



NFI data available and used in UNFCCC and KP reporting in Slovakia – main findings and challenges

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Background:

National Forest Centre – state semi-budgetary organization,
based by the Ministry of Agriculture and Rural Development

Consists of 4 institutes:

- Forest Research Institute
- Institute for Forest Resources and Information
- Forest Management Planning Institute
- Institute for Forest Consulting and Education

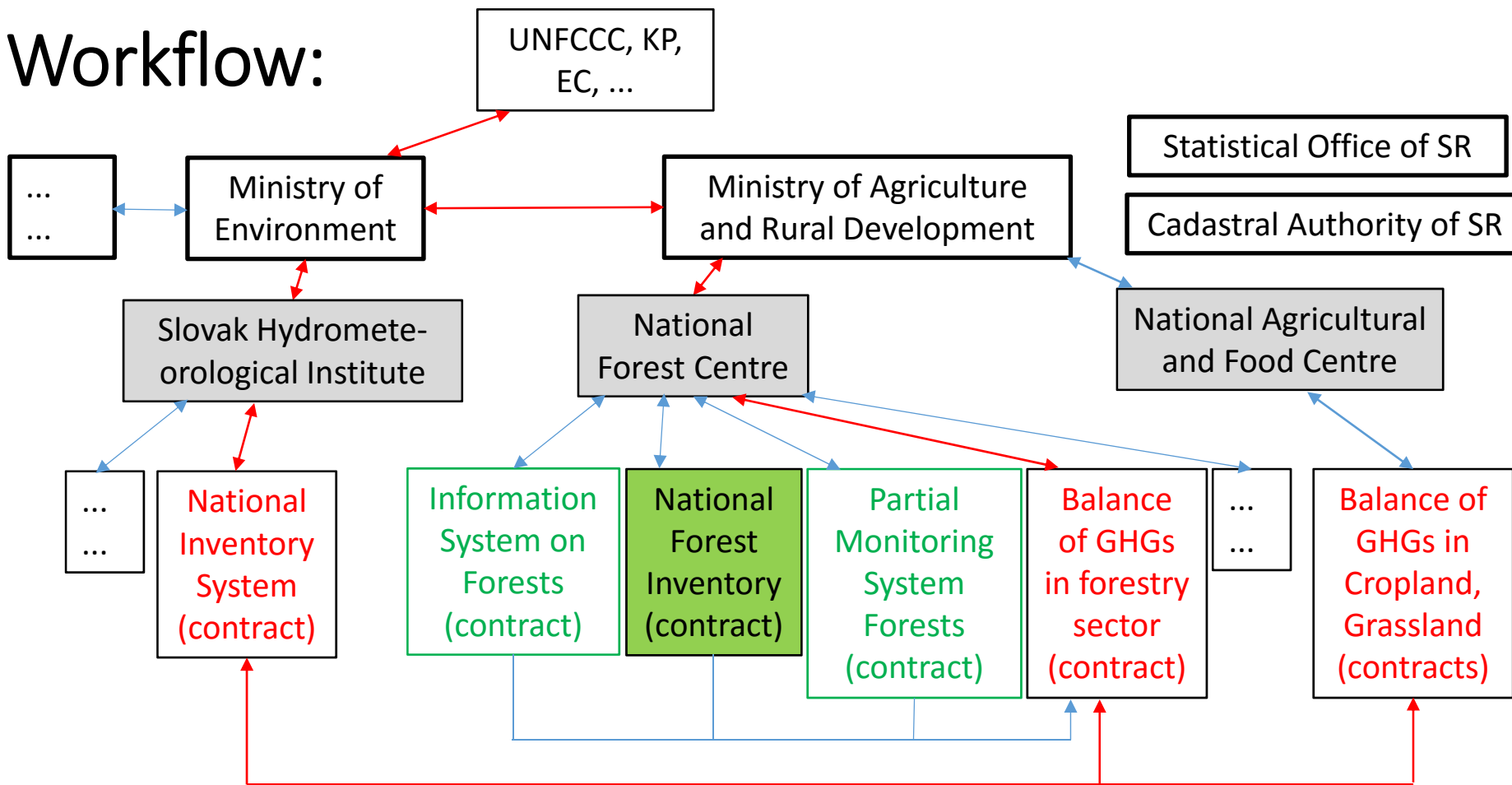
Background:

Reporting under UNFCCC, KP and EU GHG related legislation -
coordinated by the Ministry of Environment of SR in cooperation
with other sectors

National Forest Centre (NFC) has several contracts with
the Ministry of Agriculture and Rural Development of SR, including:

- Administration of information system on forests and forestry,
- National Forest Inventory (NFI) (2005-2006, 2015-2016),
- Balance of GHGs in forestry sector,
- National and/or international reporting on forests,
- Administration of Forest Management Plans (FMP) updating

Workflow:



Workflow:

Reporting under UNFCCC, KP and EU GHG related legislation -

requires cooperation of more sectors, organizations and authorities.

The **complementary activities** contribute to the compilation of required calculations and reporting.

In the optimal situation GHG calculation and reporting needs should be satisfied by **already existing data collection schemes and information systems.**

Data availability:

The complete dataset on forestry sector

is available at the National Forest Centre and includes:

- data on forest stands in all individual forest compartments managed according forest management plans (forest land use),
- data from forest managers reporting on applied forestry measures (for forest land use),
- data from National Forest Inventory (forest land cover),
- data from Partial monitoring system Forests (ICP Forests, FutMon),
- data from other forestry related research projects

Data availability – still challenging data:

In spite of applied detailed and laborious data collection on forests, some data for GHG reporting according to GPGs are challenging:

- data on changes of carbon in deadwood and soil carbon in managed forests,
- data on in-situ biomass burning except of forest fires,
- reliable data on the structure of Harvest wood products

Principles:

Reporting under UNFCCC, KP and EU GHG legislation in relation to the forestry combines:

- land use based aspects (LULUCF),
- wood use based aspects (HWP) and also ,
- management practices (FM, biomass burning, ND).

Land use based aspects:

Main source of land use data is **Cadastral information system**, providing information on the area and changes of land use types (Forest land, Cropland, Grassland, Wetland, Settlements, Other land) continuously.

NFI provides complementary information on the area and structure of forests at non-forest land.

Management practices aspects:

Main source of land use data are:

Forest Management Plans - forest descriptive data combined with growth models,

Forest Management Reporting - providing information on the applied forestry measures.

NFI provides an alternative information on the effect of applied forestry measures.

Management practices aspects:

- **Stand-wise inventory (FMPs)**
 - systematic data collection over more than 50 years, yearly 1/10 of area,
 - a tool for sustainable forest management,
 - complemented by data from forest management reporting,
 - national statistics are compiled from data on individual forest stands,
 - estimated overall precision \pm 5-25%
- **Sample-based inventory (NFI)**
 - recent alternative for forestry data, NFIs in 2005-2006, 2015-2016,
 - a new data source on forests and their changes in changing conditions,
 - repetitive measurement at fixed plots measures effect of management,
 - extended set of measured variables (deadwood, soil samples, etc.),
 - estimated precision can be calculated

NFI data – implementation in GHG inventory:

- ❑ data on deadwood volume provided for the first time, based on data from NFI 2005-2006

The dead wood carbon pool is a component of dead organic matter (DOM).

The dead wood contains standing dead trees, stumps, coarse lying dead wood and small-sized lying dead wood in various decomposition stages, not included in litter or soil carbon pools.

All components were determined in m³ - standing dead trees, stumps, lying dead wood with the diameter over 7 cm, small-sized lying dead wood with diameter 1-7cm.

The mean carbon stock in forest dead wood is **4.878 MgC ha⁻¹**, as derived from datasets of NFI.

NFI data – implementation in GHG inventory:

- data on litter volume provided for the first time,

The **litter** carbon pool is a component of dead organic matter (DOM).

The litter carbon pool includes all non-living biomass with a size less than the minimum diameter defined for dead wood (1 cm). The litter includes the surface organic layer. Live fine roots above the mineral or organic soil are included.

The mean carbon stock in forest litter is **8.3 MgC ha⁻¹**, as derived from datasets of the Forest Monitoring System and NFI.

NFI data – implementation in GHG inventory:

- data on soil carbon stocks were proven,

Information on soil organic carbon stocks in forest soils comes from detailed soil survey on permanent monitoring plots (16x16 km grid and 9 plots of intensive monitoring), extensive soil survey on almost 1500 NFI plots and a sets of research plots.

The calculated soil carbon stocks range from 13.7 to 486.8 t/ha (for the depth 0-20 cm in both the FMS and the NFI datasets).

The organic carbon stock in mineral soils in forests estimated as a weighted average is **89.02 tC/ha** (for the depth 0-30 cm).

NFI data - implementation in GHG inventory:

- **age-dependent biomass conversion and expansion factors (BCEF)** for major tree species (spruce, pine, oak, beech) were derived using NFI data and functions for tree volume and biomass calculation.

The BCEF is generally defined as: $BCEF_i = W_i / V$, where i indicates a tree biomass component, W_i (Mg) is the dry biomass of component and V (m³) is the tree merchantable volume.

22 thousands trees were selected from NFI database, representing the four key tree species (beech, oak, pine and spruce) with dominant representation at the inventory plot.

(<http://publications.jrc.ec.europa.eu/repository/handle/111111111/14708>)

NFI data – limitations and next steps:

Only one NFI already completed (2005-2006),

- data on **carbon stock changes** not yet available.
- First results of second NFI (2015-2016) confirm growing of wood stocks in Slovak forests, indicating higher increment than felling over the period of last 10 years.
- Completion of NFI and further analysis is expected soon.

**Wishing sustainable management, balanced carbon cycle
and reasonable wood use in all forests,**

thank you for your attention!