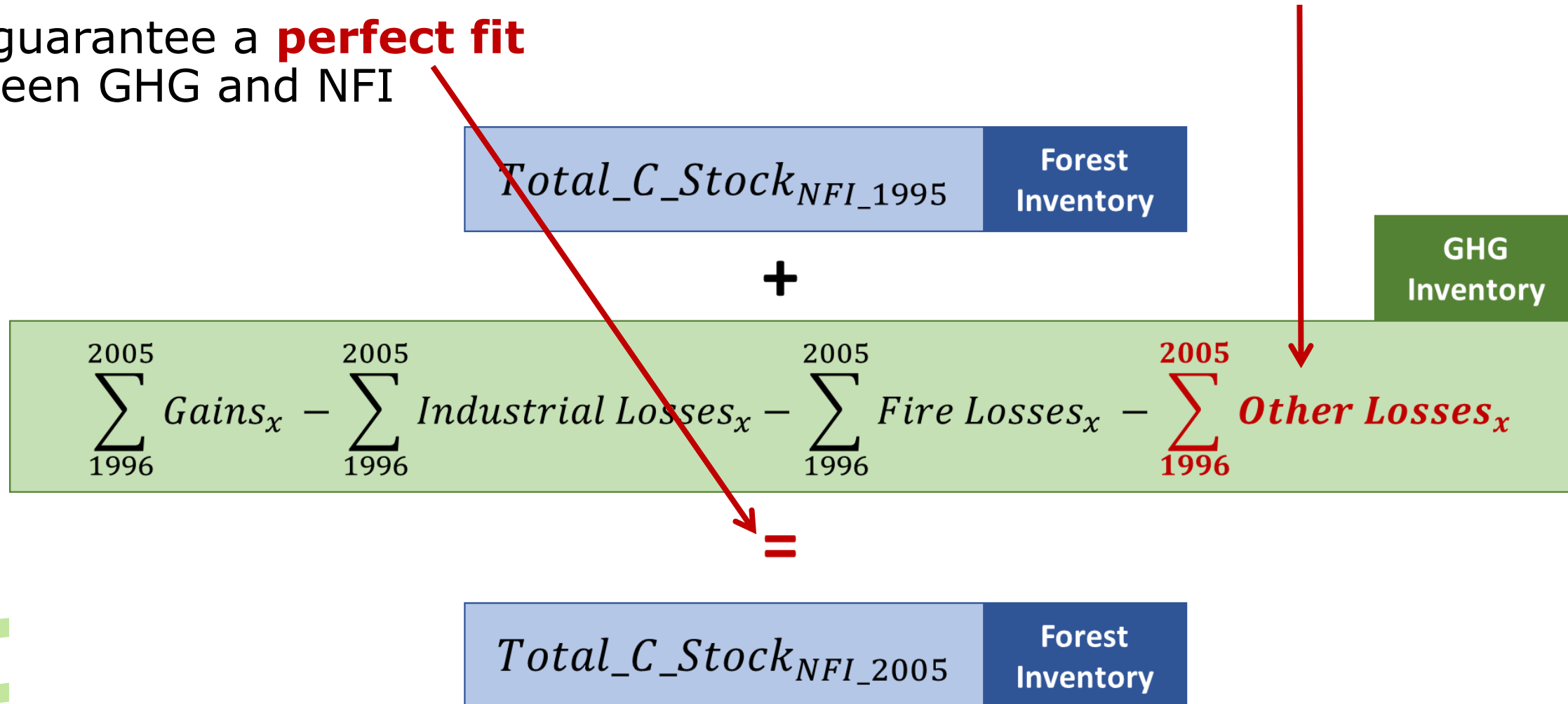
- Maintain gains/losses method
 - Inter-annual variability is an issue and should be reported as best as possible
- In general, maintain calculation approach to individual gains and losses
- Introduce 2 variables of “total C stock” and “C stock/ha”,
 - equal to NFI (in the NFI reference years)
 - updated annually with net-gains/losses from the GHG inventory



Challenges in Reporting Using Gains / Losses Method

SOLUTION

- Instead of “expert judgment”, **numerically adjust “Other Losses”**
- ...to guarantee a **perfect fit** between GHG and NFI



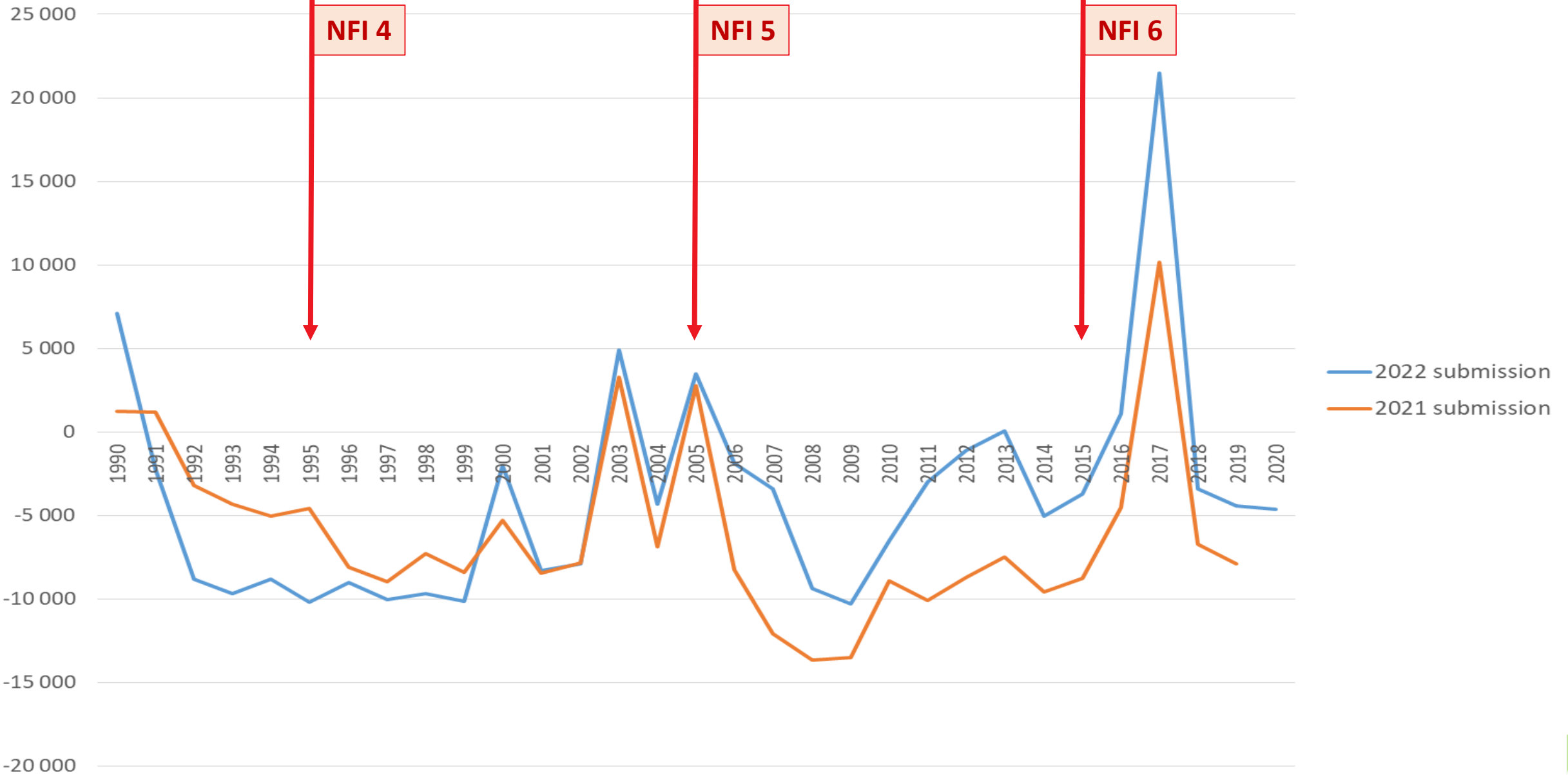
Challenges in Reporting Using Gains / Losses Method

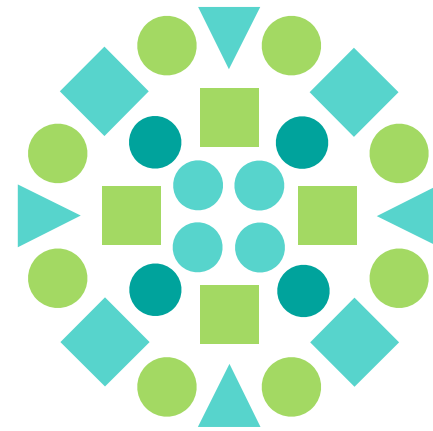
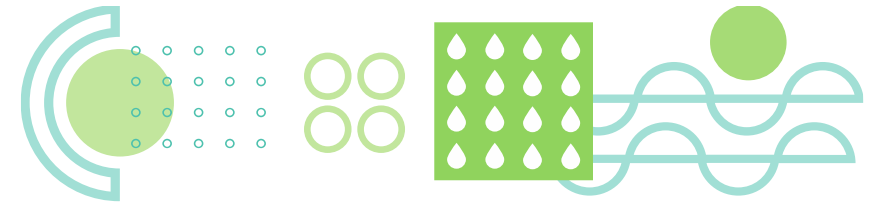
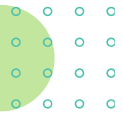
Some advantages of this Solution

- NFI and GHG Inventory share the exact same narrative
- The adequacy of the “expert judgements” used in other parts of the GHG calculations become less relevant
 - i.e. if an overestimation of gains from “growth” is introduced by mistake this will be compensated with additional losses from “other harvest”
- The calculation of “Total C Stock” and “C Stock/ha” allows for a better estimation of emissions that use this information
 - e.g. land-use change losses; fire emissions



Impact of Recalculations in 2022





THANK YOU

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