

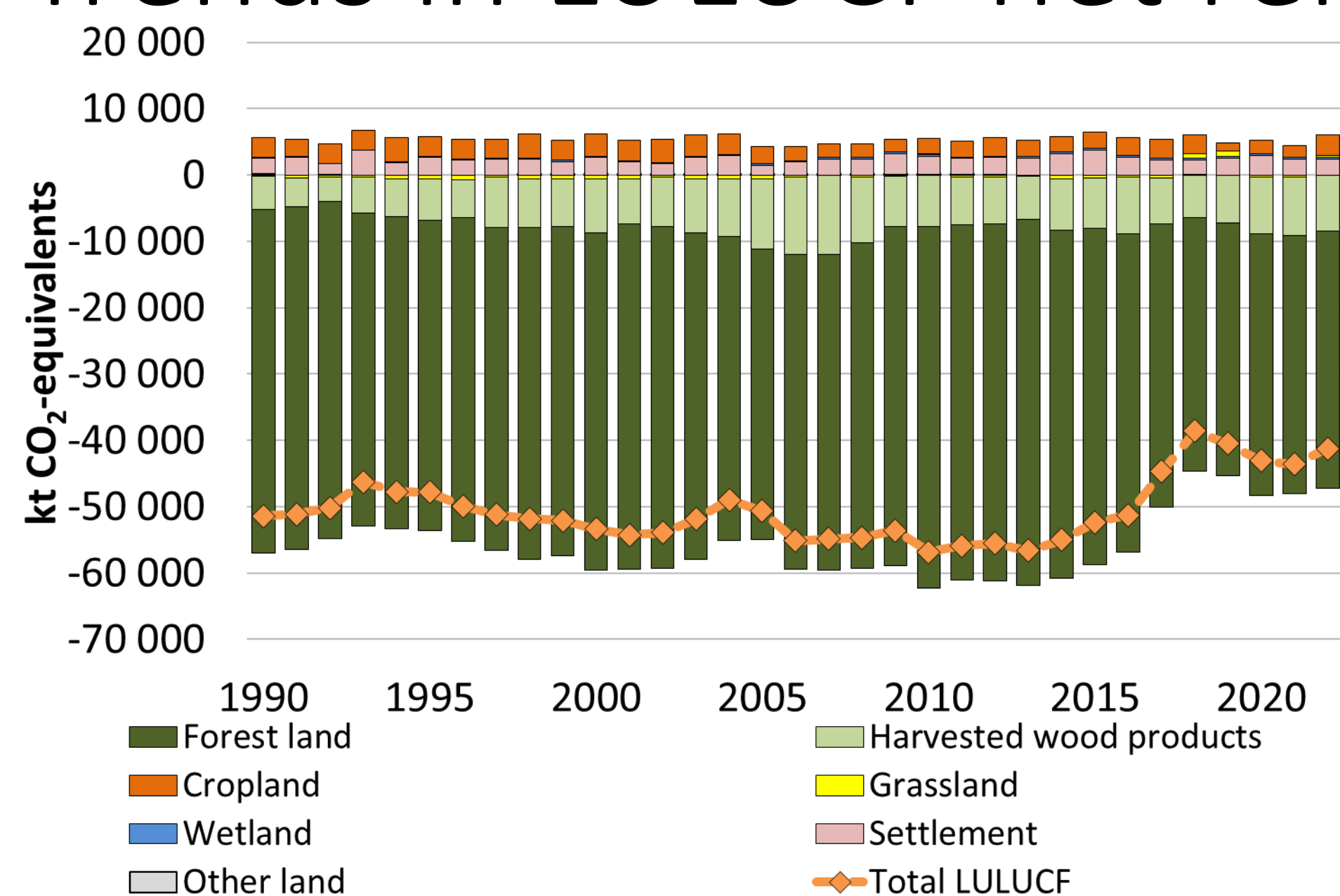
Key methods of the LULUCF-inventory of Sweden

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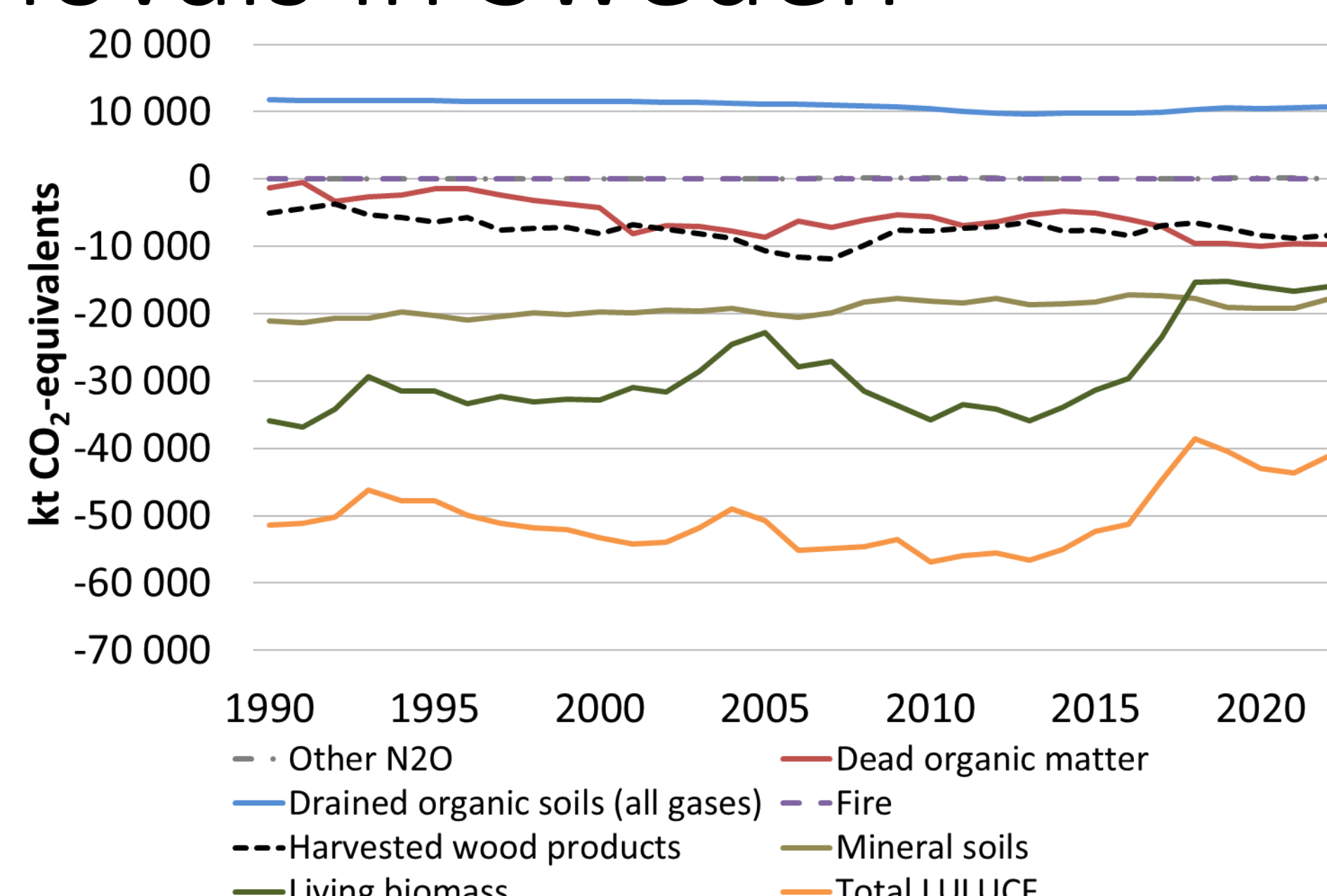
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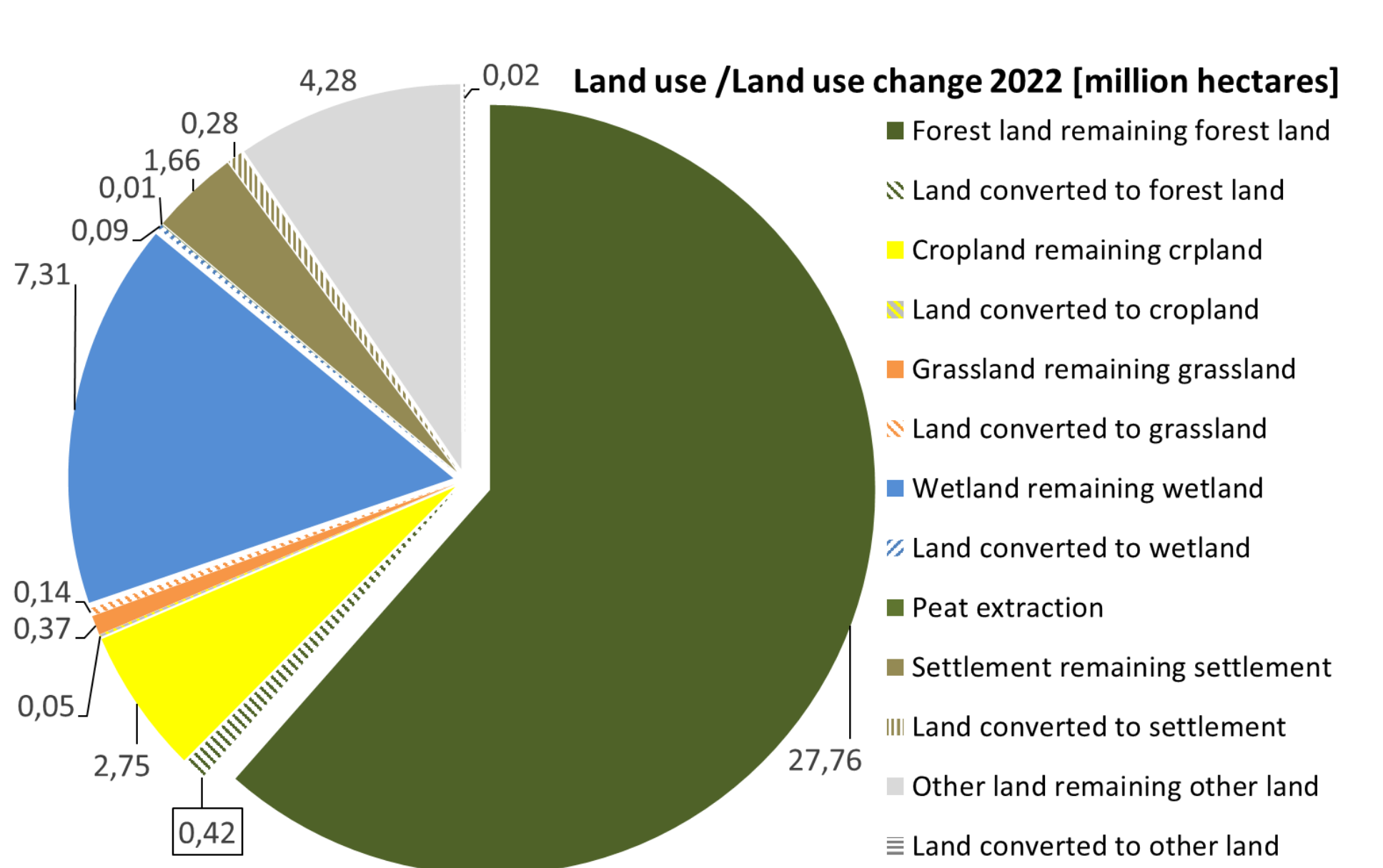
Trends in LULUCF net removals in Sweden



Emissions (+) and removals (-) from land use categories and HWP in the LULUCF-sector



Emissions (+) and removals (-) from carbon pools and other sources in the LULUCF-sector. Observe the decline in net removals from 2015.

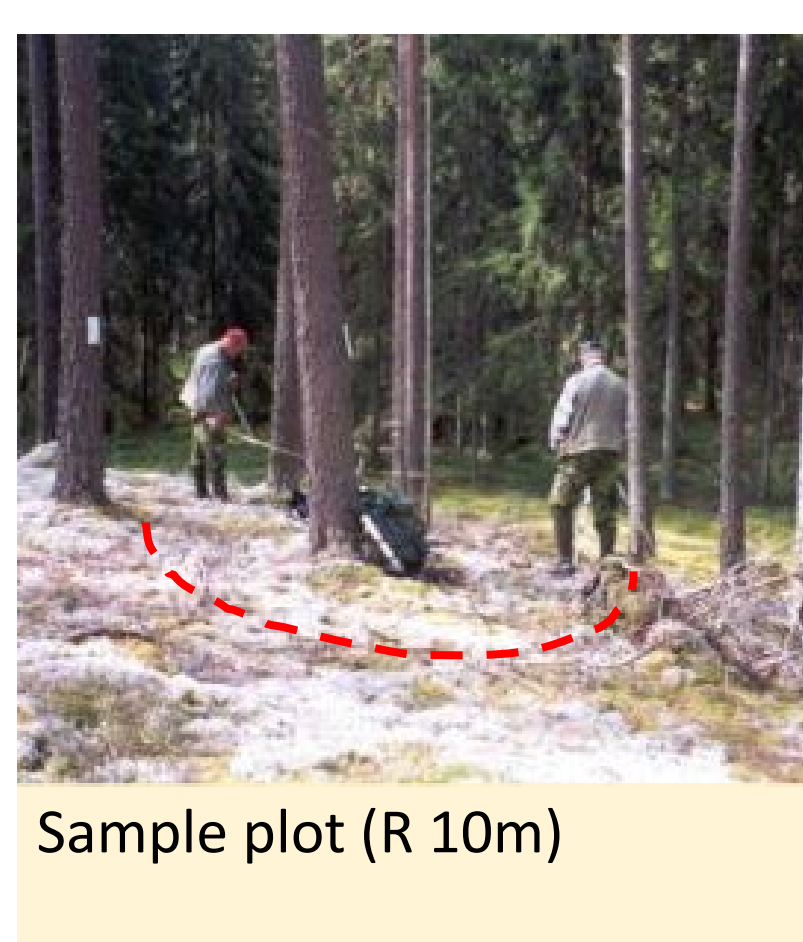


Land use in 2022. Forest land corresponds to 62 % of the total area. Land use change (20-year transition period) corresponds to 2 %.

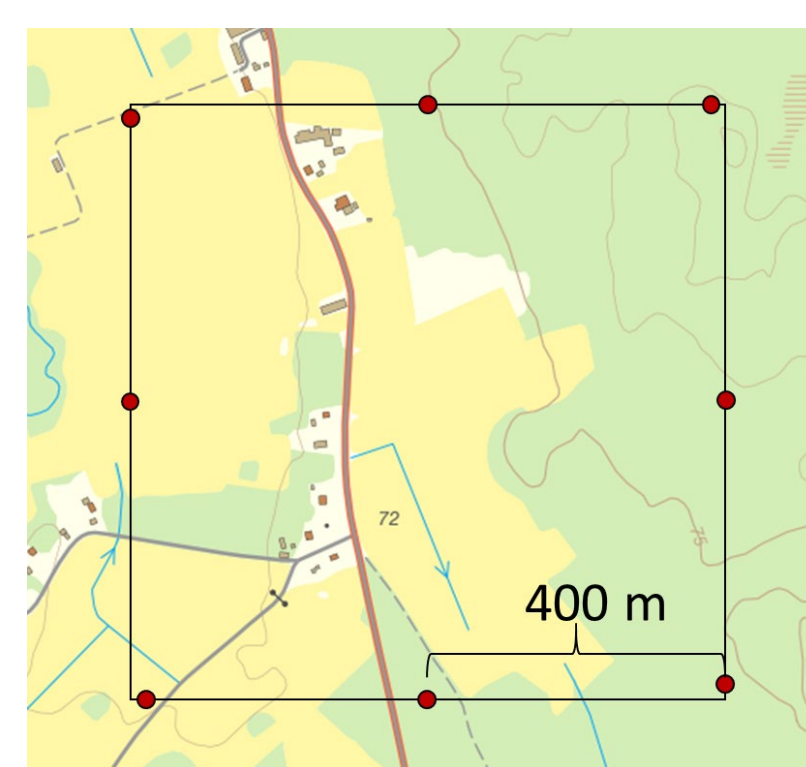
Methods used for LULUCF-reporting



The sampling cluster of the Swedish NFI

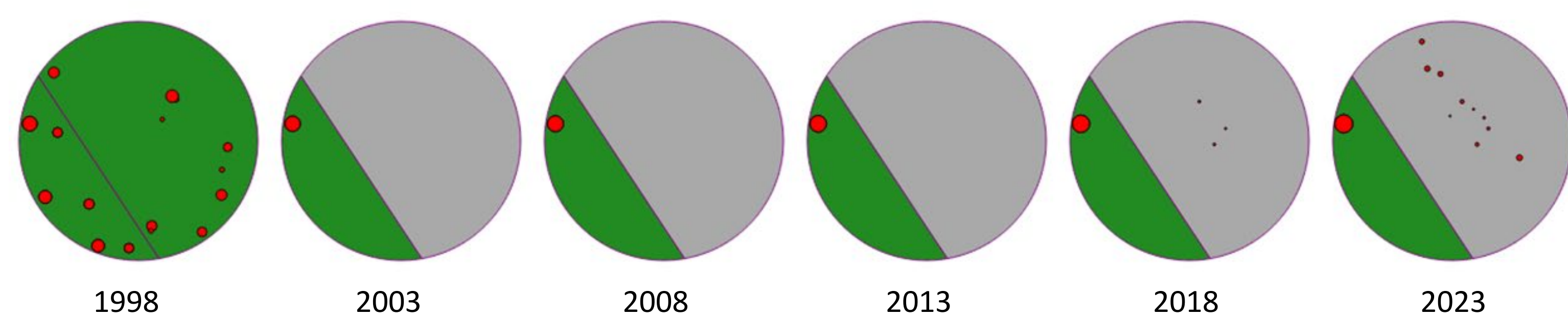


Sample plot (R 10m)

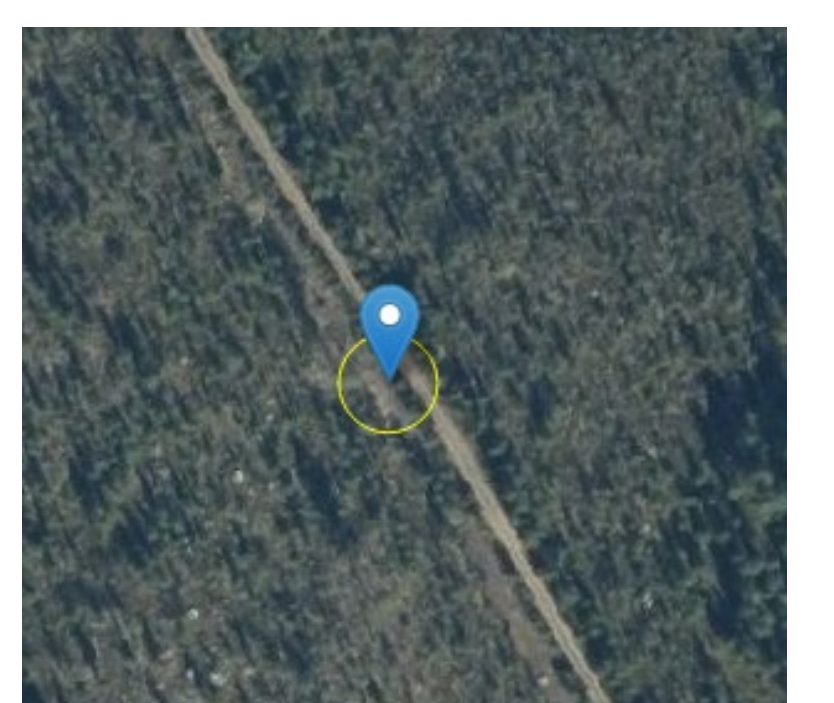


Tract with 8 permanent sampling plots (R 10m)

Permanent plots established between 1983 and 1987 is used to estimate areas and the stock of most carbon pools. Changes in carbon pools is based on changes in stock. Approximately 6 000 plots is inventoried annually in a five-year cycle (total of 30 000 plots). Soil variables are measured on forest land and natural pastures in a ten-year cycle on a subset of the plots (ca 3 000 humic layer, ca 1 500 mineral soils). All relevant land use categories are included which allows for estimating gross and net changes in area for the 36 land use categories reported in LULUCF. Thus, the NFI is used to identify managed and unmanaged land and to track changes in land use.



A single sample plot represents a certain area, and all sample plots represent all of Sweden's land and freshwater area. This specific sample plot was established in 1983, the whole plot was forest land. Part of the sample plot was deforested between 1998 and 2003. Between 2013 and 2018, new trees starts to establish on the deforested part. Trees are measured on all land use categories.



Sweden estimate emissions and removals for all carbon pools (living biomass, dead wood (including stumps), litter, soil organic carbon and harvested wood products on managed land (forest land, cropland, grassland and settlement).

Wetland and other land are considered unmanaged although peat extraction are reported under wetland in the CRF-tables. The possibility to track changes in land use using the NFI makes it possible to report carbon stock changes separately for each land use category. Carbon stock changes are estimated using different methods. Important carbon pools are in general estimated using measurements or models while some are still estimated using emission factors. Although most of the carbon stock changes are estimated using advanced Tier 3 methods there are still challenges related to how data from the inventories are utilized for annual reporting.

	Areas (org. land)	Living biomass	Dead wood / Coarse litter	Litter / Humic layer	Soil organic carbon (mineral soil)	Drained org. soil CO ₂ , N ₂ O, CH ₄	Other
managed land	Forest land	NFI (SFSI+ Geological survey)	NFI Carbon stock change	NFI Carbon stock change	SFSI CSC Area (NFI), EF	SFSI CSC Area (NFI), EF	Drained area, EF (nutrient status, climate) Fertilisation Mineralization Indirect N ₂ O Biomass burning
	Cropland	NFI (SFSI+ Geological survey)	NFI Carbon stock change	NFI Carbon stock change	- ICBM-model (yield, climate) Area (NFI), EF	Drained area, EF	Mineralization Indirect N ₂ O
	Grassland	NFI (Geological survey)	NFI Carbon stock change	NFI Carbon stock change	SFSI CSC Area (NFI) and EF	SFSI CSC Area (NFI) and EF	Drained area, EF (nutrient status, climate) Mineralization Indirect N ₂ O Biomass burning
unmanaged land	Settlement	NFI (SFSI+ Geological survey)	NFI Carbon stock change	NFI Carbon stock change	Area (NFI) and EF	Area (NFI) and EF	Drained area, EF Mineralization Indirect N ₂ O
	Wetland	NFI (Environmental reports)	NFI Carbon stock change	NFI Carbon stock change	Area (NFI) and EF	Area (NFI) and EF	Area and EF (peat extraction) Hort. peat (production) Mineralization Indirect N ₂ O
	Other land	NFI	NFI Carbon stock change	NFI Carbon stock change	Area (NFI) and EF	Area (NFI) and EF	Areal dikad mark och EF Mineralization Indirect N ₂ O
	Harvested wood products	-	-	-	-	-	IPCC:s model (PA), Production of semi-finished products

NFI: National forest inventory SFSI: Swedish forest soil inventory EF: Emission factor
Divided celles indicate method for permanent land use and land use change respectively.