Reuse of IACS data in the LULUCF

Rafal Zielinski (EEA) / LULUCF Workshop, Ispra / 06.05.2025

Outline

- Potential **role of IACS** data in LULUCF

- Status of IACS data usage based on **National Inventory Reports 2024 review** (work in progress)

- CAP data from the **climate policy perspective**

- Final remarks and future work

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Spatial data in CAP

CAP reforms

1962   1992   2023

EU **agricultural** land production, **38 % of the total land area of the EU**.

(Source: Eurostat 2023)

The Early Years (60s)	The Crisis Years (70s/80s)	THE 1992 REFORM	Agenda 2000	CAP REFORM 2003	CAP Health Check 2008	CAP REFORM Post-2013	CAP 2023-27
Price support Productivity improvement Market stabilisation	Over production Exploding expenditure International frictions Supply controls	Price cuts and compensatory payments Surplus reduction Income and budget stabilisation	Deepening the reform process Rural development	Market orientation Decoupling Cross compliance Consumer concerns Environment Enlargement	Reinforcing 2003 Reform Dairy quotas	Greening Targeting Redistribution End of production constraints Food chain Research & Innovation	Performance

Direct payment

On-The-Spot-Checks (OTSC)

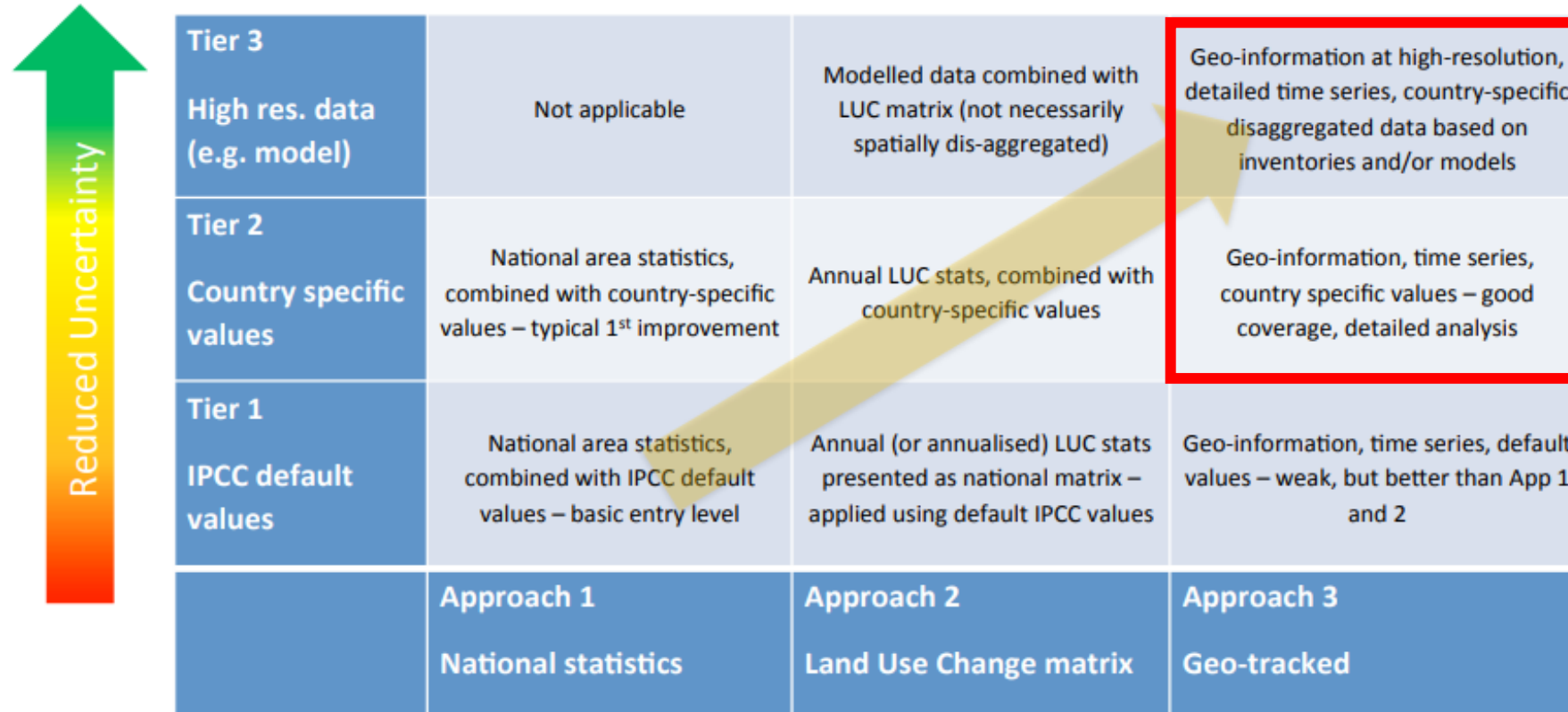Controls with Remote Sensing (CwRS)

From **2004**: Land Parcel Identification System (**LPIS**)

From **2018**: Geo-Spatial Aid Application (**GSA/GSAA**)

From **2023**: Area based monitoring (**AMS**)

- Trusted, timely delivered, annual, validated data, frequently updated, best in the land sector?
- Existing, Available, Accessible. Will continue?

Implemented and avalible at the MS level

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Improving accuracy and robustness of estimates of GHG inventories

IPCC 2006 Tiers and Approaches for implementing **LULUCF Reg. 2018/841**

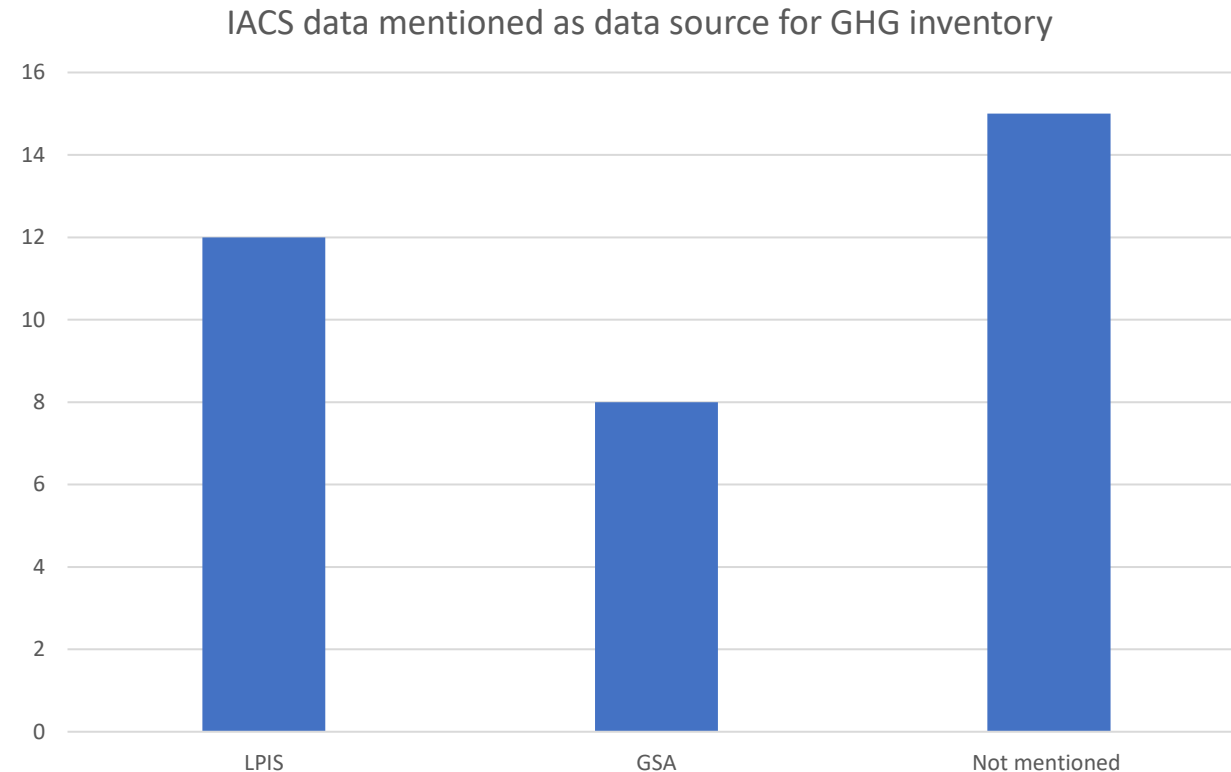**IACS...**

Reduced Uncertainty

	Approach 1 — National statistics	Approach 2 — Land Use Change matrix	Approach 3 — Geo-tracked
Tier 3 — High res. data (e.g. model)	Not applicable	Modelled data combined with LUC matrix (not necessarily spatially dis-aggregated)	Geo-information at high-resolution, detailed time series, country-specific disaggregated data based on inventories and/or models
Tier 2 — Country specific values	National area statistics, combined with country-specific values – typical 1st improvement	Annual LUC stats, combined with country-specific values	Geo-information, time series, country specific values – good coverage, detailed analysis
Tier 1 — IPCC default values	National area statistics, combined with IPCC default values – basic entry level	Annual (or annualised) LUC stats presented as national matrix – applied using default IPCC values	Geo-information, time series, default values – weak, but better than App 1 and 2

Improved Coverage and Representation

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NIR 2024: IACS data used/mentioned

- **12/27 MSs** mentioned as a data source
  - Several MSs indicated as a future use/development of IACS data (e.g. GR)
- Type of information:
  - **LPIS**: agricultural land eligible for CAP subsidies (Land Use/Land Cover)
  - **GSA**: annual information about crop type (Land Cover) for each parcel declared
- Used as:
  - **Spatially explicit**
  - **Tabular** information
  - Other
- **NIR level of details varies** between the MSs
  - limited information or generic too information
  - issues with nomenclature

IACS data mentioned as data source for GHG inventory

Payment schemes, Agricultural Practices, Good agricultural and environmental condition (GAEC) - ?

…. to be further investigated

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NIR 2024: How IACS data contribute to LULUCF categories?

- As an activity data:
  - Mainly contributes to CL and GL (+conversions)
  - WL and SL: Information about exclusions (part of the agricultural land not use directly for production)
  - FL: Agroforestry, landscape features, grasslands partly covered by trees (pro-rata information)?
  - Focus on **data semantics** (LPIS->LULUC)

- As reported in NIRs, **% of total CL and GL** covered by IACS data (i.e.):
  - RO: 70% - **to be investigated** (lack of data, or sematic issues?)
  - HR: 60% - **to be investigated** (lack of data, or sematic issues?)
  - AT: 99%
  - BG, NL: 100%
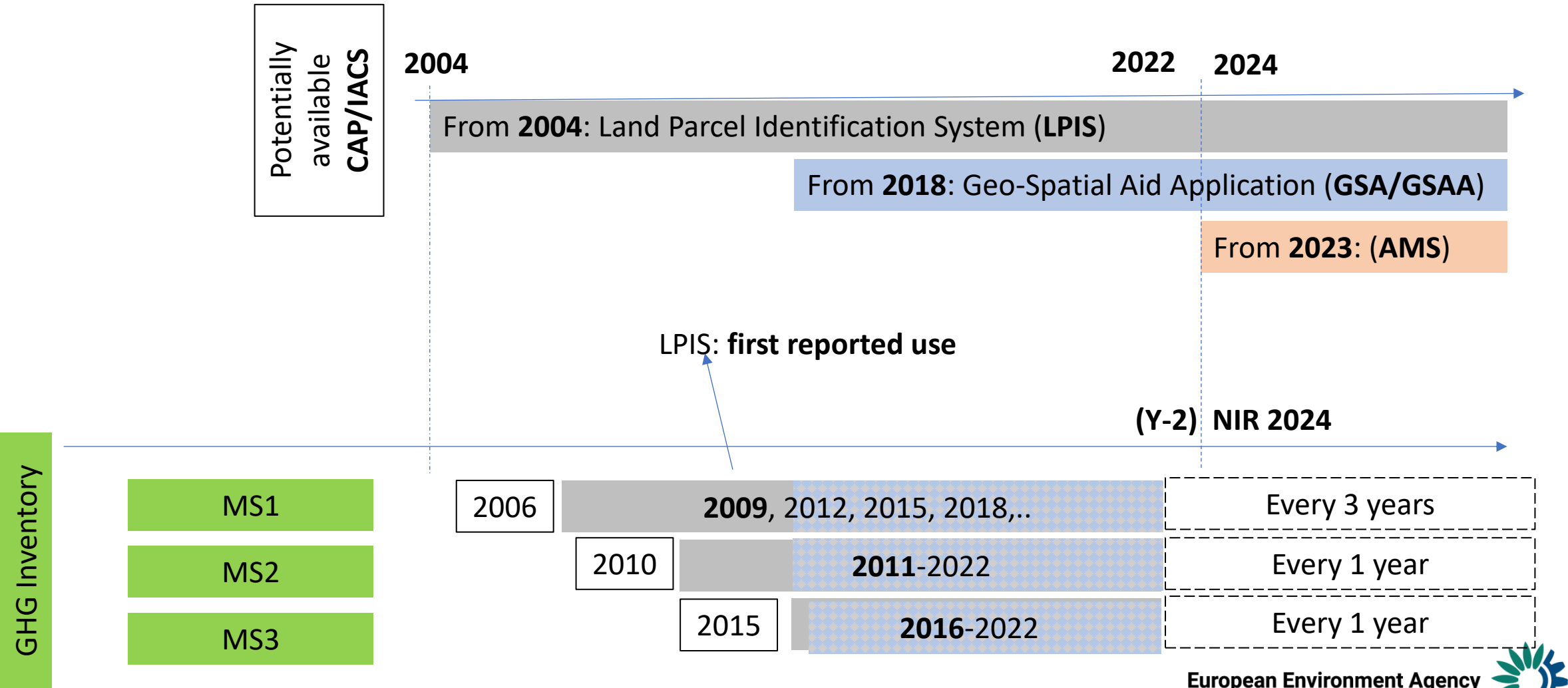 - DK: close agreement of LPIS data and Statistics Denmark (difference < ±2%).

As reported* by MSs in the NIR 2024

WL 5% SL 6% FL 3% CL 43% GL 43%
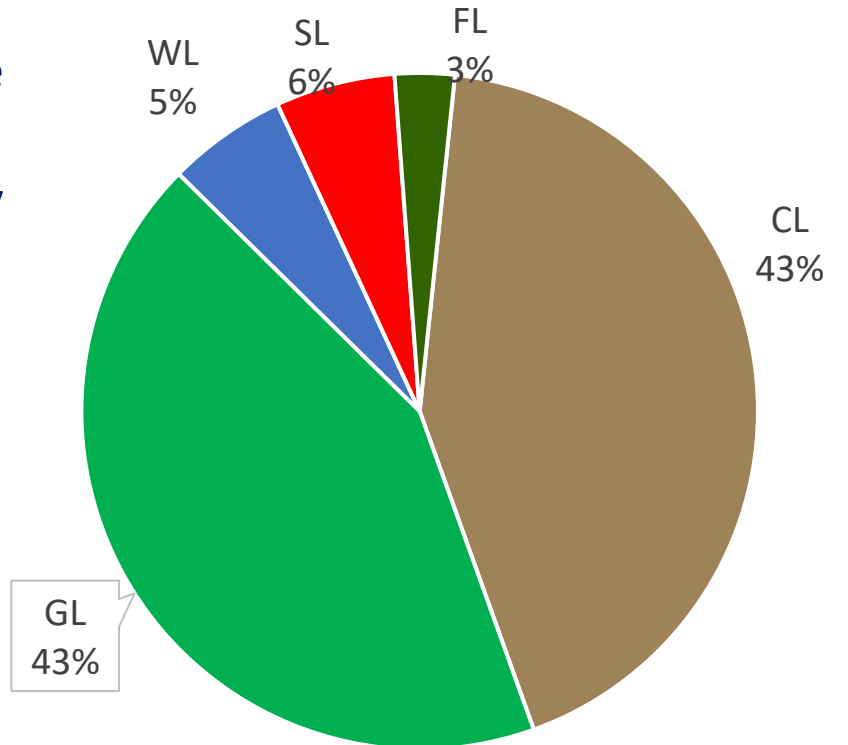
*each time mentioned note as one

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NIR 2024: IACS spatial data contribution to GHG Inventories

Potentially available CAP data vs a practical usage (3MSs example)

Potentially available **CAP/IACS**

2004 | **2022** | **2024**

From **2004**: Land Parcel Identification System (**LPIS**)

From **2018**: Geo-Spatial Aid Application (**GSA/GSAA**)

From **2023**: (**AMS**)

LPIS: **first reported use**

GHG Inventory

(Y-2) NIR 2024

MS1	2006	**2009**, 2012, 2015, 2018,..	Every 3 years
MS2	2010	**2011**-2022	Every 1 year
MS3	2015	**2016**-2022	Every 1 year

.... to be further investigated

CAP data from a climate policy perspective

- LPIS – agricultural land use
- GSA – annual land cover (crop/crop groups)
- CbM/AMS – annual land cover + agricultural practices (LU) – unknown yet!

- Trusted, timely delivered, annual, validated data, frequently updated, best in the land sector?

- Existing, Available, Accessible? Will continue? Easy to use?

- Very specific – difficult to understand for non-CAP community
- Various concepts: LC/LU, eligibility, payments,…
- LPIS/GSA/FOI – different geometries, and stability over time and content

Reference parcel (LPIS)
Identification and quantification of agricultural area eligible for direct payments

Landscape Features (LPIS)
To be potentially included in LPIS

Ecological focus area (applications)
Land fallow, terraces, LF, buffer strips, agroforestry, forest edges, rotation, coppice without min. fertilizers/plant protection, afforested areas, catch crops, nitrogen fixing crops
(Only the stable ones are included in LPIS)

Agricultural parcel (applications)
single crop
single crop group (crops with equal payment eligibility)

Non-Agricultural area (LPIS)
eligible for payments

Agricultural area (LPIS)
agroforestry
permanent grassland
arable land
permanent crop

Note: Elements of the LPIS datasets are sown in red, while that of GSA in green.

Source: Martirano, G. and Toth, K., Technical Guidelines on IACS Spatial Data Sharing - Part 2 – Interoperability, Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/646422, JRC132427.

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Final remarks

- **National Inventory Reports are a good source of information** but differ with the level of details between the MSs (more detailed analyses = talk to Inventory teams ☺)

- **Several MSs use IACS data** for the GHG inventory to improve accuracy estimates of GHG emissions/removals in the LULUCF sector

- **IACS data are considered a backbone structure** providing validated information about the agricultural sector

- Lack of online/public data availability **should not be a constraint** or a blocking factor **for reusing data within institutions of a MS** for the GHG inventory.

- From the **LULUCF perspective there is still work to be done** in the context of spatial data harmonisation, semantics, and interoperability to enhance the inventory and reduce the uncertainty

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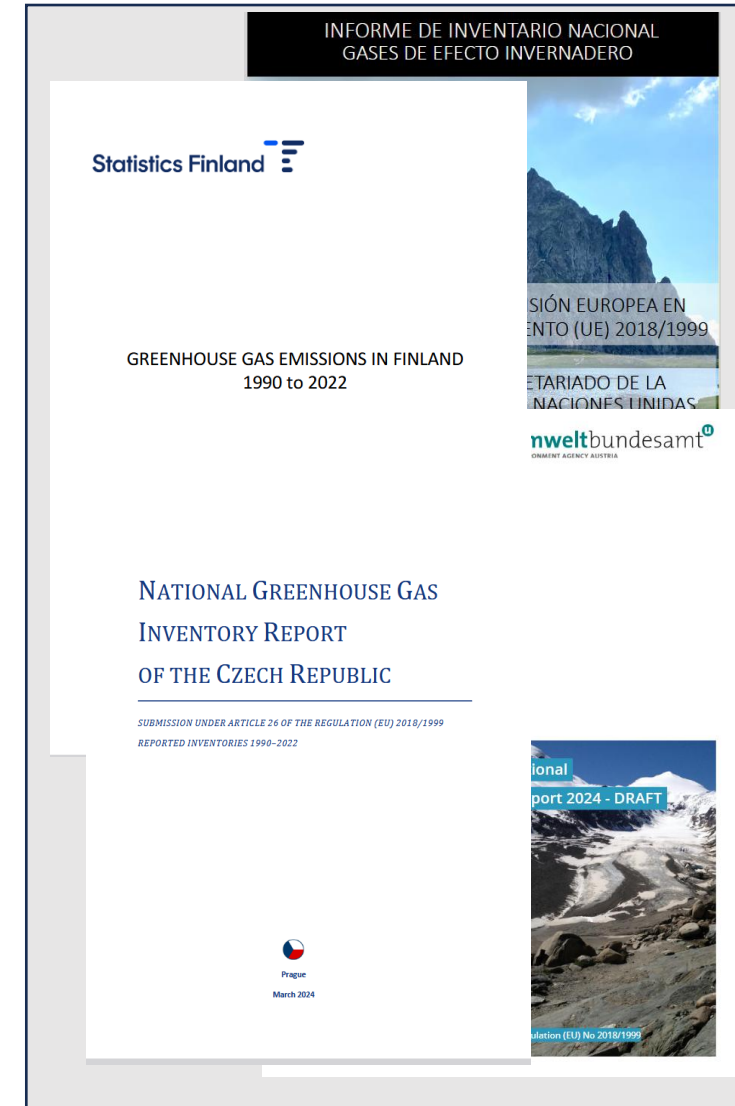
Future work

- Collect (update) information about **monitoring methods** used by the MSs in LULUCF inventories (geographic explicit/**focus on IACS**)

- Analises and **identification** of methodological **best practices**, data semantics, and a common solution

- Provide further information about **IACS data potential** for the LULUCF application

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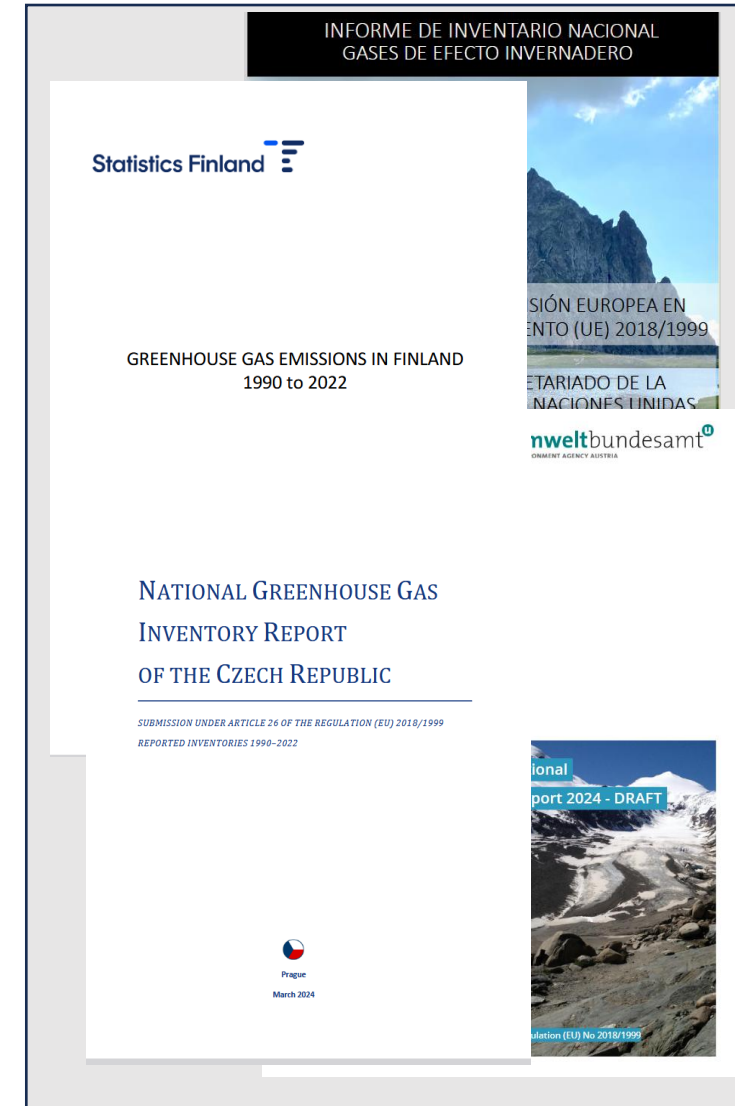
Thank you for your attention

- Big thanks to the ETC/CM team for support in extraction of information from the NIRs

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