Agriculture (cows) and land use (trees) in the Commission proposals for the 2030 Climate and Energy Framework

- Policy, Impact Assessment, Models -

MACSUR Workshop, Norway, 10 October 2016
Peter Wehrheim, DG CLIMATE ACTION

Contents

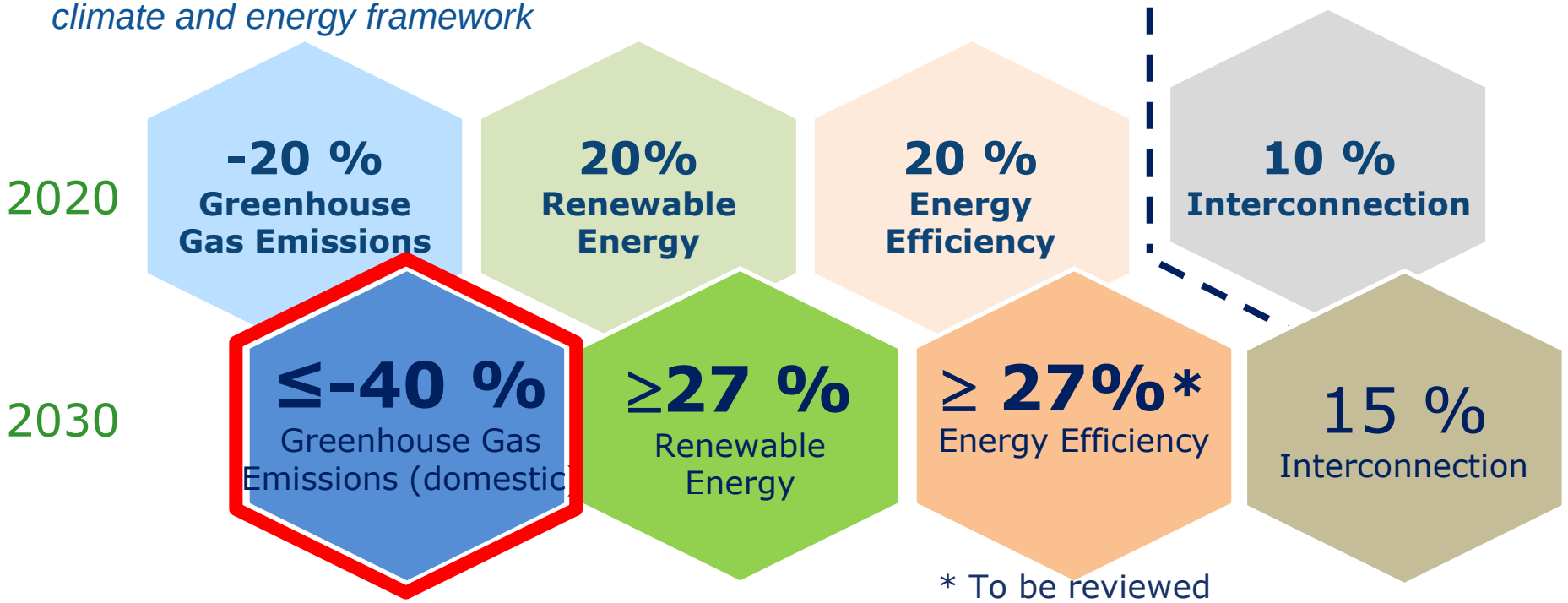
- **Introduction: policy context**
- Impact Assessment: options, models, examples
- Proposal for Effort Sharing Regulation and LULUCF Regulation
- Conclusions and Outlook: more work for modellers!

Policy context

European Commission

EU Climate and Energy Framework

In October 2014 the European Council gave guidance on how to implement the 2030 climate and energy framework

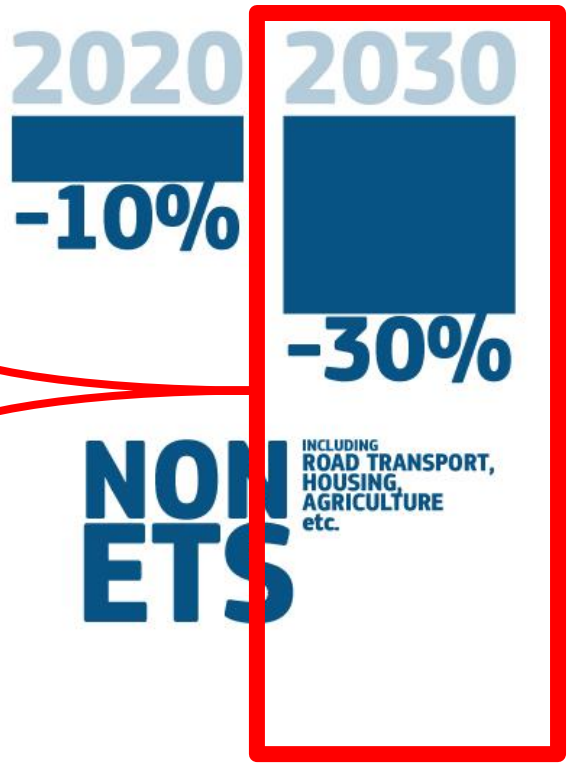


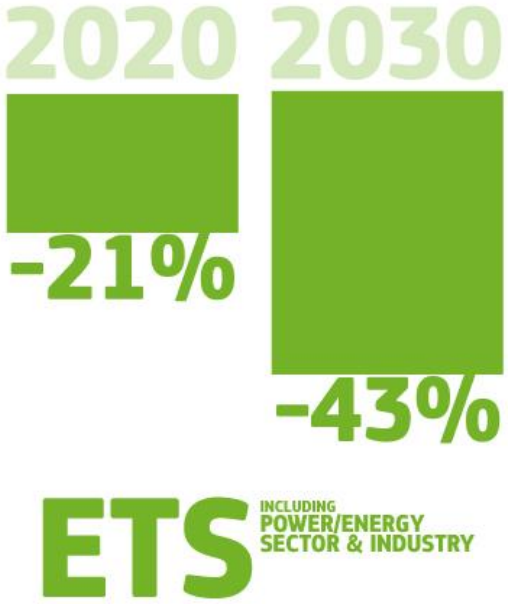
European Commission

At least 40% reduction of Greenhouse Gas Emissions

EFFORT SHARING REGULATION (ESR)

LAND USE, LAND-USE CHANGE AND FORESTRY (LULUCF)





Land Use and Agriculture in non-ETS

European Commission

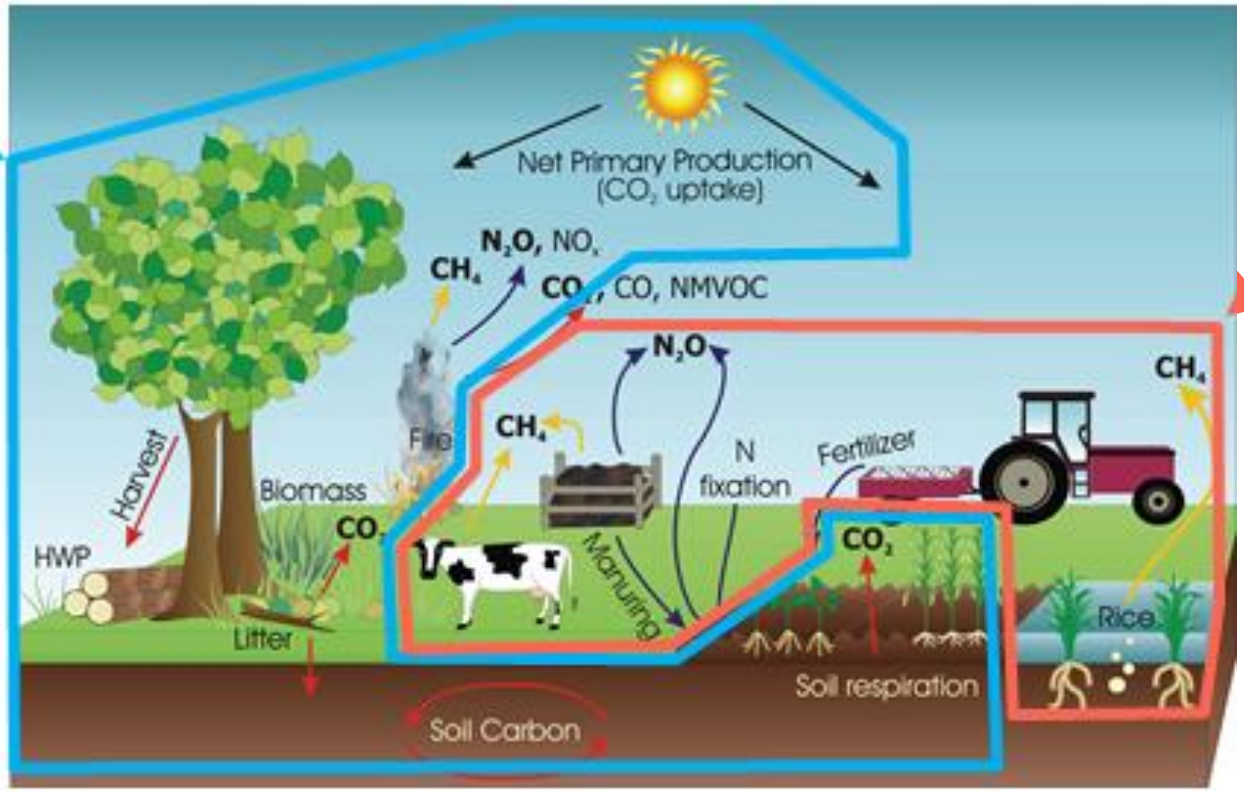
Land use: in both LULUCF and the ESR

Land Use, Land Use Change and Forestry (**LULUCF**): CO_2

AGRICULTURE *non-CO_2* (CH_4, N_2O) – **in the ESR**

Partly human induced (strongly linked to global natural carbon cycle)

Uncertainties?
Additionality?
Permanence?
Leakage?

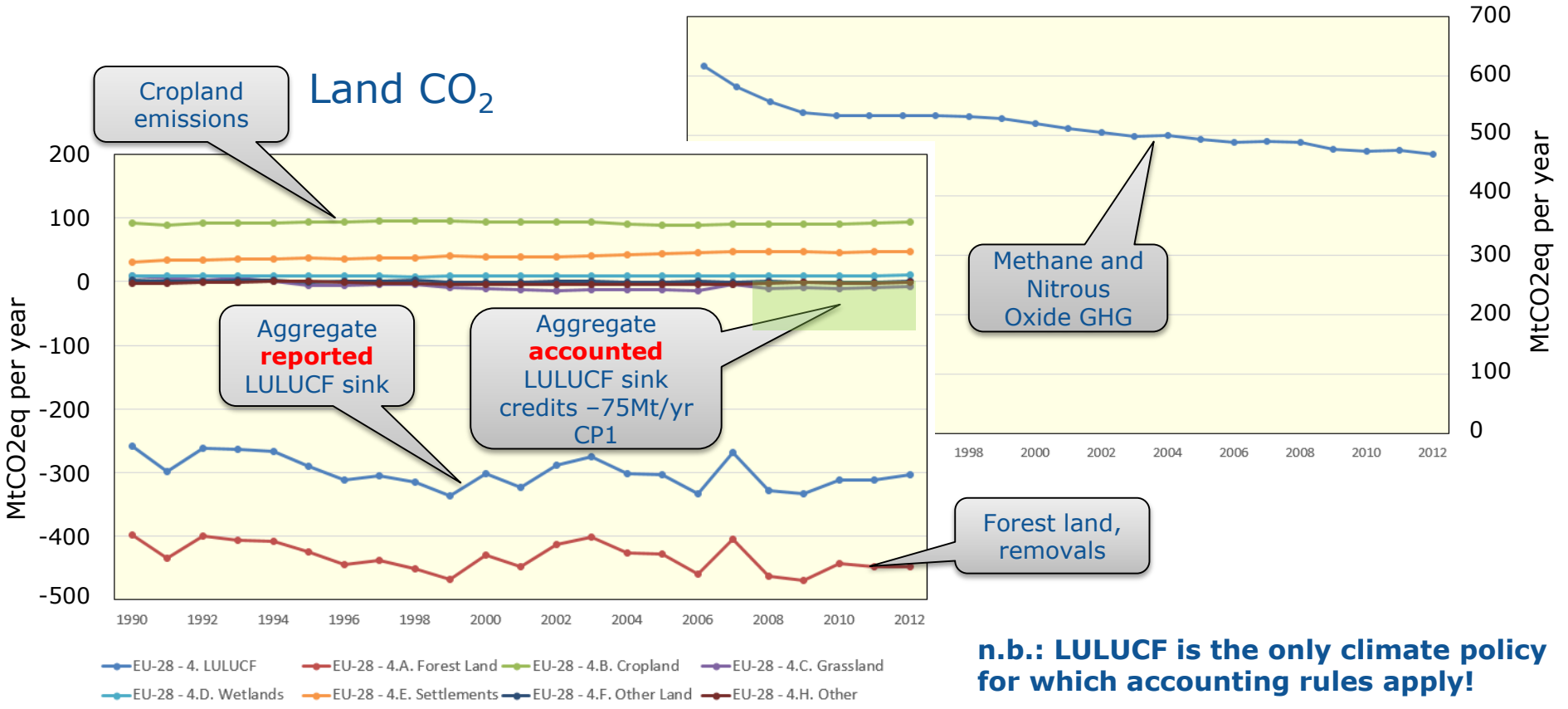


Mainly human-induced

=> More readily quantifiable

Land Use and Agriculture

EU28 agriculture & land emissions since 1990



n.b.: LULUCF is the only climate policy for which accounting rules apply!

Reported ≠ accounted figures!!!

GHG emissions and removals as reported under the UNFCCC

Contents

- Introduction: policy context
- **Impact Assessment: challenges, models, options, examples**
- Proposal for Effort Sharing Regulation and LULUCF Regulation
- Conclusions and Outlook: more work for modellers!

Impact Assessment

Objective:

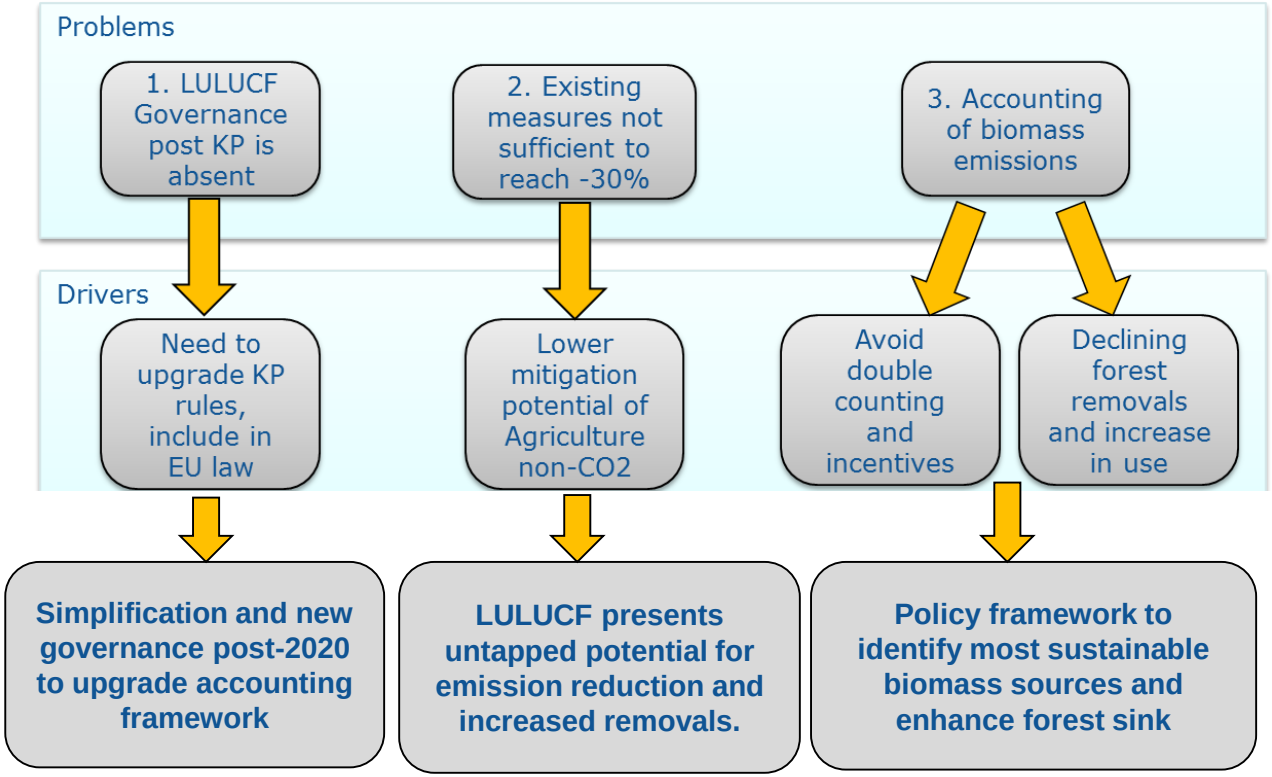
- evidence-based policy design

Challenges:

- Not one big option (reduce emissions by XX%), but many detailed options to be assessed
- Not one sector, but agric + forestry + energy
- What is the mitigation potential in agriculture?
- What is the credit generation potential in land use/forestry? **Quantitative assesment has to factor in accounting rules!**

European Commission

Problem setting and drivers

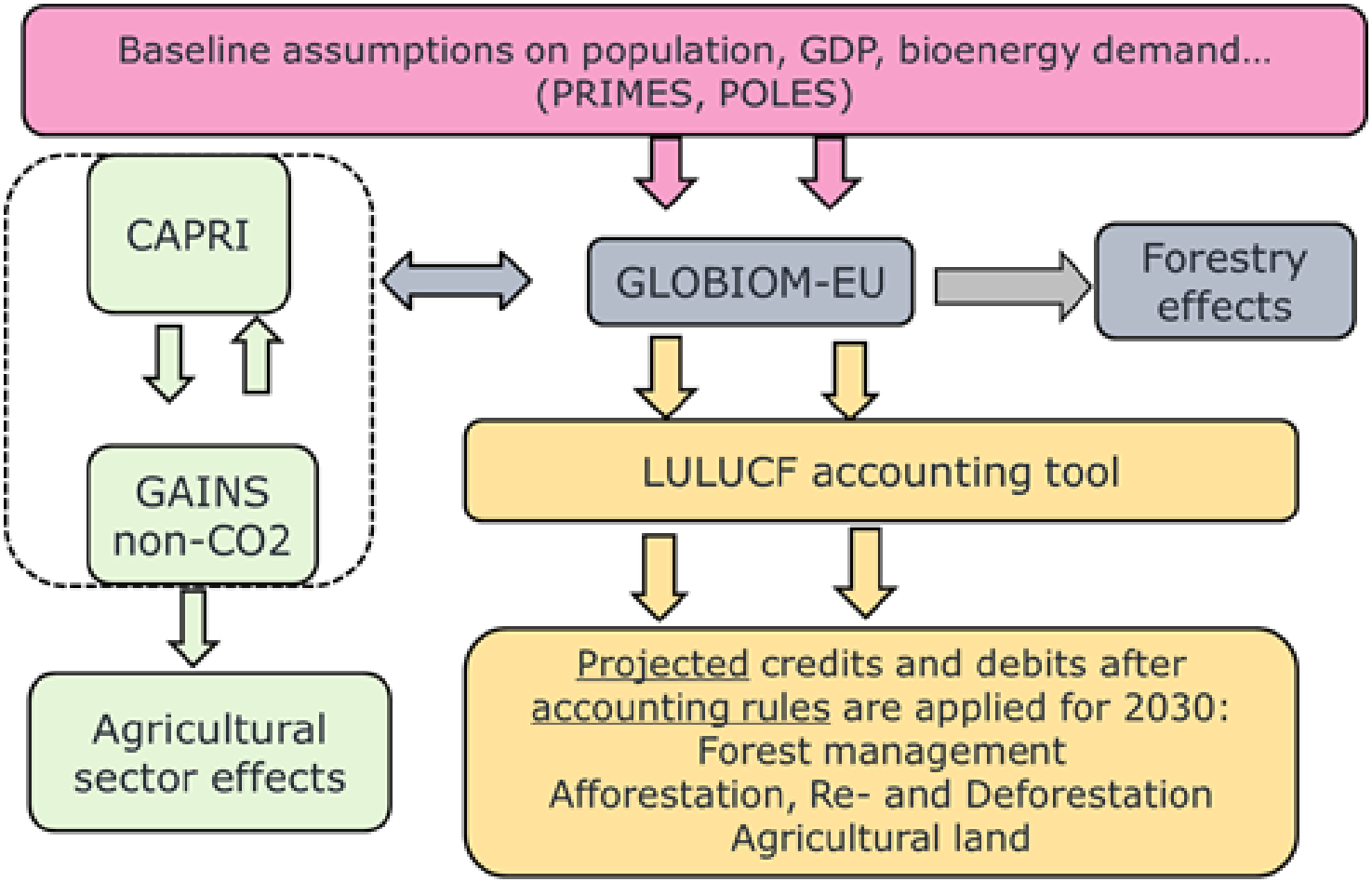


This prepares the EU for the long term.
Post 2050, the Paris Agreement outlines that emissions might need to be counter balanced by higher removals.

Impact Assessment

European Commission

Figure 8: Overview of EUCLIMIT modelling components used for the assessment of impacts related to agriculture and LULUCF



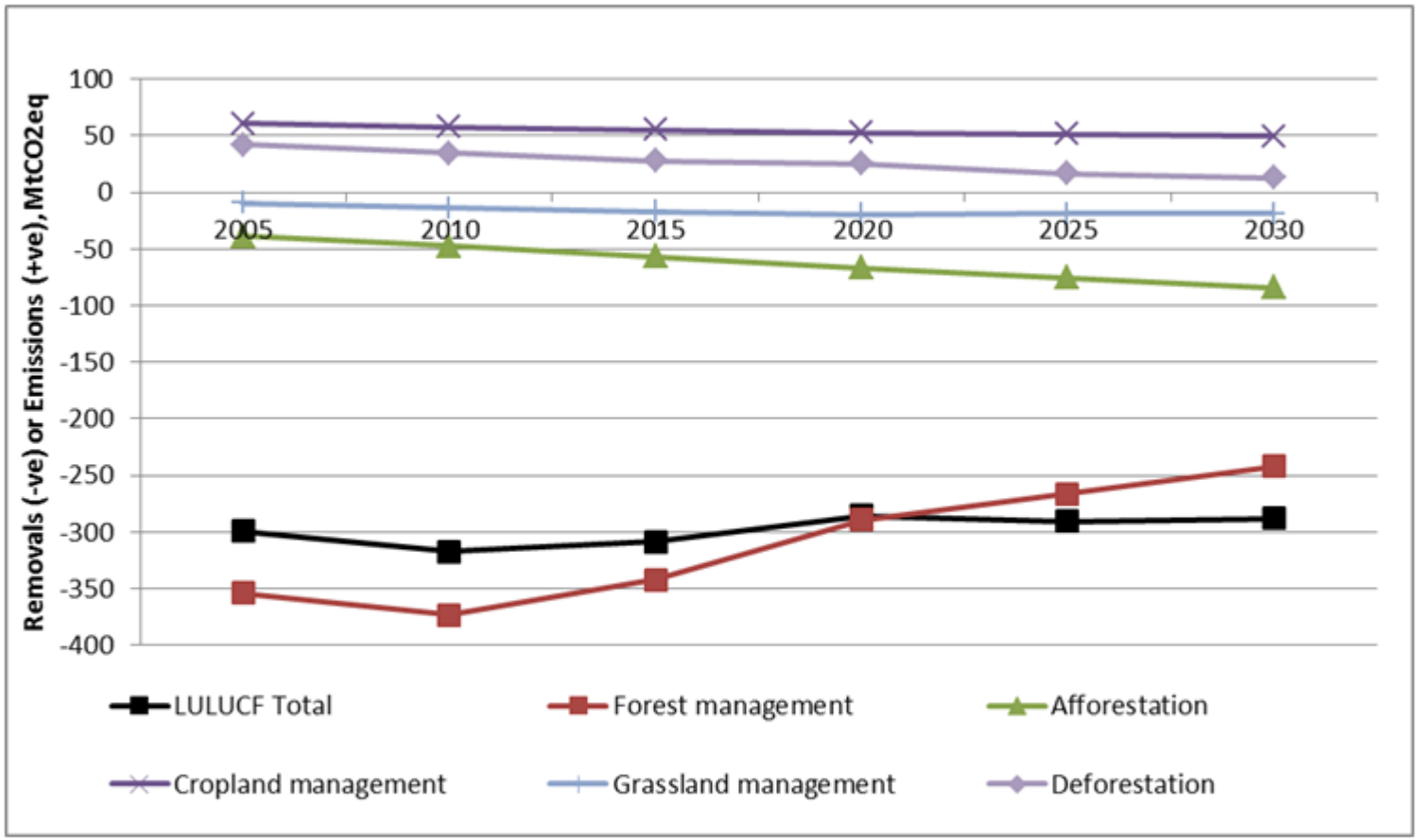
Source: SWD(2016)249 p38 and Annex 2

Impact Assessment
Projections of reported figures for LULUCF

European Commission

From SWD(2016)249

Figure 2: Projection of reported emissions (+) and removals (-) from LULUCF main activities for the EU28 2005 - 2030, in MtCO2eq

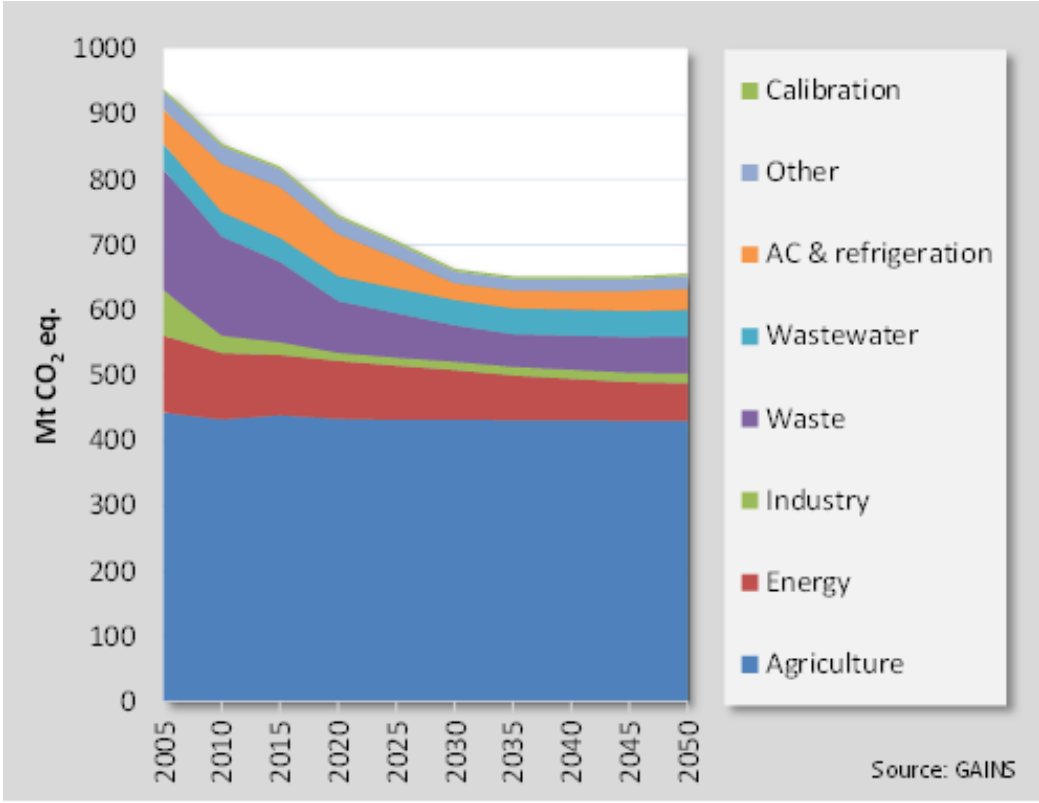


Notes: Removals (sink) and emissions (source) represented as negative and positive values, respectively
Source: EUCLIMIT Reference 2016 model projections

Impact Assessment: Projections of mitigation in different sectors

Non-CO_2 GHG emissions reduce strongly until 2030

- *Sectoral trends differ markedly*
- *Waste emissions reduce strongly, driven by policies*
- *Energy and transport related emissions reduce in line with energy system changes*
- *Significant trend shift in AC& refrigeration, reflecting revised F-gas regulation of 2014*
- *Decreases of industrial emissions reflect ETS inclusion*
- *Wastewater emission stability reflects population trends*
- ***Agricultural emissions remain stable in absolute terms, relative increase***



Impact Assessment: Mitigation potential in agriculture

Mitigation options for non-CO2 agriculture in the reference projection

- Farm scale Anaerobic Digestion
- Breeding for feed efficiency
- Ban agricultural waste burning
- Rice cultivation: intermittent aeration and alternative hybrids
- Feed additives and/or changed feed management practices

European Commission

Afforestation "gross-net" accounting (total annual increment)

Table 8: Impact of streamlining framework different accounting rules on credit generation potential for Afforested Land (RMUs in $MtCO_2eq$) EU28 2021-2030 including additional mitigation enhanced at a carbon price of €20/tonne, negative value is credits

Activity	Option R0 Status quo	Option R1: Only land-based UNFCCC, 20yr	Option R2: Only land-based UNFCCC, 30yr
Afforested land	-901	-437	-730

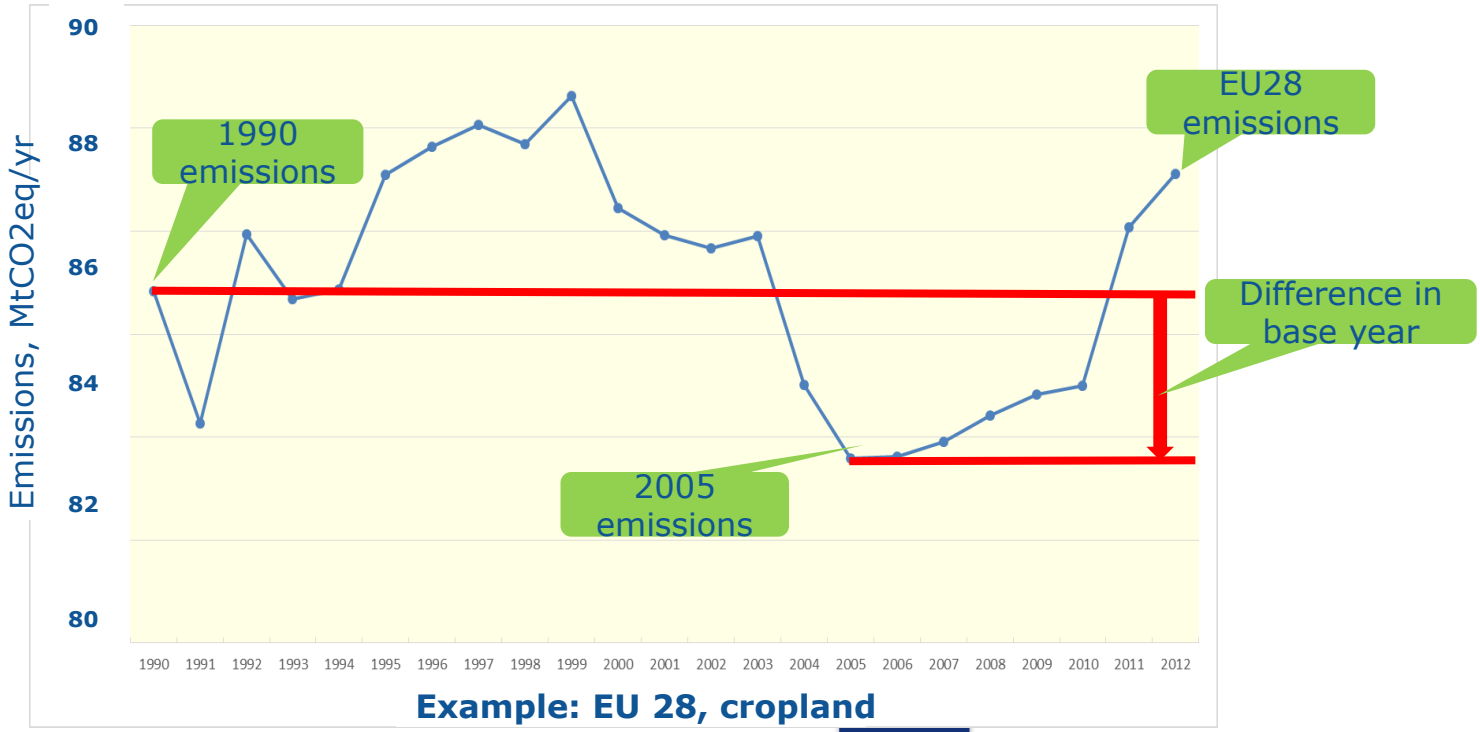
Source: 2015 UNFCCC Inventory data and EUCLIMIT projections

Source: SWD(2016)249 p41

Impact Assessment: accounting rule changes

Agricultural land "net-net" accounting (against base year)

Switching the **base year**
from 1990 to 2005/7 for agricultural land categories, and any elected categories such as wetlands: more recent reference and **improved accuracy** (less inter-year variance).



Example: EU 28, cropland

Assessment of accounting rule changes

	Option B0	Option B1
Base year	1990 Kyoto base year	Period 2005-2007

Preferred option: B1 - period 2005-2007

- **Reduces uncertainty of the data** – information on agricultural land was significantly improved as of 2005; more recent datasets
- **Aligns** with **ESR**, improves **environmental integrity**
- Base period (2005-2006-2007) **helps address potential high inter-annual variability**

Impact Assessment: accounting rule changes

Table 6: Impact of the base year change on the potentially available LULUCF RMUs for the EU28 from agricultural land, 2021-2030, including additional mitigation enhanced at a carbon price of €20/tonne, in MtCO2, negative value is credits

Activity	Option B0 Status quo 1990	Option B1 Base year: Avg. 2005-07
Agricultural land	-645	-437

Source: EUCLIMIT modelling

Source: SWD(2016)249 p38

Impact Assessment: Flexibility ESR to LULUCF

European Commission

Table 15: Direct impact of different levels of flexibility between LULUCF and ESD on GHG abatement costs in the agriculture non-CO_2 sector (annual costs in 2030 in € 2013) and assuming a 20% reduction in 2030 compared to 2005

		Flexibility Options			
	F0 No flex	**F1 Low**	**F2 Medium**	**F2 Medium (excluding breeding)**	**F3 High**
Non-CO_2 Emission reduction in 2030, MtCO_2eq	78.0	43.0	25.0	25.0	7.0
LULUCF reduction in 2030 MtCO_2eq	0	35.7	53	53	70.7
Non-CO_2 Emission reduction in 2021-2030, MtCO_2eq*	380	215	125	125	35
LULUCF reduction in 2021-2030 cf. 2005, MtCO_2eq*	0	179	265	265	354
Allocated flexibility of credits (MtCO_2eq for period 2021-2030)	0	190	280	280	425
Marginal costs €/tCO_2eq. for non-CO_2 mitigation	78.6	32.5	7.3	31.4	0

Source: GAINS model/GLOBIUM for LULUCF based on AR4 Global Warming Potentials and using Reference 2016. * assuming a linear increase of mitigation between 2021 and 2030. : SWD(2016)249 p38

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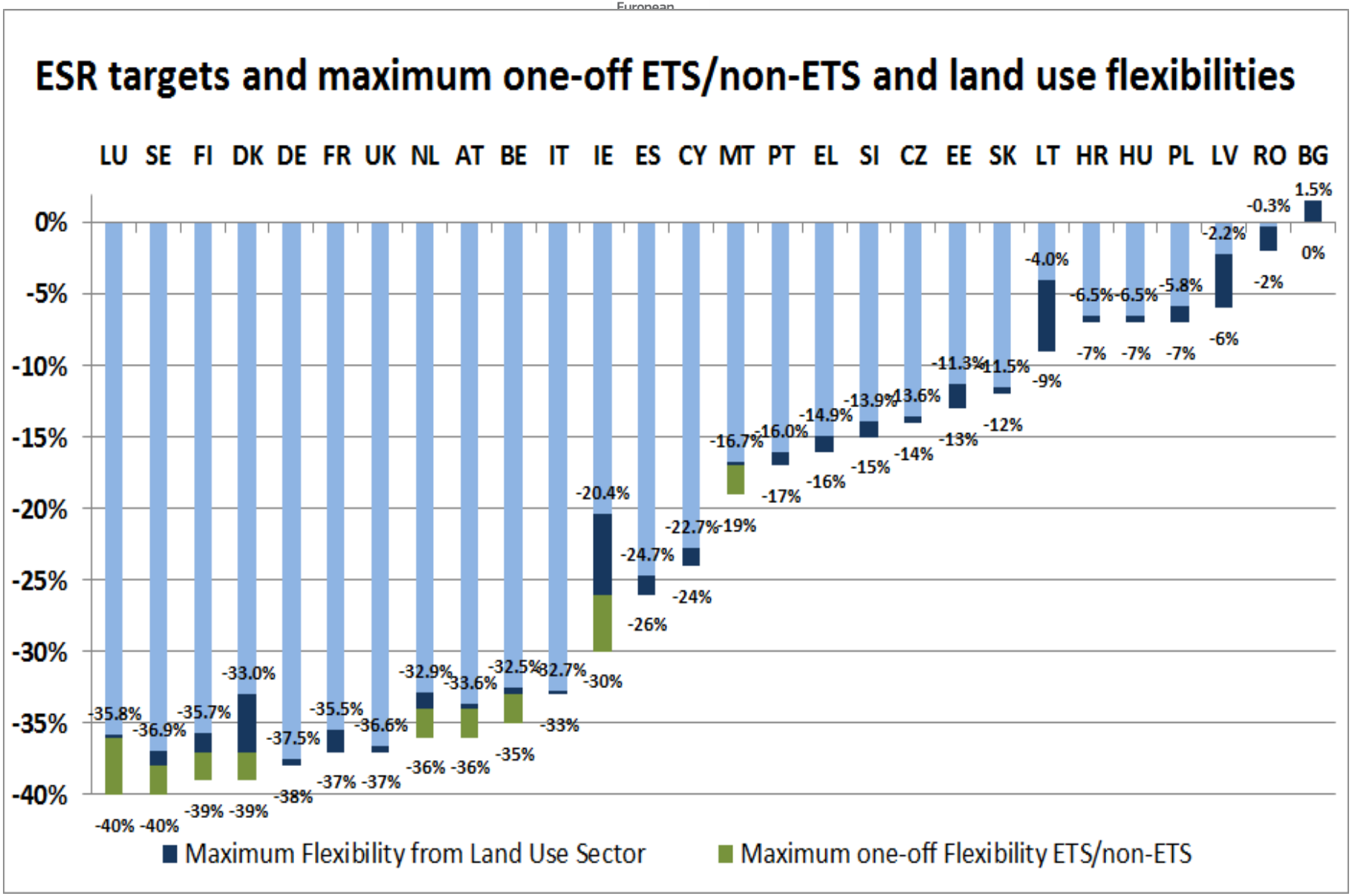
Effort Sharing Regulation (ESR) in a nutshell

- Sets rules for calculating **annual emission allocations** and **5-yearly evaluation of compliance** of Member States' annual progress towards targets
- To recognise different capacities, principal indicator to differentiate targets **2013 GDP**
- For 11 higher income MS, additional adjustment in this group to reflect **cost efficiency** concerns
- Target range to remain between 0 and -40%


ESR targets and maximum one-off ETS/non-ETS and land use flexibilities
LU SE FI DK DE FR UK NL AT BE IT IE ES CY MT PT EL SI CZ EE SK LT HR HU PL LV RO BG
0%
-5%
-10%
-15%
-20%
-25%
-30%
-35%
-40%
-35.8% -36.9% -35.7% -33.0% -37.5% -35.5% -36.6% -32.9% -33.6% -32.5% -32.7% -20.4% -24.7% -22.7% -16.7% -16.0% -14.9% -13.9% -13.6% -11.3% -11.5% -4.0% -6.5% -6.5% -5.8% -2.2% -0.3% 1.5%
-40% -40% -39% -39% -38% -37% -37% -36% -36% -35% -33% -30% -26% -24% -19% -17% -16% -15% -14% -13% -12% -9% -7% -7% -7% -6% -2% 0%
Maximum Flexibility from Land Use Sector
Maximum one-off Flexibility ETS/non-ETS

What is LULUCF?

- *LULUCF: emissions and removals associated with our use of **soils, trees, plants, biomass and timber.** Reporting and accounting done by Member States only – no obligation for private actors.*
- *The opportunity to sequester/remove CO2 from the atmosphere gives LULUCF a particularly important role in view of the objective from the Paris Agreement to reach **carbon neutrality** by **(bis 2050)**.*
- *Reported removals from LULUCF currently equivalent to about 10% of the total EU greenhouse gas emissions. Decisive: how much **additional mitigation potential** can LULUCF deliver?*
- ***Accounting rules** aim to make that distinction.*

LULUCF proposal

European Commission

What does the LULUCF proposal deliver? (1)

- Brings the CO2 commitment for this sector **into the EU** climate and energy framework **for the first time**
  - As a **stand-alone policy pillar**
  - Where the **"no-debit" rule is retained**. *Accounted emissions from land use are entirely compensated by an equivalent removal of CO_2 from the atmosphere*
- Is in line with:
  - the agreement by EU leaders that **all sectors** should contribute to the **EU's 2030 emissions reduction target** (October 2014)
  - the **Paris Agreement** on climate change
- Is compatible with food security and biodiversity objectives

LULUCF proposal

European Commission

What does the LULUCF proposal deliver? (2)

- Adjustments would be made to LULUCF accounting rules and architecture
  - reducing **administrative burden** and red tape
  - is **not** addressed to individual actors (farmers, foresters)
- Ensures that **emissions of biomass would be recorded and counted**
  - promoting **bio-energy feed-stocks** that are most sustainable
- Introduces **new flexibilities**
  - including LULUCF, driven by "the low-mitigation potential of agriculture" (EUCC, 2014)
  - incentivising additional mitigation action in all sectors

LULUCF proposal

European Commission

Flexibility, within LULUCF

- **Intra-account flexibility:** a Member State can balance emissions from one land **accounting** category by removals from another category on their territory

- **Intra-LULUCF pillar flexibility**: Surplus accounted removals may be transferred to another Member State

And

- Member States can cumulate net removals identified in their LULUCF accounts over the 10 year period ("**banking**")

- **Eligibility**: Member States are required to ensure adequate monitoring in order to use the flexibilities.

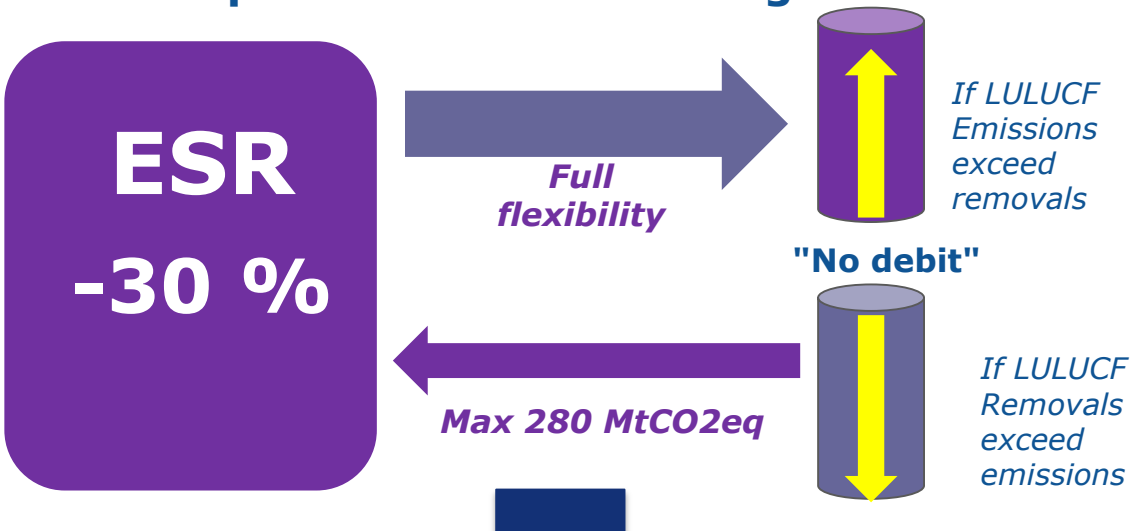
What does the proposal deliver (5)

Flexibility from ESR towards LULUCF:

- **Allows the compensation of net emissions in LULUCF with use of emission allocations under ESR**

Flexibility from LULUCF towards ESR:

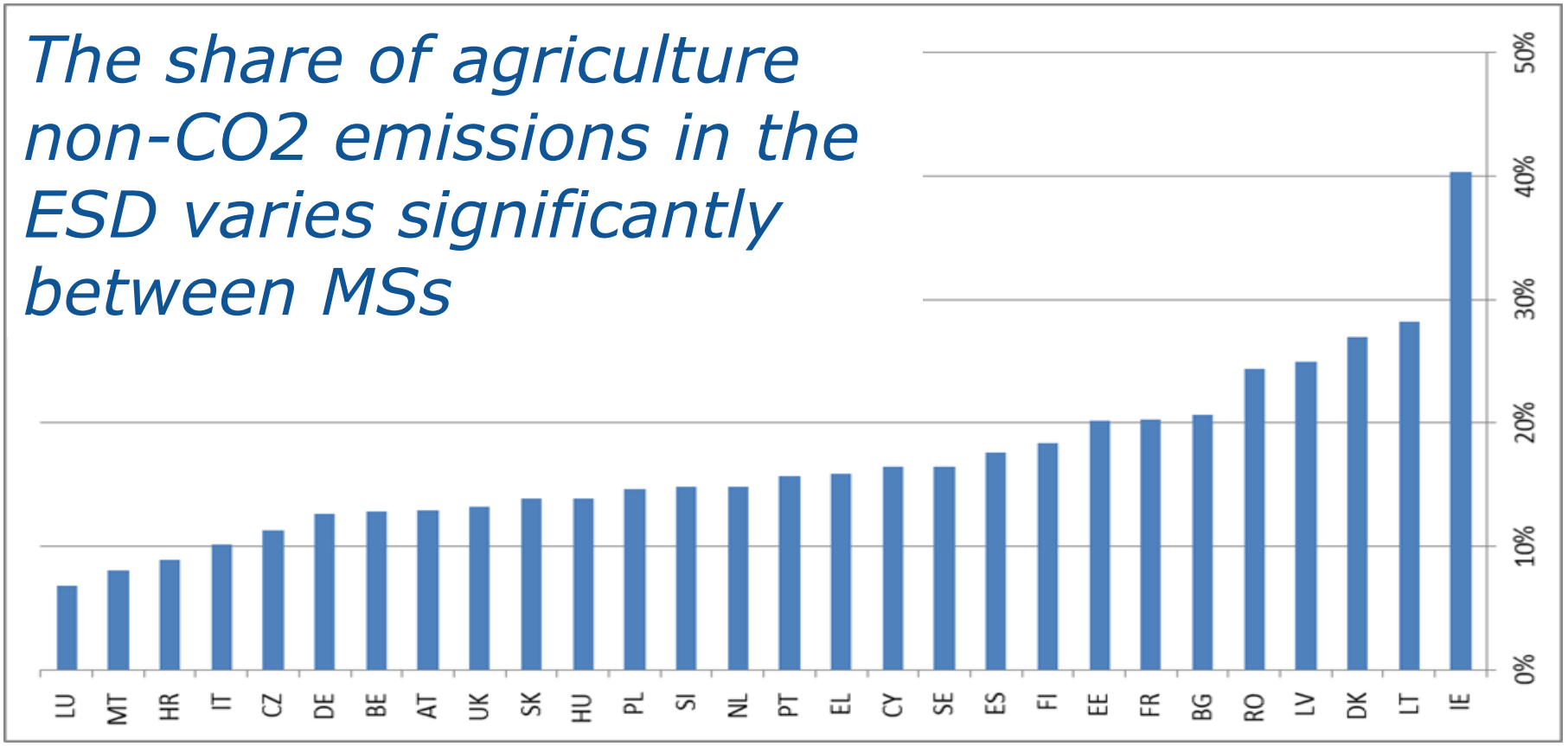
- **Upper limit of 280 Mt on total amount of flexibility in the period 2021-2030**
- **Credits from afforestation, cropland and grassland management**
- **Identified based upon the needs of the agriculture sector**



European Commission

Average share of agriculture non-CO2 emissions in the ESR, 2008-12

The share of agriculture non-CO2 emissions in the ESD varies significantly between MSs



Distribution of credit potential between Member States

According to EUCC guidance, flexibility should be allocated to each MS reflecting their needs

- **For LULUCF, based on the lower mitigation potential of the agriculture sector**
- **While also recognising the need to preserve environmental integrity and maintain incentives to reduce emissions in ESR**

MSs which have a higher share of agricultural emissions in the ESR are more affected by the limited mitigation potential in agriculture.

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2030 Climate and Energy Framework

-40% Greenhouse Gas Emissions by 2030 (domestic EU) compared to 2005

ETS

-43 %

Including: Power/Energy Sector and Industry, Aviation

Max 100 MtCO2eq

Non-ETS

-30%

Including: road transport, buildings, waste, agriculture, LULUCF

ESR

-30 %

Full flexibility

Max 280 MtCO2eq

New!!

LULUCF

≤ 0 %

"No-Debit"

Conclusions (1)

1. Fully in line with Paris Agreement, no backsliding on robustness and transparency
2. Provides for continuity
   - Addresses Member States and not individual farmers or foresters
   - Stand-alone LULUCF pillar
   - No-debit rule (from KP)
   - Flexibility within LULUCF and from ESR to LULUCF

Conclusions (2)

3. Proposes limited innovations

- **Flexibility to the ESR up to 280 mt CO2**
- **Aligning accounting rules (AF,CM/GM)**
- **Defining EU-internal process to set national forest management levels**
- **Simplifying administration**

Outlook: more work for modellers!

European Commission

Policy

- *COM proposals in **negotiations with co-legislators***
- *LULUCF proposals sets framework for providing **incentives for additional mitigation**, e.g. through CAP*
- ***Rule set** for agriculture, land use, forestry in PA*
- *Agriculture and land use in **mid-century strategies***

Modelling

- *Land Use/forestry: accounting rules matter*
- *Non-CO2 agriculture: mitigation potential*
- *Dynamic effects, long-term projections*
- *Partial vs general equilibrium models*

Thank you!

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