Climate Change (EU) mitigatie kader

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Landbouw en landgebruik

- Voeding
- Bio(energie)
- Landgebruik (infra, wonen, water, natuur, boeren)

- Relevantie: verbind o.m. sectoren huishouden, wonen en transport!
- BSIK werk en EU policy studies

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The Netherlands in a nutshell

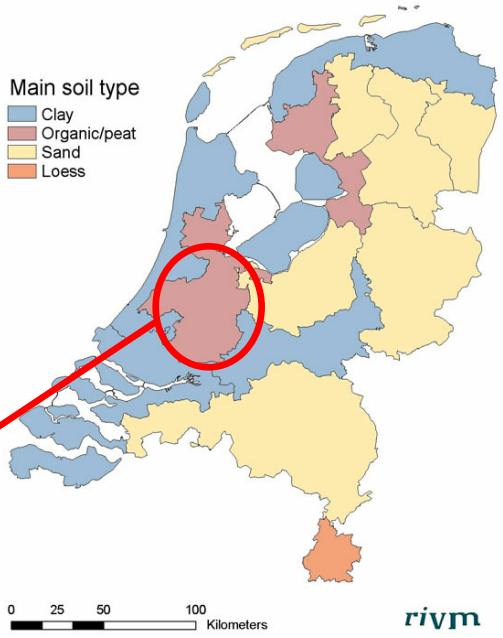
Surface	4,152,600 ha	of which 18% is water
	2,000,000 ha	agriculture
	390,000 ha	forest
Inhabitants	16,669,112	
Animal population	3,968,000	cattle
	1,489,000	dairy cattle
	12,200,000	pigs
	100,000,000	poultry
Milk quotum	11,000,000,000	kg milk

INFLUENCES ON TRENDS

- In 2009 net emissions from the NL LULUCF sector was 2,475 Gg $CO_{2\text{-}e}$ (sink in forest, source in agriculture)
- The LULUCF sector is responsible for 1.2% of the total greenhouse gas emissions.
- The LULUCF sector in the Netherlands is estimated to be a net source due to the contribution of carbon emitted from drained peat soils.

Typically Dutch soil types?

peat soil



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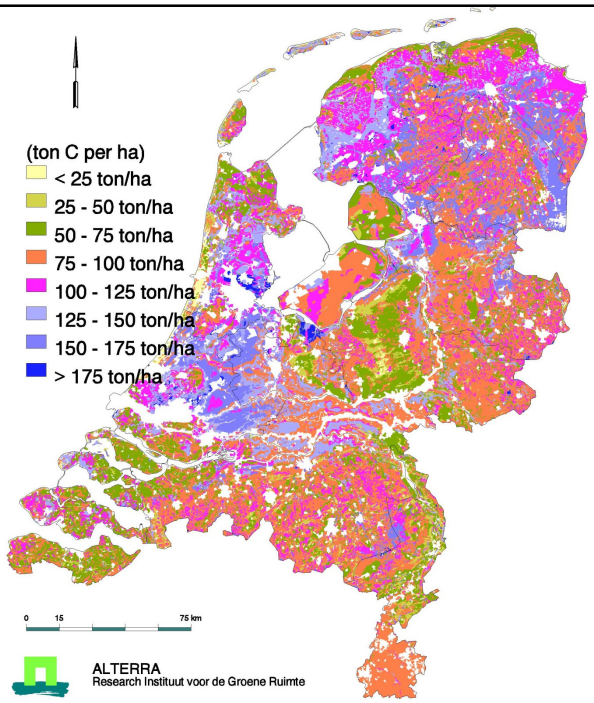

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Calculation of carbon stock/change - soil

Organic matter content in Dutch mineral soils

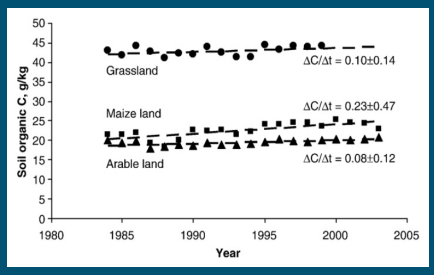

Figure 7-2. Changes in mean soil organic carbon contents of grassland (period 1984–2000), maize land (1984–2004) and arable land (1984–2004) in the Netherlands. The mean annual change in SOC is indicated as ΔC/Δt, in g/kg/year (Source: Reijneveld et al., 2009)

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Dutch mineral soils considered as 'not a source'

The soil organic carbon content of Dutch mineral soils used by agriculture is as an average not decreasing and increases slightly. The Netherlands do not have a national register for the three types of land use: grassland, arable land and land for fodder maize. The Netherlands also do not know the annual shifts between these land use types.

In reality these mineral soils show on an average a slightly increase in soil organic carbon content and for this reason the Netherlands consider the mineral soils used by agriculture as 'not a source'. In fact they act as very small sinks but their magnitude is not known.

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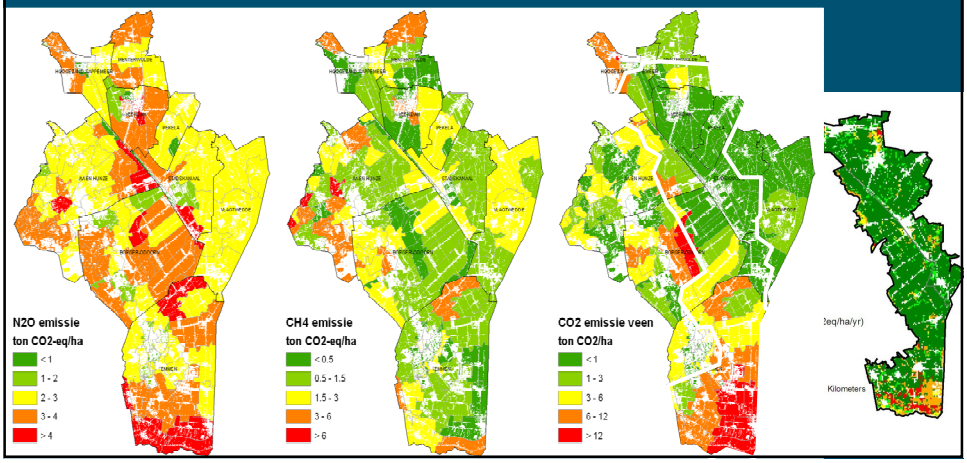
Example GHGs Veenkoloniën

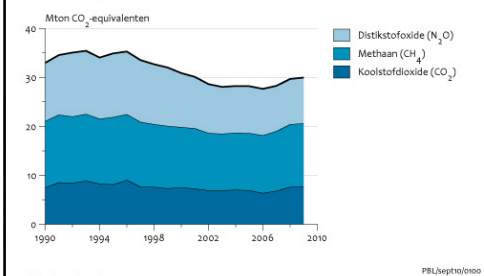
- Agriculture

	AV	GV	CO_2-equiv
Methane	75	152	kton/yr
Nitrous oxide	203	306	kton/yr
Carbondioxide	330	564	Kton/yr

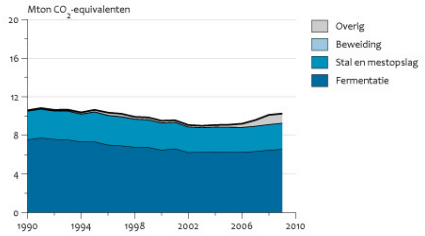


Emissies van broeikasgassen door de Nederlandse land- en tuinbouw, 1990-2009

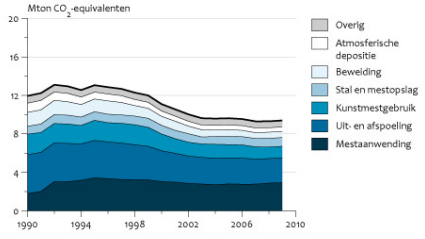
Emissie broeikasgassen land- en tuinbouw



Emissie methaan (CH_4) land- en tuinbouw



Emissie distikstofoxide (N_2O) land- en tuinbouw



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Emissions Agriculture EU27 – towards baselines

- Trend to lower emissions from Agriculture 1990 - 2008
- Downward trend mostly based on structural changes (less livestock) and management of nitrogen (less N use)
- As of 2006, emissions apparently stabilize

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Categories of changes and effects

Managerial changes (software)	Technological changes (hardware)	Structural changes (orgware)
– Crop management – Grazing management – Improved Wetland management	– Soil tillage practices – Biomass incineration – Grazing & housing systems – Manure processing – Biogas production	– Land use changes – Changes in farming system – Integration with processing industry and markets

- Combination of managerial, technological, and structural changes, depending also on the local situation and Management>Technology>Structural
- Software = 'low hanging fruits' at low cost > impact; is tech available?
- For hardware management: are skills available?
- Orgware most complicated, very costly and may take a long time and to deal with trends?

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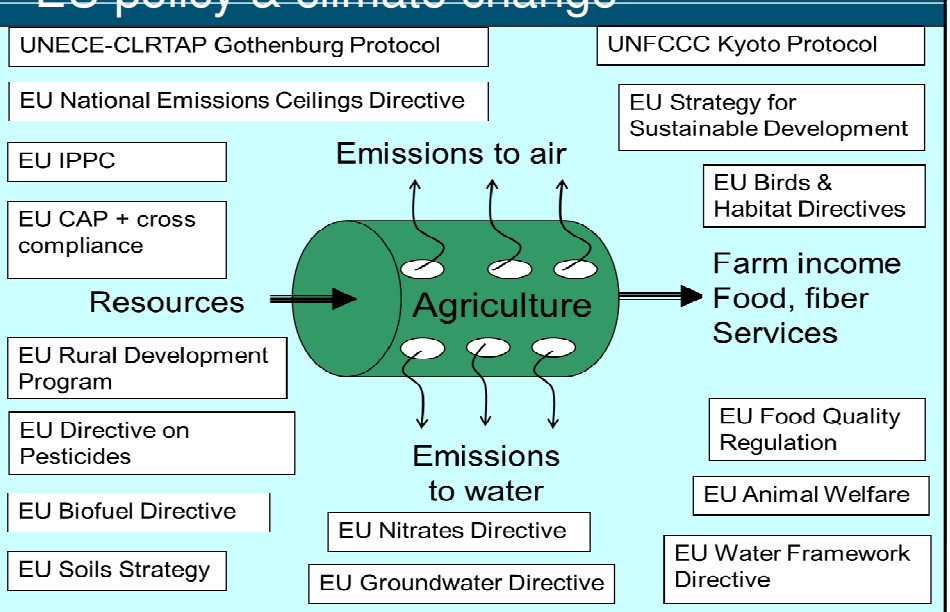
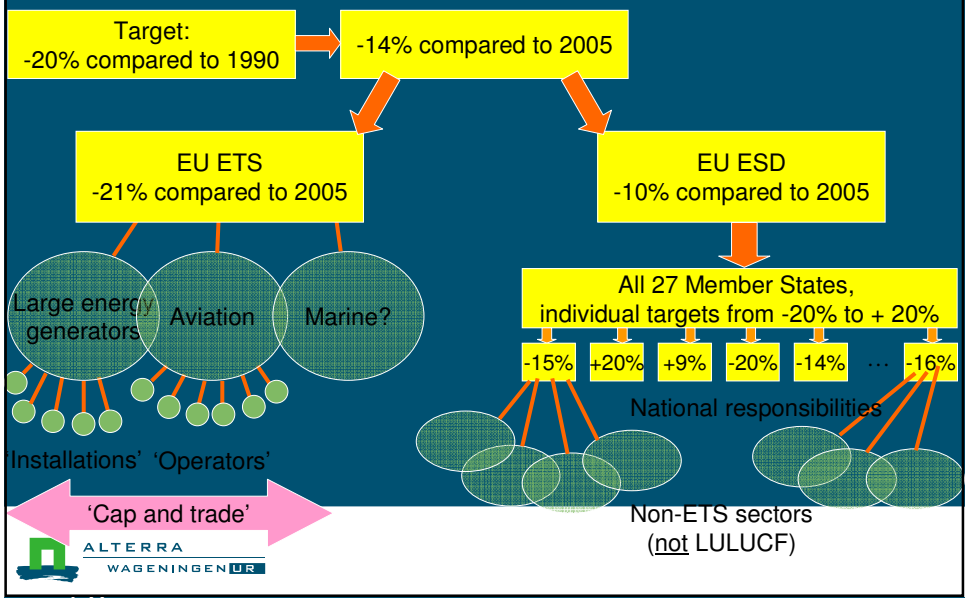
EU policy & climate change



Policy context

- The EU has committed unilaterally to reduce its overall greenhouse gas (GHG) emissions to 20% below 1990 levels by 2020, and to 30% below 1990 levels 'if conditions are right'.
- The current reduction commitment is mainly implemented through Directive 2009/29/EC and Decision 406/2009/EC, i.e. the EU Emissions Trading System (EU ETS) and the Effort Sharing Decision (ESD).
- Emissions and removals relating to Land Use, Land Use Change and Forestry (LULUCF) are not part of these commitments but provisions in the ESD (Articles 8 and 9) require the Commission to assess and, as appropriate, propose how they may be included.

The EU commitment to GHG emissions reduction



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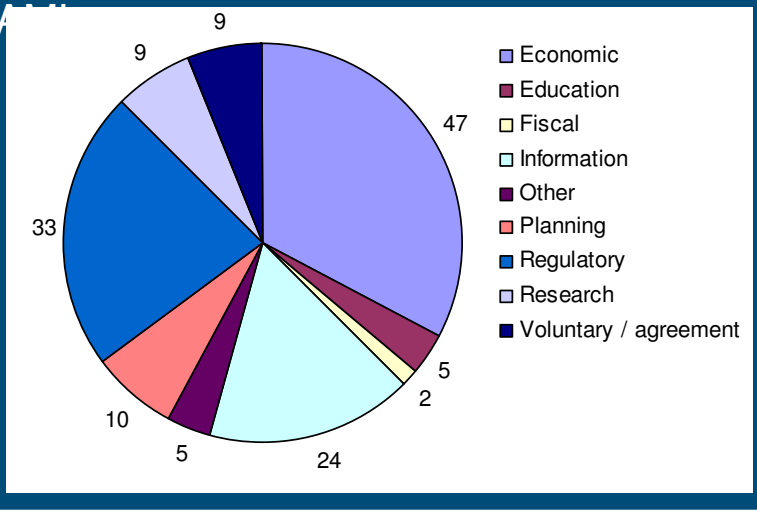
What are MS doing now? Classification of PA



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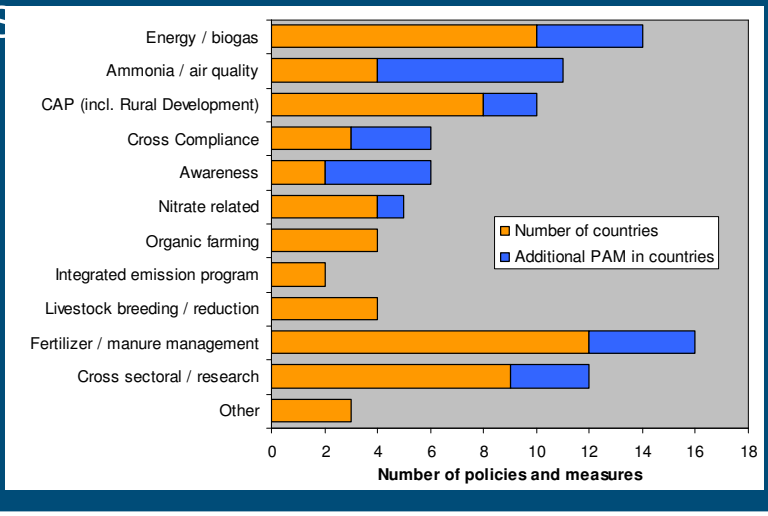
Categorization of policies and measures EU MS



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What are MS doing now in agriculture?

- Major categories now ‘Economic’ and ‘Regulatory’
- Regulatory is likely on manure + fertilizers and economic on biogas or CAP CCompliance payments
- MS reporting poor and inconsistent - reporting in NIR ‘not well defined’ nor ‘explicit on MS actions’
- Focussed on detailing of the PAM per MS; MS use more than 1 measure to comply with policies

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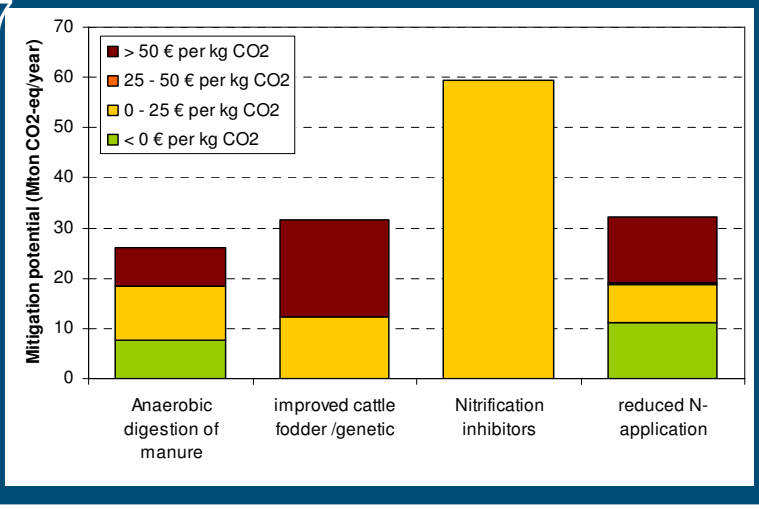
Mitigation potential per measure and cost EU-27



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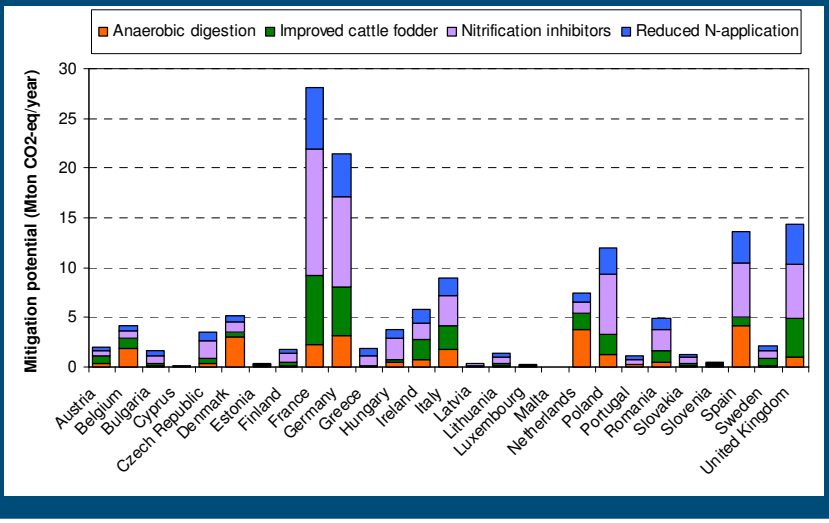
Technical mitigation potential per MS by 2020



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Mitigation potential EU27

- Very distinct potentials per MS
- Expect some of the potential to vaporize in practice and without realism

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Policy options mitigation Agriculture (1)

- Sector policies have been defined at EU and MS level and have been effective
- Most not specifically aimed at climate action but target other environmental problems
- .... with often positive side-effects for climate mitigation

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Policy options mitigation Agriculture (2)

- Quantification of the mitigation potentials by MS of the policies is limited.
- Available 2020 potential est. 3.4 Mton $CO_{2\text{-eq}}$ y^{-1} (1% of Ag emissions)
- Projected technical mitigation potentials in SERPEC study in agriculture est. at 150 Mton CO_2-eq per year (>30% baseline)
- Significant policy gap and requires actions to reach the ESD targets by 2020 (also in NL?)

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Policy options mitigation Agriculture (3)

- The significant difference in projected mitigation potential by MS and from the SERPEC projections indicates that it might be difficult to obtain those emission reductions in practice.

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How LULUCF is included in UNFCCC/KP?

	UNFCCC	KP	
	Reporting	Reporting	Accounting
AGRI CULTURE	CH4 and N20 from soils, livestock, manure	= UNFCCC	relative to 1990 (net-net)
LULUCF	GHG from 6 **land uses** (all managed lands)	GHG only from direct human induced **activities**	very complex

- FL Forest land
- CL Cropland (CO2)
- GL Grassland (CO2)
- WL Wetland
- S Settlements
- O Other

- AR Aff/Reforestation
- D Deforestation

→ Mandatory, gross-net

- FM Forest management

→ Voluntary, gross-net + cap

- CM Cropland manag. (CO2)
- GM Grazing land manag. (CO2)
- RV Revegetation

→ Voluntary, relative to 1990 (net-net)

- Total GHG in a country
- GHG reported under UNFCCC
- GHG accounted for under KP

7

Source: Giacomo Grassi, JRC

Possible ways forward – policy options for inclusion of LULUCF in the EU's greenhouse gas reduction commitments

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Background to this study

Approach taken

- what is the expected development of emissions and removals in LULUCF over the period leading up to 2020, what mitigation measures can be undertaken to mitigate climate change; and what is the potential magnitude of the contribution of LULUCF to the EU's GHG reduction effort?
- should emissions and removals related to LULUCF be included in the commitment and, if so, how should this be done? The answer to this question must be guided (according to Decision 406/2009/EC) by principles including environmental integrity, harmonised modalities, accurate monitoring, accurate accounting and permanence.
- MS EU27 agreed in the *Climate Change and Energy Package* that all sectors must contribute to climate change mitigation in the EU. Do Member States have sufficient tools to provide incentives for mitigation in the LULUCF sector or can incentives usefully be provided at the EU level?

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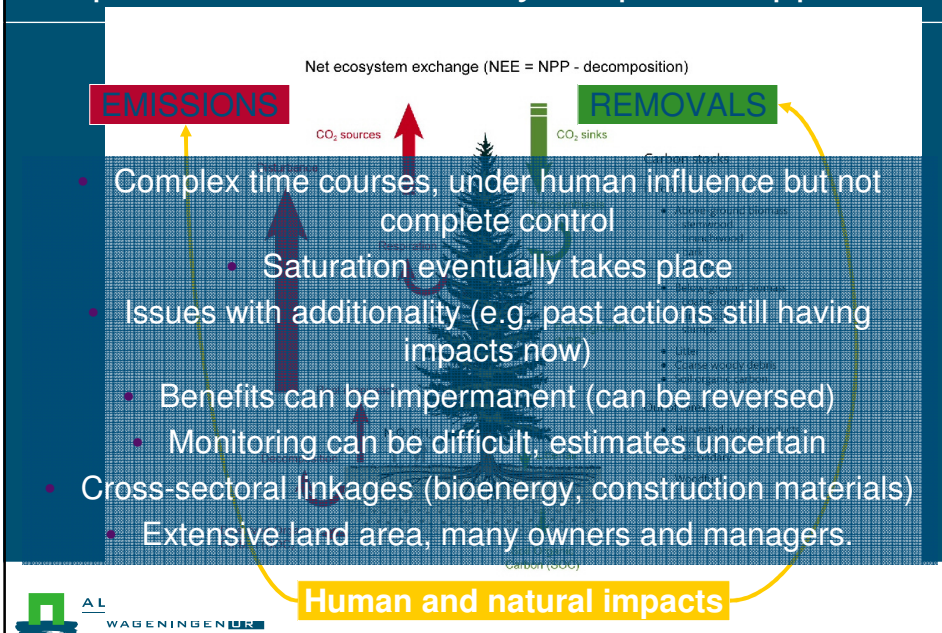
Properties of LULUCF may shape the approach



- Complex time courses, under human influence but not complete control
- Saturation eventually takes place
- Issues with additionality (e.g. past actions still having impacts now)
- Benefits can be impermanent (can be reversed)
- Monitoring can be difficult, estimates uncertain
- Cross-sectoral linkages (bioenergy, construction materials)
- Extensive land area, many owners and managers.

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Key issues pertaining to whether and how LULUCF should be included in the EU's GHG commitment

- What is the most appropriate policy context and framework for the LULUCF sector?
  - Build on existing frameworks or develop a new one?
  - Integration with existing frameworks?
- How should accounting be done?
  - Affects the 'importance' of LULUCF activities in contributing to GHG mitigation
  - International negotiations about accounting rules continue, some recent positive progress.
- What Monitoring, Reporting and Verification would be needed to support the accounting and policy framework?
  - (completeness, accuracy, time-consistency, comparability, tractability).

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How could LULUCF be accommodated in practice?

'Building blocks'		Focus
Liability	→	Who would be liable for credits and debits?
Definitions		Would targets be set? If so, how (taking into account the varying circumstances between Member States)? How would the link with the EU's overall target be regulated?
Targets	→	
Flexibilities	→	Would credits and debits be transferable, between Member States, between ETS, ESD, separate framework, between accounting periods to allow flexibility? How?
Relation to other policies		
Monitoring and reporting	Accounting	
Compliance and risk	→	Who would compliance be defined? How would risks be mitigated?
Corrective actions		

Policy options

Review of existing EU policy frameworks

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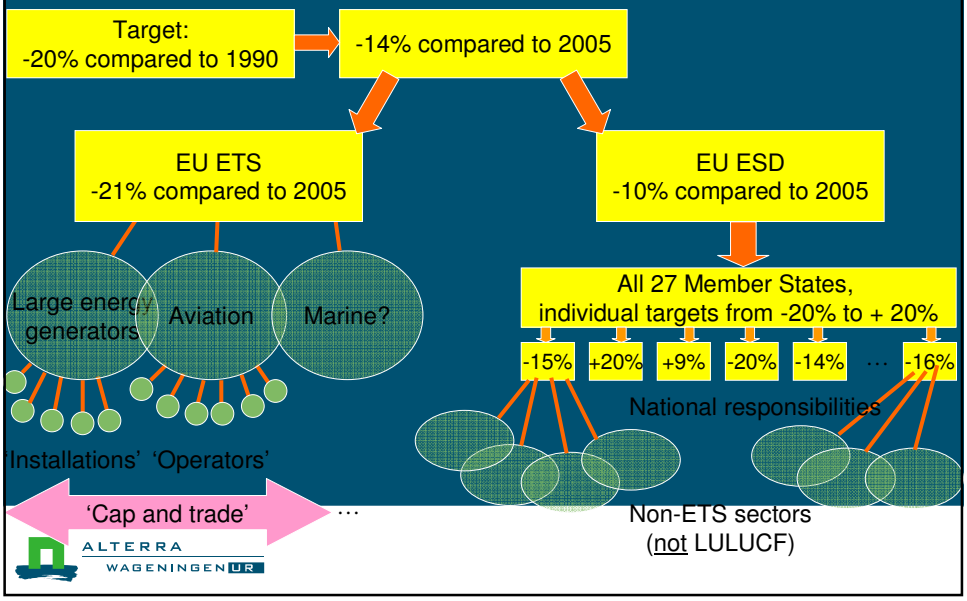
The EU commitment to GHG emissions reduction



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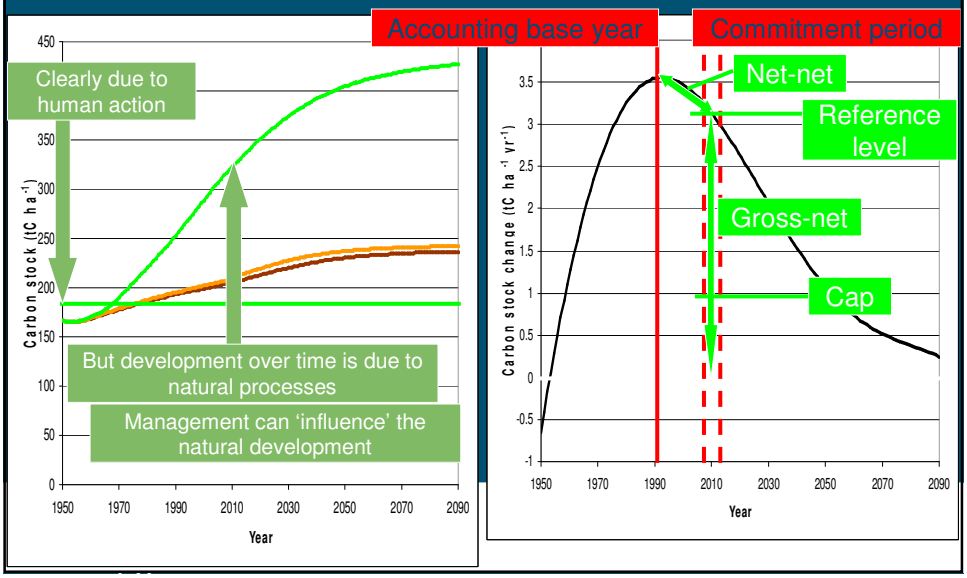
Human and natural influences on FM – net-net, gross-net and 'reference level' accounting



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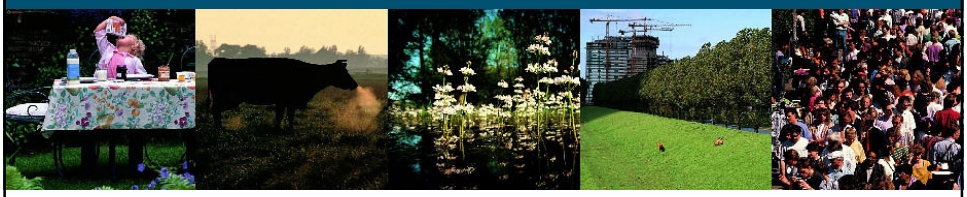

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Conclusions (Business As Usual)

Under Business As Usual (BAU) the EU would not include LULUCF in the unilateral commitment to reduce GHGs by 2020. This would have a number of implications:

- It will hamper the environmental integrity of the EU's GHG reduction commitment because accounting will be partial. The European Parliament and the Council (406/2009/EC) have explicitly required that all sectors contribute to reaching the climate commitments made by the EU.
- The potential for a cost-effective achievement of targets as mitigation efforts will be limited.
- Politically, it may signal that LULUCF emissions and removals are unimportant. Not accounting for ARD would be particularly problematic, as this has been mandatory under the Kyoto Protocol.
- Deforestation is 'modest' in the EU but not explicitly addressing the issue it could detract from international efforts to reduce emissions from deforestation and forest degradation e.g. under the REDD mechanism.
- Not accounting for LULUCF emissions would mean that there is an implicit subsidy for the use of biomass for purposes other than sequestration. Important CO2 emissions due to biomass harvesting would remain unaccounted for.
- Ultimately the consequences of a non-inclusion will depend on what happens both at the international and EU level. EU and national policies will still be important in terms of the trajectory of greenhouse gas emissions.

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Conclusions (Emission Trading System)

There would be serious problems with inclusion of the LULUCF sector in the Emission Trading System (ETS), specifically:

- MRV – ETS MRV requirements for estimating emissions of GHGs involve high accuracy and low uncertainty for emissions from each installation for each reporting period (annual). The high inter-annual uncertainties in net LULUCF emissions would be unsuitable for the current ETS requirements.
- Uncertainties – current uncertainties in LULUCF (moderate to high) are greater than would be acceptable for ETS.
- Implementation – in the ETS this would be problematic e.g. there are a very large number of land holdings involved, for which transactions would need to be tracked.
- Targets – setting targets would require negotiations at EU level. The setting of caps at MS level or across the LULUCF sector is likely to be problematic. The large land area and the complexity of the LULUCF sector in terms of carbon stocks and ownership would make it very difficult and contentious to allocate (some or all) allowances (for removals?) to land holdings.
- Legislation in the EU27 – In particular, the ETS includes provisions for revenues generated through auctioning of allowances to fund LULUCF activities. This would probably have to stop. It would also be necessary to withdraw direct support for these activities under the CAP. This would be problematic as it would then not be possible to pay for wider related environmental services.

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Conclusions (ESD and Separate framework)

There do not appear to be intractable barriers to the inclusion in ESD or the creation of a separate framework for LULUCF either with emissions targets or with targets for levels of activity:

- LULUCF either with emissions targets or with targets for levels of activity. Development would need to take account of issues identified for most criteria.
- It is not clear that any one of the options has significant advantages over the other, however
- Including LULUCF in the ESD would require significant amendments.
- A separate framework (based on targets for emissions levels or activities) would appear to present certain opportunities that would be less easy to realise through inclusion within the ESD:
  - Incentives – there could be an opportunity to ensure that specific incentives for mitigation activity in the LULUCF sector are put in place.
  - Targets – by definition the framework would set some sort of quantitative targets for emissions levels in the LULUCF sector for the EU and for MS. Targets can be set in terms of levels of emissions or levels of activity.

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Conclusions (Accounting and reporting)

- In places, existing accounting under the KP is not adequate to reflect the true impacts of LULUCF mitigation actions.
- This could be addressed through ‘moderate’ to ‘many’ changes to rules
- Incremental approach to rule changes?
- Rule changes do not necessarily involved more or changed MRV (existing UNFCCC commitments)
- Member States may need to think about links between national reporting/accounting and local implementation of mitigation measures (depends on approach taken to implementation of measures).

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