



Art. 3.3 reporting in Austria

COST 639, WG IV

HFRI Budapest,
25-26 May 2009

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Content

- General information related to Art. 3.3
- ARD: area information
- ARD: soil information
- ARD: changes in C-Pools
- Outlook

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Information related to Art. 3.3

Forest definition

Parameter	Range	Selected value (NFI)
Minimum land area	0.05 - 1 ha	0.05 ha
Minimum crown cover	10 - 30 %	30%
Minimum height	2 - 5 m	2 m

This national definition has been selected in correspondence to the forest definition used for the Austrian Forest Inventory, to ensure consistent data and a comparable time series.

Austria has decided to account for each activity under Article 3.3. for the entire commitment period

Austria did not elect any Art. 3.4 activity

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ARD area information

- Austrian Forest Inventory (BFW):

NFI periods: 1961-70, 1971-80, 1981-85, 1986-90, 1992-96; 2000-02 and 2007-09.

NFI: 4 x 4 km grid
 4 x 300 m² permanently marked
 sample plots at each grid point

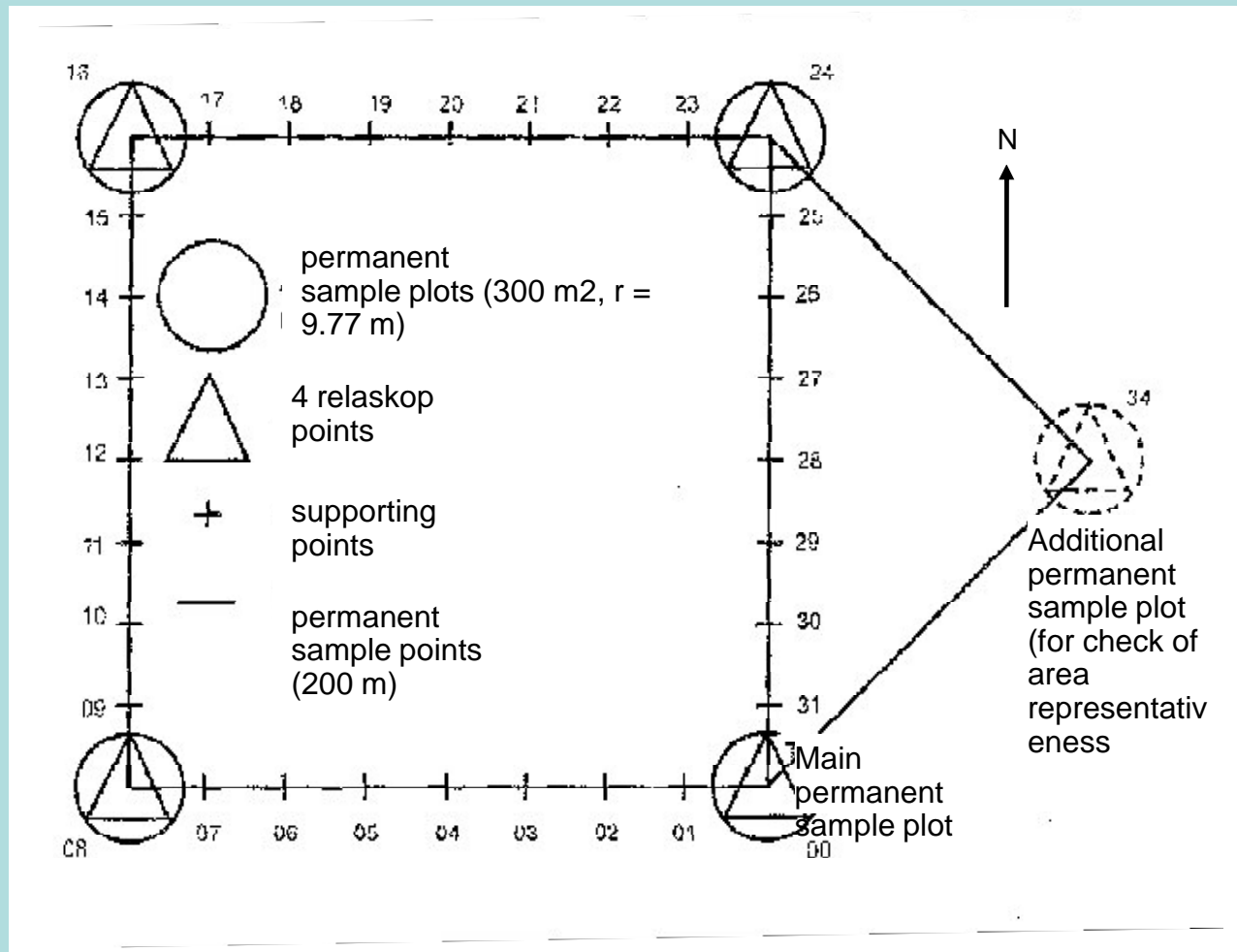
- data on forest area
- LUC from and to forests
- increment and harvest, stocks
- deadwood

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ARD area information (NFI grid point)



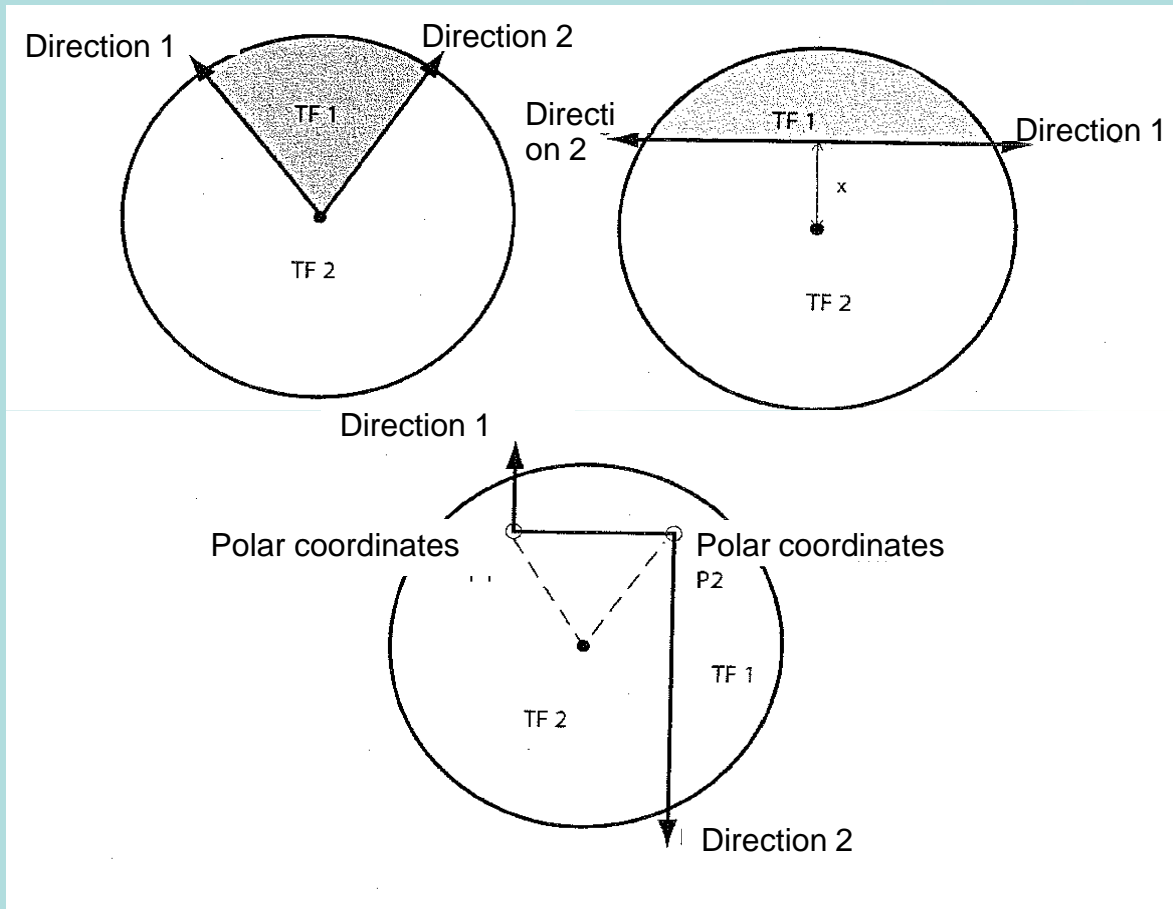
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ARD area information

border assessment between LUCs at NFI sample plots



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ARD area information

NFI land use classes

- forests with its sub-specifications
- cropland: annual cropland, fallow, orchards and vineyards, energy plantations and wind belts, Christmas tree cultures
- grassland: cutted pastures, grazing land and alpine pastures
- wetlands: inshore waters, reeds, bogs
- settlements: trade, industry and mining, traffic areas, landfills, touristic areas, houses and parking places, garden and parks
- other natural areas: shrublands, screes and gravel areas, rocks, landslide areas, other natural areas

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ARD area detection

- Statistical approach based on NFI data following Reporting Method 1 of the GPG-LULUCF (2003)
- ARD area under KP is consistent to LUC from and to forests reported under UNFCCC - > different time frame

Average, annual ARD-area (based on NFI data, BFW)

	1990-1994	1995-2001	2001-2008
AR-area	14,700 ha/a	9,700 ha/a	<i>NFI 07-09</i>
D-area	7,000 ha/a	4,500 ha/a	<i>NFI 07-09</i>

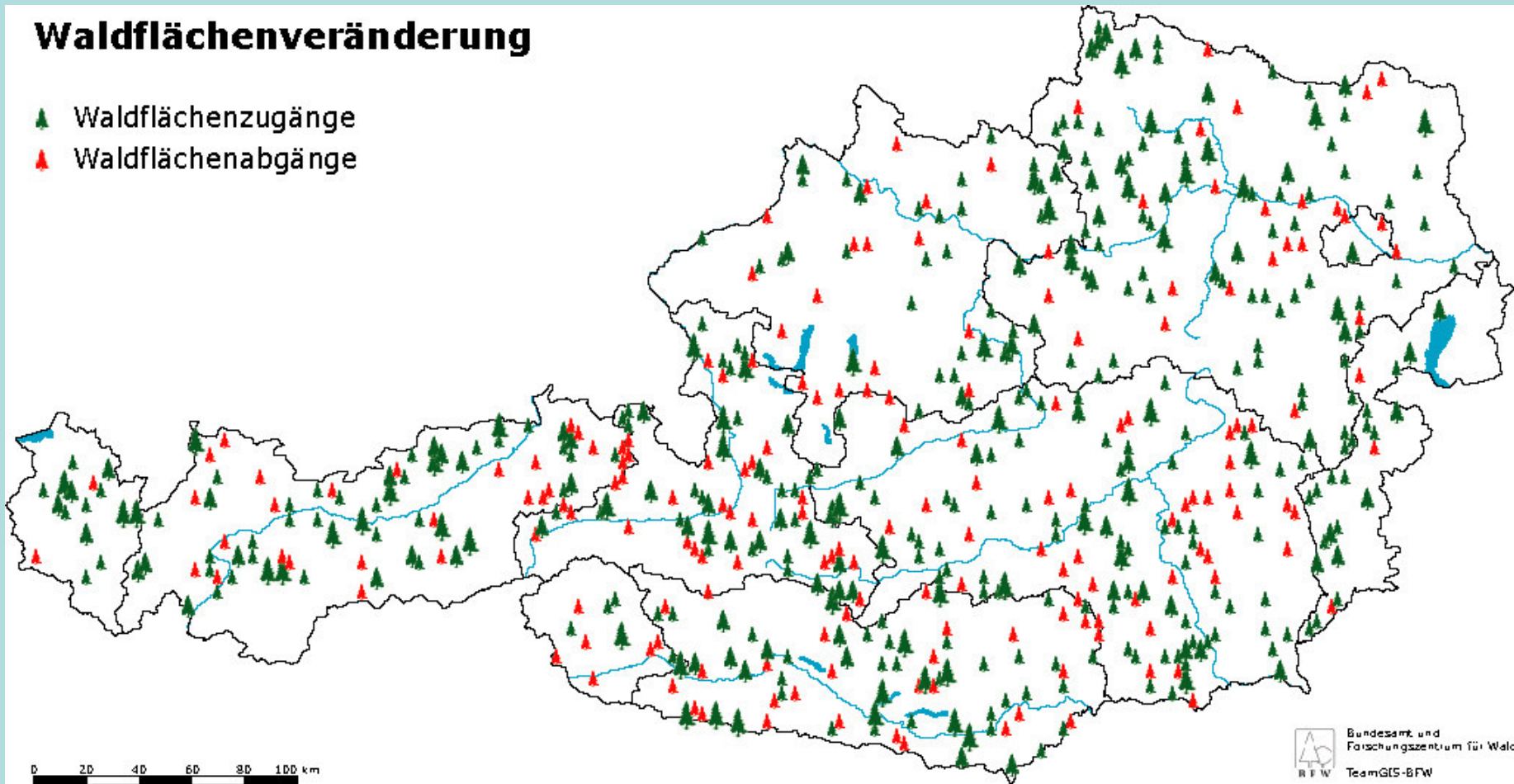




Forest area changes (BFW: NFI)

Waldflächenveränderung

- ▲ Waldflächenzugänge
- ▲ Waldflächenabgänge



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ARD area detection

Land use changes to forest land (% of total conversion to forest land)

Cropland (5 A.2.1)	16.0
Grassland (5 A.2.2)	59.0
Wetlands (5 A.2.3)	5.0
Settlements (5 A.2.4)	14.0
Others (5 A.2.5)	6.0
Total	100.0

Land use changes from forest land (% of total conversion of forest land)

Cropland (5 B.2.1)	5.0
Grassland (5 C.2.2)	53.0
Wetlands (5 D.2.3)	3.0
Settlements (5 E.2.4)	15.0
Others (5 F.2.5)	24.0
Total	100.0

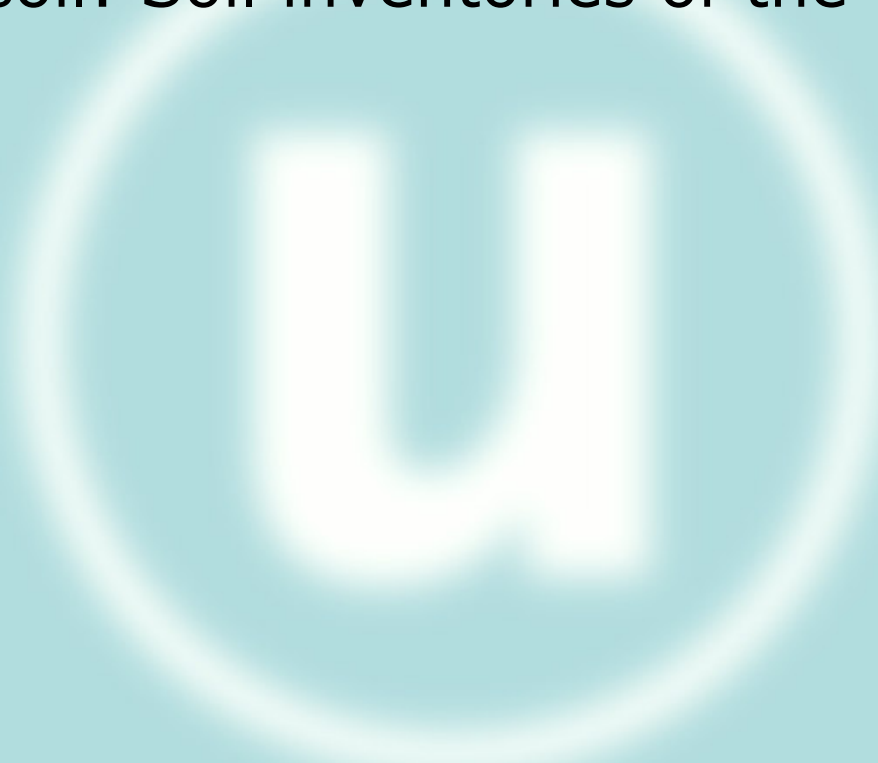
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ARD soil information

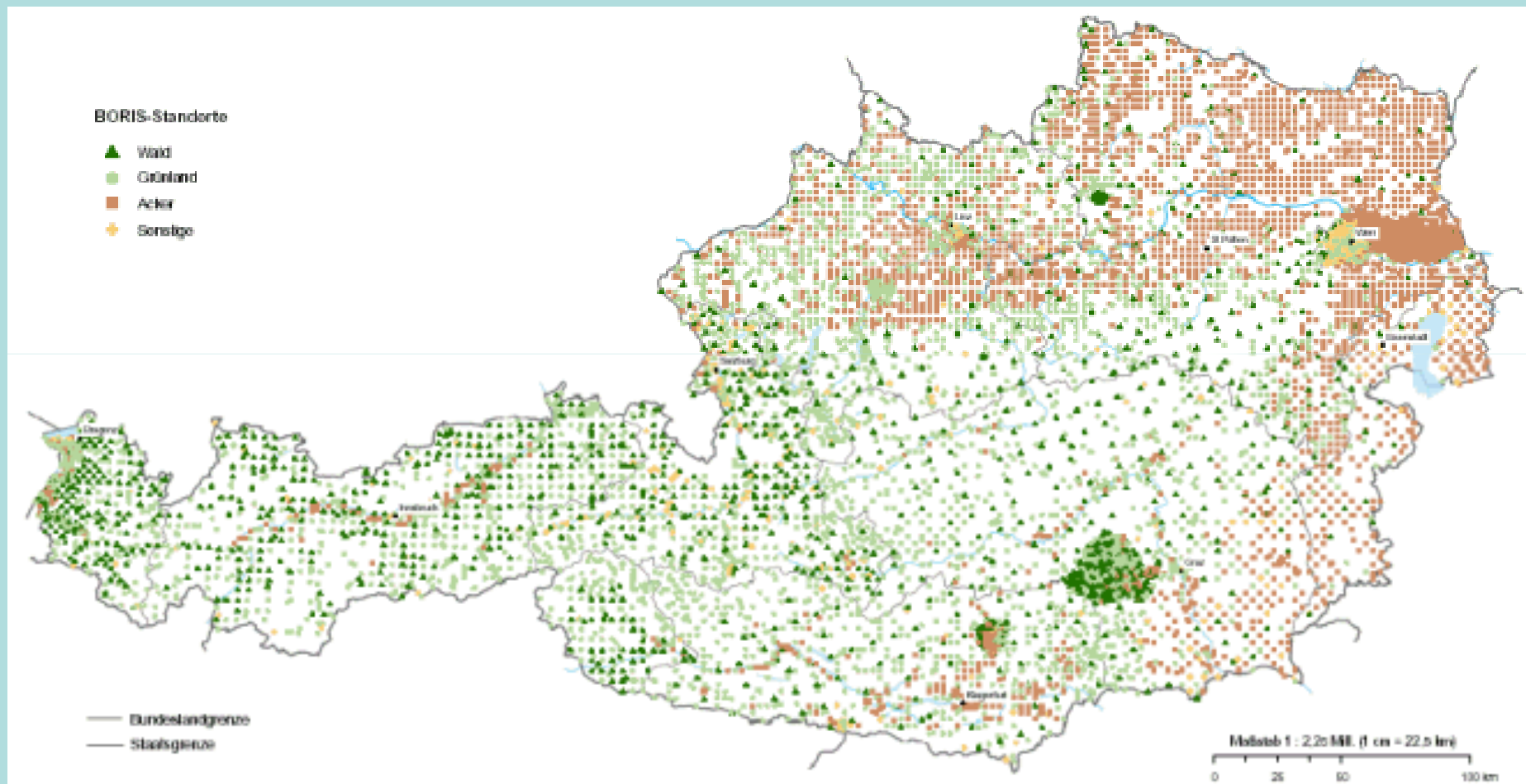
- Forest soil: Forest soil inventory (BFW, 1989)
- Cropland, grassland soil: Soil inventories of the Federal provinces



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Soil Data Sources (soil inventories)



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ARD soil information

- Forest soil: Forest soil inventory (BFW, 1989)
- Cropland, grassland soil: Soil inventories at the Federal provinces
- literature data
- expert judgements

- The average soil C stocks were derived from these soil inventories
- Linear increase or decrease across 20 years between average soil C stocks of different land uses

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Applied C-stocks in Austrian soils

IPCC-GPG Land use categories	Land use	C stock [t C/ha] 0-50 cm	Reference
Forest land		121*	Weiss et al. 2000
Cropland	Annual cropland	60	Gerzabek et al. 2003; Strebl et al. 2003
	vineyards	58	Gerzabek et al. 2003; Strebl et al. 2003
	orchards/garden	78	Gerzabek et al. 2003; Strebl et al. 2003
Grassland	grassland (intensive use)	81	Gerzabek et al. 2003; Strebl et al. 2003
	grassland (extensive use)	119	Gerzabek et al. 2003; Strebl et al. 2003
Wetlands	bogs	150	Expert judgement
	surface water	0	Expert judgement
Settlements	settlement and traffic area	50	Expert judgement
Other land	alpine shrub lands	119	Körner et al. 1993
	rocks and stone slopes	0	Expert judgement
	other land	30	Expert judgement

* Includes humus layer

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Annual C stock changes in soils

Emission factors for estimates at LUC areas

LUC to forests

- "cropland" to "forest land": $\Delta SOC_{20} = 3.0 \text{ t C ha}^{-1} \text{ a}^{-1}$
- "grassland" to "forest land" : $\Delta SOC_{20} = 1.0 \text{ t C ha}^{-1} \text{ a}^{-1}$
- "wetlands" to "forest land" : $\Delta SOC_{20} = 4.6 \text{ t C ha}^{-1} \text{ a}^{-1}$
- "settlements" to "forest land": $\Delta SOC_{20} = 3.9 \text{ t C ha}^{-1} \text{ a}^{-1}$
- "other land" to "forest land": $\Delta SOC_{20} = 4.6 \text{ t C ha}^{-1} \text{ a}^{-1}$

LUC from forests

- "forest land" to "cropland": $\Delta SOC_{20} = -2.9 \text{ t C ha}^{-1} \text{ a}^{-1}$
- "forest land" to "grassland": $\Delta SOC_{20} = -0.9 \text{ t C ha}^{-1} \text{ a}^{-1}$
- "forest land" to "wetlands": $\Delta SOC_{20} = -6.1 \text{ t C ha}^{-1} \text{ a}^{-1}$
- "forest land" to "settlements": $\Delta SOC_{20} = -4.5 \text{ t C ha}^{-1} \text{ a}^{-1}$
- "forest land" to "other land": $\Delta SOC_{20} = -4.0 \text{ t C ha}^{-1} \text{ a}^{-1}$

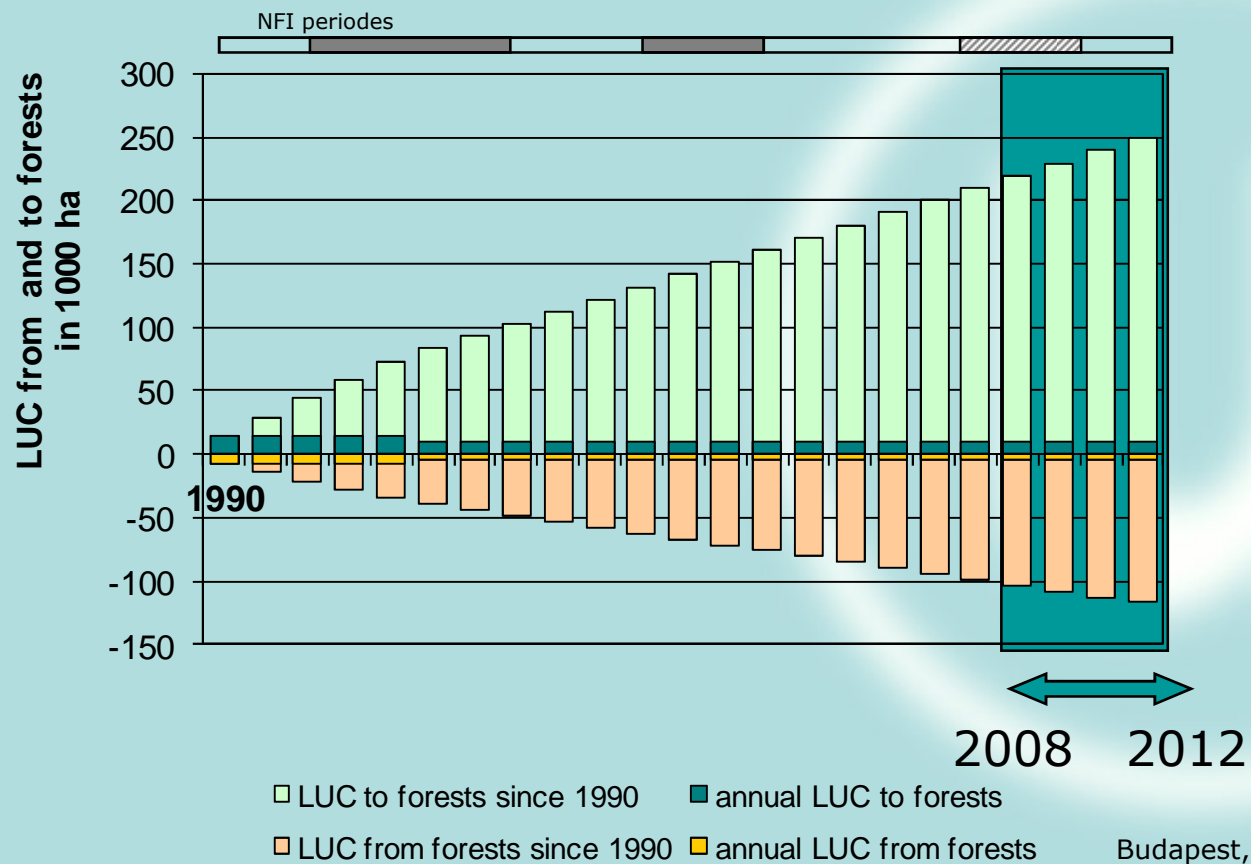
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Kyoto - Art. 3.3 areas

Time dimension



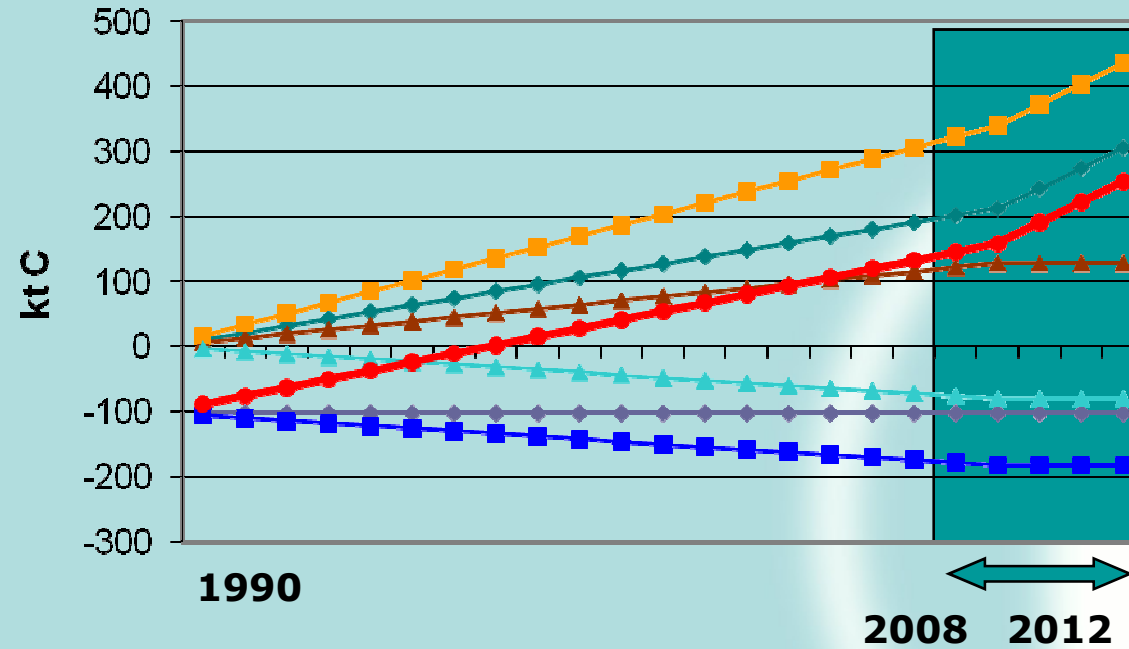
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Kyoto - Art. 3.3

First estimations of a C-balance



◆ biomass C-uptake	969 kt C (3,5 Mt CO₂)
▲ soil C increase	
■ total C-increase	193 kt C/a (0,7 Mt CO₂)
◆ biomass C-loss	
▲ soil C loss	
■ total C-loss	
● net C-increase (+) or C-loss (-)	

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Outlook

- Improvement of measurements in the NFI 2007-09:
e.g.:
More accurate and detailed assessment of LUC areas from and to forests and the related biomass changes
Assessment of trees with dbh <5cm
Assessment of shrubs, ground vegetation
- Modelling of the C stock changes in forest soils and soils of LUC from and to forests
- New uncertainty assessment (Monte Carlo)

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Thank you for your attention

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