IS AGRICULTURE OFF THE HOOK IN THE EU'S 2030 CLIMATE POLICY?

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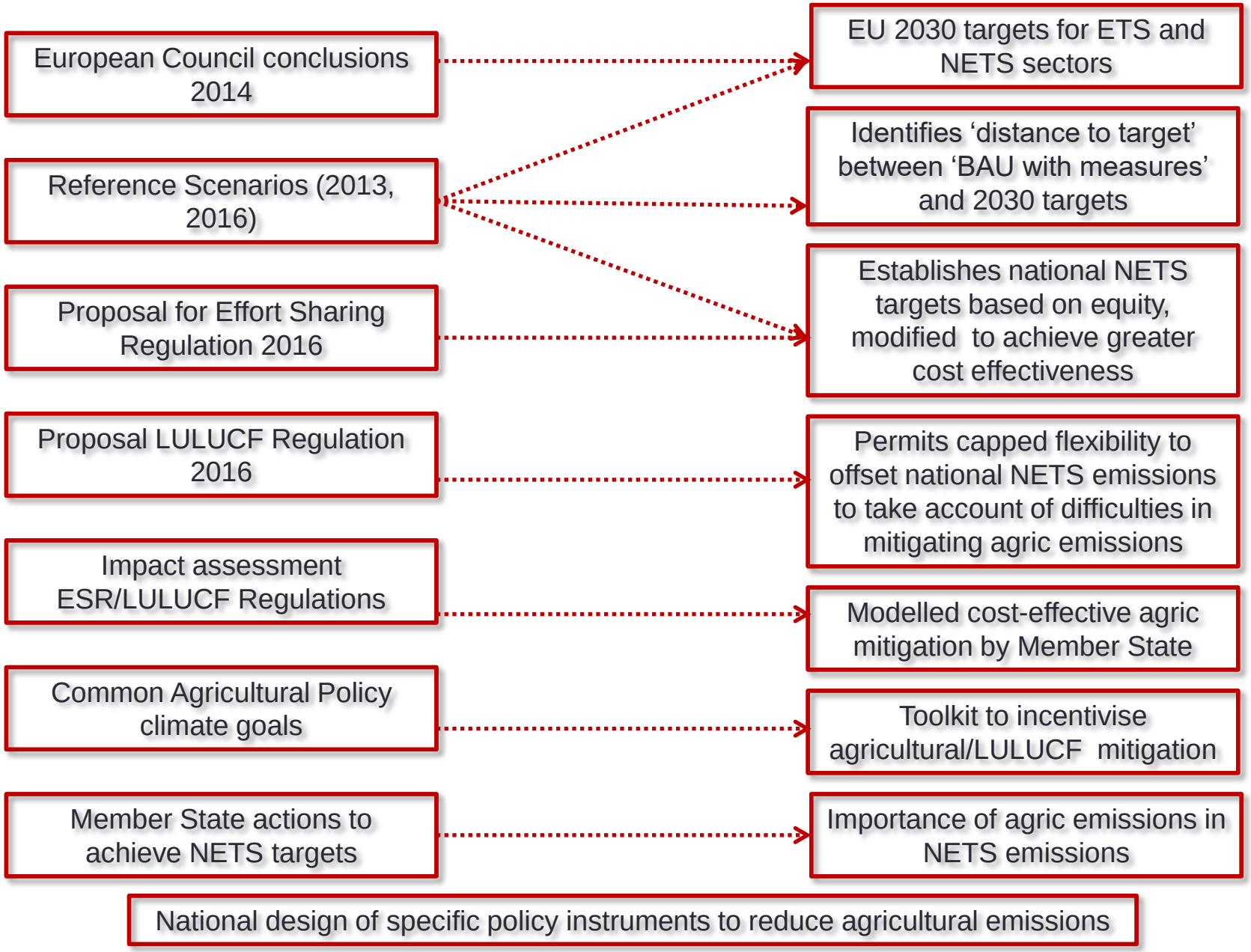
EU climate policy and AFOLU

- Overall **2030 level of ambition** agreed by European Council October 2014
- Commission **ESR proposal** July 2016 – sharing of effort in NETS across MS plus trading mechanisms
- Commission **LULUCF proposal** – integration of LULUCF into climate policy
- AFOLU mitigation pursued through **CAP** as well as flanking environmental policies
- **No specific EU targets** for agricultural mitigation in NETS
- Ultimately, how AFOLU mitigation is pursued will depend on **MS decisions**

Special role of AFOLU in climate policy

- **European Council guidance**
- The European Council specifically acknowledged "the multiple objectives of the agriculture and land use sector, with their lower mitigation potential, and the need to ensure coherence between the EU's food security and climate change objectives".
- It invited the Commission "to examine the best means of encouraging the sustainable intensification of food production, while optimising the sector's contribution to greenhouse gas mitigation and sequestration, including through afforestation".

Setting the 2030 framework for agricultural mitigation



Source: Graphic prepared by Alan Matthews

Three (four) topics

- The role played by agriculture and land use (AFOLU) sectors in the **setting of Member State ESR targets**
- The **LULUCF policy architecture**
- The **difficulty of agricultural mitigation**
- ***Adapting the CAP*** *to incentivise agricultural mitigation*

ROLE OF AFOLU SECTOR IN SETTING EFFORT-SHARING TARGETS

The 2014 Framework impact assessment (IA)

- Underpinned the EUCO decision-making on overall 2030 target, split between ETS and NETS sectors, targets for energy efficiency
- Based on Reference Scenario 2013
- in the IA agricultural non-CO2 emissions In EUCO option eventually adopted were expected **to reduce by 28%** compared to **4% in the 2013 Reference Scenario**

The 2016 ESR impact assessment.

- Designed to assess the burden-sharing among Member States of the EUCO targets
  - two policy scenarios EUCO27 and EUCO30
- Based on Reference Scenario 2016 to establish baseline
- Little change in reduction of agricultural emissions in Reference Scenario (-2.4% compared to -4% in 2013 RS)
- But very different outcomes in the policy scenarios.
- **Non-CO2 mitigation based on carbon values of €0.05/t in EUCO27 and zero in EUCO30**
- Correspondingly, minimal or no reduction of agricultural emissions expected in 2030 policy scenarios
- Was potential for agricultural mitigation overlooked because of fears over reduced activity levels?
- Does this matter?

Explaining NETS effort sharing in the 2016 ESR

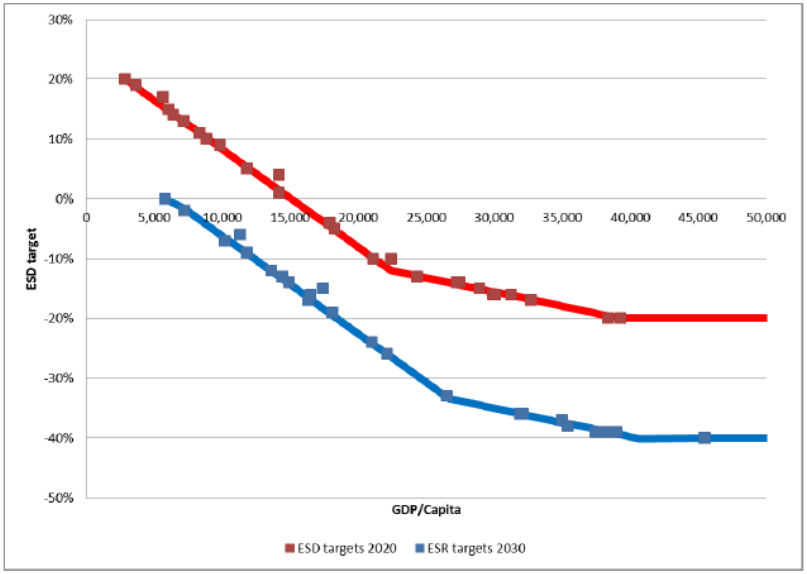
Initial distribution based on ‘fairness’, GDP per capita

Adjusted for MS with above-average GDPpc using gap analysis with cost-effective shares

Two further flexibilities

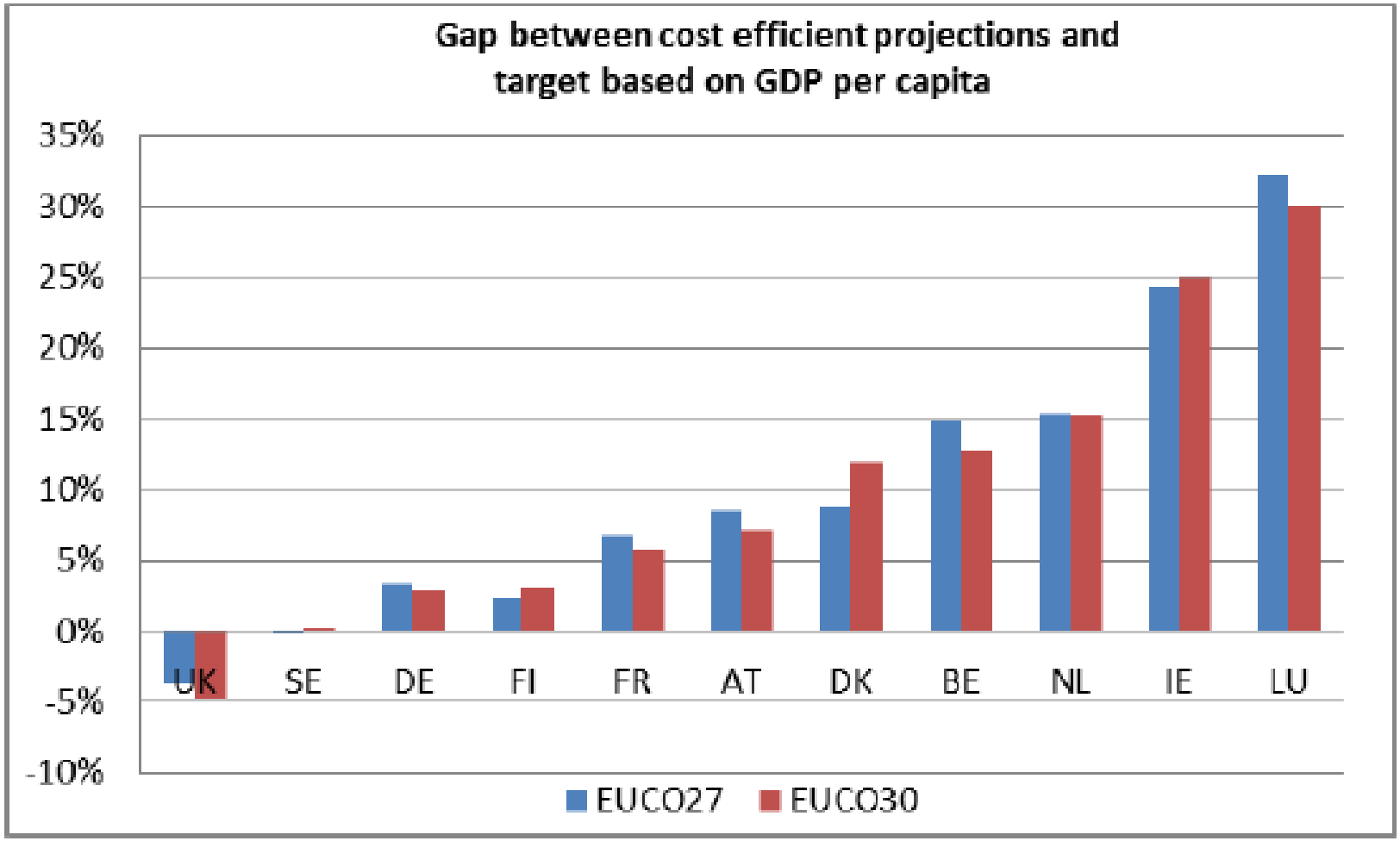
- once-off ETS to NETS allocation
- LULUCF credits

Figure 6: National effort sharing targets for 2020 and 2030 resulting from the current methodology in relation to GDP per capita



Source: Commission calculations based on Eurostat and reported GHG emissions

Gap in 2030 between GDP-based targets and cost-effective EU emission reductions for high income Member States (as % of 2005 emissions)



Source: Commission ESR Impact Assessment 2016

Implications of treatment of non-CO2 emissions in EUCO27/30 modelling for MS targets

- MS targets based initially on 'fairness' – relative GDP per capita – between 0% and 40%
- For high-income MS, targets adjusted for cost-effectiveness based on 'gap analysis' with cost-effective targets derived from the policy scenarios

	EU targets achieved cost-effectively	MS target based on GDP per cap.	Gap (as a % of 2005 emissions)
EU	**-30%**	**-30%**	**0%**
All High Income MS	**-33%**	**-37%**	**4%**
MS with large gap	-10%	-40%	30%
MS with smallest gap	-41%	-36%	-5%

Source: Commission calculations based on PRIMES and GAINS, EUCO30 scenario

Implications of treatment of non-CO2 emissions in EUCO27/30 modelling for MS targets

- Adjustment solution (option T2) was to arbitrarily redistribute targets among the high-income countries
  - An upward adjustment in ambition of 1 percentage point for group 1, no adjustments for group 2 and a downward adjustment in ambition of 3 percentage points for group 3 and 9 percentage points for group 4.
- Recall, EUCO scenarios effectively ignore potential for non-CO2 emission reductions beyond 'business as usual'
- High-income countries with high shares of non-CO2 emissions in NETS will, by construction, have large cost-effectiveness 'gap' as calculated in scenarios
- Hence, adjustment for cost-effectiveness de facto weighted towards countries with high shares of agricultural emissions

Implications of being an 'agricultural' emitter for outcome of the 'gap' analysis

Option	T1: No target adjustment	T2: Limited target adjustment
LU	-40%	-40%
SE	-40%	-40%
DK	-40%	-39%
FI	-39%	-39%
NL	-39%	-36%
AT	-39%	-36%
IE	-39%	-30%
BE	-38%	-35%
DE	-37%	-38%
FR	-36%	-37%
UK	-36%	-37%

Group 1:
DE, UK and FR, the group with a low gap below or around 5% across all scenarios.

Group 2:
SE and FI, a group with a low gap below 5% across the EUCO27, EUCO30 and WEM-EXTRA scenarios, but clearly a significantly higher gap in scenarios based on the 2013 Reference.

Group 3:
A group of small rich Member States ranging above the average gap of higher income Member States and below 15% across most scenarios (AT, DK, BE, NL).

Group 4:
A small group with a very high gap of above 15% across all scenarios, comprising two smaller Member States (LU, IE).

Once-off ETS to NETS flexibility

- Introduced for MS with national emission reduction targets significantly above both the EU average target and their cost effective reduction potential, as well as for member states that did not have free allocation for industrial installations in 2013.
- Allows eligible MS to facilitate the achievement of their NETS obligations through the cancellation of EU ETS allowances.
- Once-off flexibility for the commitment period as a whole which must be chosen prior to the beginning of the period.
- Not free – MS making use of this option would forego the associated auction revenue.

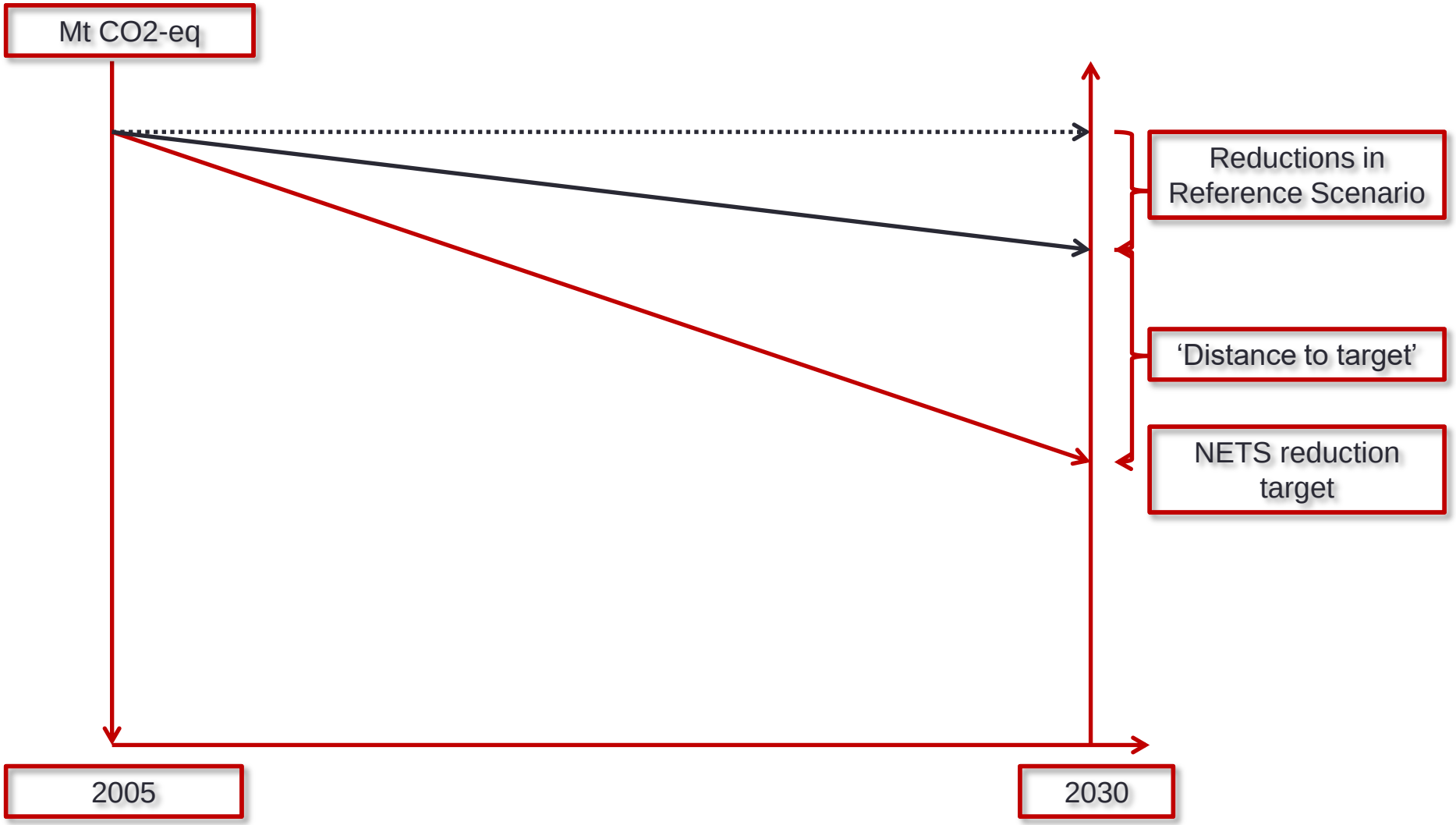
LULUCF flexibility

- Allows for limited use of net removals from certain LULUCF accounting categories, while ensuring no debits occur in the LULUCF sectors, to account for MS compliance towards NETS targets if needed.
- The overall amount of LULUCF credits that can be used to offset NETS emissions is capped at 280 Mt CO2-eq (credits from forest management FM cannot be used)
- Total allocated across MS based on the relative share of agricultural non-CO2 emissions in total NETS emissions

Assessing member state's NETS challenge

- 2030 reduction percentages relative to 2005 are allocated mainly on the basis of GDP per capita. But national GHG emissions evolve very differently in the Reference Scenario
- In the 2016 Reference Scenario, NETS emissions projected to decrease by around 24% below 2005 levels in 2030, 'distance from target' is 6%.
- Challenges are very different for individual member states
- Disparate picture if countries are ranked on the basis of 'distance to target' in 2030 rather than on the basis of the reduction percentages between 2005 and 2030.

Assessing member state's NETS challenge



The agricultural mitigation challenge in 2030 by Member State

Country	Effort-sharing based on 'fairness' (with no target limit)	NETS 2030 reduction compared to 2005	Maximum annual flexibility		NETS reduction target assuming full use of allowed flexibilities	'Distance to target' in 2030 assuming maximum	Projected share of agriculture in 2030 emissions
			One-off flexibility from ETS to NETS	Flexibility from LULUCF to NETS			
		%	%	%		%	%
Austria	-39%	-36%	2.0%	0.4%	-33.6%	11.7%	17.0%
Belgium	-38%	-35%	2.0%	0.5%	-32.5%	25.4%	16.1%
Bulgaria	0% (+1%)	0%		1.5%	1.5%	-22.2%	25.4%
Croatia	-7%	-7%		0.5%	-6.5%	-15.2%	19.5%
Cyprus	-24%	-24%		1.3%	-22.7%	5.8%	19.7%
Czech Republic	-14%	-14%		0.4%	-13.6%	-6.6%	13.4%
Denmark	-40% (-42%)	-39%	2.0%	4.0%	-33.0%	16.2%	36.0%
Estonia	-13%	-13%		1.7%	-11.3%	-4.9%	30.2%
Finland	-39%	-39%	2.0%	1.3%	-35.7%	8.8%	24.3%
France	-36%	-37%		1.5%	-35.5%	19.8%	24.9%
Germany	-37%	-38%		0.5%	-37.5%	17.0%	17.6%
Greece	-16%	-16%		1.1%	-14.9%	-29.8%	21.9%
Hungary	-7%	-7%		0.5%	-6.5%	-21.2%	19.3%
Ireland	-39%	-30%	4.0%	5.6%	-20.4%	15.1%	49.0%
Italy	-33%	-33%		0.3%	-32.7%	9.8%	12.3%
Latvia	-6%	-6%		3.8%	-2.2%	-7.7%	28.9%
Lithuania	-9%	-9%		5.0%	-4.0%	-9.2%	47.9%
Luxembourg	-40% (-61%)	-40%	4.0%	0.2%	-35.8%	54.2%	6.8%
Malta	-19%	-19%	2.0%	0.3%	-16.7%	-4.0%	11.3%
Netherlands	-39%	-36%	2.0%	1.1%	-32.9%	22.6%	20.2%
Poland	-7%	-7%		1.2%	-5.8%	6.7%	19.0%
Portugal	-17%	-17%		1.0%	-16.0%	-17.5%	23.1%
Romania	-2%	-2%		1.7%	-0.3%	-10.5%	22.9%
Slovakia	-12%	-12%		0.5%	-11.5%	-0.7%	10.9%
Slovenia	-15%	-15%		1.1%	-13.9%	-8.5%	18.4%
Spain	-26%	-26%		1.3%	-24.7%	-1.5%	21.9%
Sweden	-40% (-42%)	-40%	2.0%	1.1%	-36.9%	7.6%	23.5%
United Kingdom	-36%	-37%		0.4%	-36.6%	4.3%	17.0%

*Estimate, limit is expressed in absolute million tonnes over 10 years.

Source: First three columns from Commission, Effort Sharing Regulation proposal COM(2016)482, Annex 1: Distance to target and projected share of agriculture in 2030 are own calculations by Alan Matthews based on Commission, Reference Scenario 2016, Appendix 2 and 3.

Assessing member state's NETS challenge relative to Reference Scenario 2016

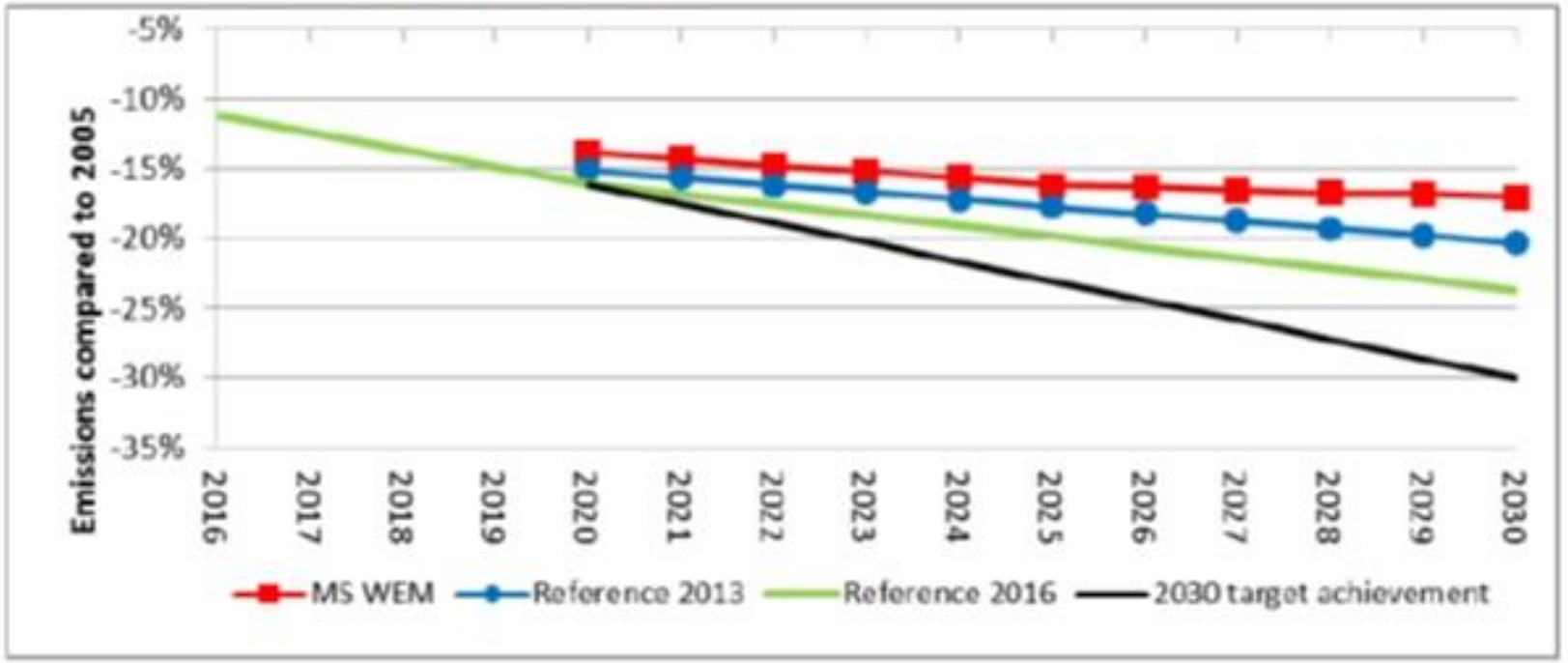
- Group 1
  - countries which are likely to have surplus AEAs in 2030. Their expected NETS emissions will be below their ESR targets. These are mainly Central and East European countries but also include three Mediterranean countries, Greece, Portugal and Spain.
- Group 2
  - countries where the distance to target falls within a 10% range and thus will require some additional effort, ranging from UK (4.3% above target in 2030 in the Reference Scenario) and Italy (9.8% above target).
- Group 3
  - countries where the distance to target is greater than 10% and significant additional efforts will be required over the next commitment period
  - Group 3A Luxembourg, Austria, Belgium and Germany, share of NETS emissions coming from agriculture is relatively low in 2030, less than 20%.
  - Group 3B Denmark, France, Ireland and the Netherlands, shares of agricultural emissions greater than 20% of total NETS emissions in 2030.

Member States 2030 challenges - caveats

- The ‘distances to target’ have been calculated assuming full use of permitted flexibilities.
- The 2016 Reference Scenario assumes full and successful implementation of all existing policy measures.
- The 2016 Reference Scenario based on model runs carried out for the Commission differs from MS projected NETS emissions in 2030 (see next slide)
- No carryover of surplus AEAs from the 2013-2020 commitment period into the 2021-2030 period

Member states 2030 challenges – impact of Reference Scenario baseline

Figure 4: Emissions projected under current trends and policies and required reductions to achieve the 2030 target



Source: Commission calculations based on PRIMES, GAINS, EEA 2015

Member States are more pessimistic than Commission regarding emissions reductions to 2030 in baseline scenario

Implications of EU bubble

- Commission has put in place trading mechanisms in NETS sectors to ensure least-cost fulfilment of overall EU targets
- Challenge of MS ESR targets also depends on use MS make of trading mechanisms
- MS have not to date made use of these mechanisms and prefer to meet targets domestically
- A number of MS have domestic targets in addition to EU targets
- ESR IA looked at adding central information site, central market place for AEA transfers or mandatory auctioning
- Links with annual monitoring and 5-year legal compliance checks (2027 and 2032)

Brexit implications

- EU and some MS have now ratified Paris Agreement
  - Joint action covering the emission level allocated to each Party remains to be communicated to Secretariat
- Following Brexit UK will need to decide how it wishes to meet its own statutory climate targets
- UK has promised to ratify Paris by end of this year and will do so as EU member. Joint fulfilment of EU pledge?
- Regarding ETS, could set up its own ETS and link with the EU (a la Swiss) or agree to remain in ETS (a la Norway and Iceland)
- Will UK remain part of NETS? Will targets have to be renegotiated? Norway indicated it intends to participate in NETS (with indicative target 40% reduction)

ASSESSMENT OF LULUCF INTEGRATION

European Council guidance on LULUCF

- “Policy on how to include Land Use, Land Use Change and Forestry into the 2030 greenhouse gas mitigation framework will be established as soon as technical conditions allow and in any case before 2020”.

LULUCF policy architecture

- Three options in Commission 2030 Communication
- **Option 1 — LULUCF pillar:** Maintain non-CO2 agriculture sector emissions in a potential future Effort Sharing Decision, and further develop a LULUCF sector policy approach separately;
- **Option 2 — Land use sector pillar:** Merging the LULUCF and agriculture sector non-CO2 emissions into one new and independent pillar of the EU's climate policy;
- **Option 3 — Effort Sharing:** Include the LULUCF sector in a potential future Effort Sharing Decision.

LULUCF policy architecture

- Responses to public consultation very mixed
  - half of respondents had no clear preference
  - one third of respondents, mostly environmental NGOs and forestry organisations, were in favour of keeping LULUCF as a separate pillar
  - option of merging agriculture and LULUCF in a separate pillar outside the ESD received the least support
- **Stand-alone LULUCF pillar** with two-way flexibility.
  - NETS credits must be used to maintain 'no debit' status if necessary
  - Capped but differentiated possibilities for MS to use LULUCF net credits to offset NETS emissions
  - **Limited flexibility with NETS** justified "on the need derived from the agriculture sector share for each Member State in the ESD**"** and as providing **"**additional incentives to improve and optimize the mitigation potential from LULUCF"

LULUCF flexibility and environmental integrity

- Some NGOs opposed in principle to allowing LULUCF credits to be used to offset NETS emissions
- Position not supported by the Paris Agreement Article 4
  - sets out objective “to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century,….”
- Others object in practice that LULUCF flexibility weakens 2030 target (by max ~0.5% overall (39.5% instead of 40%), max 1% in NETS (29% instead of 30%))
- EUCO decision was a binding target of “at least a 40 % domestic reduction in economy-wide greenhouse gas emissions by 2030 compared to 1990”
- Better to argue to increase level of ambition at future stocktakes than to reject principle of substitution

LULUCF flexibility linked to conditions

- Overall LULUCF balance cannot be in debit (with restrictions on the use of Forest Management (FM) credits to achieve balance).
  - LULUCF credits can be traded
- FM credits cannot be used for LULUCF transfers which can only come from additional effort in afforestation (AF) and cropland and grassland management.
- Overall amount of LULUCF transfers is capped (whether the level of the cap is appropriate can also be debated).
- LULUCF credits enter NETS to the extent that a MS needs them to achieve their own ESR target, but not beyond that
  - i.e. cannot be used to allow MS to generate a surplus to trade with other MS, though LULUCF credits can be banked within a period.
- MS can only make use of LULUCF credits when it meets the technical conditions for accurate reporting of LULUCF emissions.
- Generating additional LULUCF credits will not be costless, at least for some MS

Allocation of LULUCF flexibility across MS

- Allocation across MS done on a banded basis, grouping MS into bands based on their dependence on agricultural emissions in NETS. However, all countries can make use of some transfers.
- No obligation to make use of these transfers. They are ceilings, dependent on MS efforts in the LULUCF sector, and not automatic deductions from a country's NETS target.
- Thus we cannot know if indeed the full transfer permitted will be taken up by 2030. Here the Commission points to the importance of the interactions with other elements and flexibilities in the ESR decision.

Final LULUCF reflections

- Most mitigation potential is in FM but this is also most open to gaming e.g. setting FM reference levels
- Forest-rich countries want maximum scope for FM credits
- NGOs concerned that treating all LULUCF credits equally will encourage afforestation which can have adverse effects for biodiversity etc.
- Commission proposal creatively links LULUCF flexibility with difficulties in agricultural mitigation
- My sense is that Commission proposal strikes a good balance between competing objectives
- Will it survive the co-decision process? What will be the crunch points?

IS AGRICULTURAL MITIGATION MORE DIFFICULT?

Mitigation potential - concepts

Source: Smith et al. IPCC WG3 report, Chap 11 AFOLU, 2014

Estimates of agricultural mitigation potential are all over the place

- *Even when narrowing the analysis down to the sole emissions of methane (CH4) and nitrous oxide (N2O) from agriculture, a quick overview of the available results reveals a wide range of abatement rate estimates in the literature. For a commonly used price of 20€/tCO2eq, the predicted abatement rates may vary by a factor up to 20 from one study to another*" (Vermont and De Cara, 2010).

Implied mitigation potential in EU models

Direct impact of different levels of flexibility between LULUCF and ESD on GHG abatement costs in the agriculture non-CO2 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 exc. Breeding	F3 High
GAINS model	Emission reductions relative to 2005				
Agriculture Non-CO2 Emission reduction in 2030, MtCO2eq	78	43	25	25	7
LULUCF credits in 2030 MtCO2eq	0	36	53	53	71
Percent reduction relative to 2030 agriculture emissions	20%	11%	6%	6%	2%
Marginal costs €/tCO2eq. for non-CO2 mitigation	78.6	32.5	7.3	31.4	0
EUCLIMIT modelling framework	Emission reductions beyond Reference 2016 baseline				
Agriculture Non-CO2 Emission reduction in 2030, MtCO2eq	84	49	31	n.a.	13
LULUCF credits in 2030 MtCO2eq	0	35	53	n.a.	71
Percent reduction relative to 2030 agriculture emissions	20%	12%	7%	n.a.	3%
Marginal costs €/tCO2eq. for non-CO2 mitigation	120	42	21	n.a.	10
Memo item					
Agriculture non-CO2 emissions, 2005, MtCO2eq	443.3				
Agriculture non-CO2 emissions, 2030, MtCO2eq, Reference 2016	432.6				

Source: GAINS model/GLOBIUM for LULUCF based on AR4 Global Warming Potentials and using Reference 2016

EcAMPA 2 mitigation potential

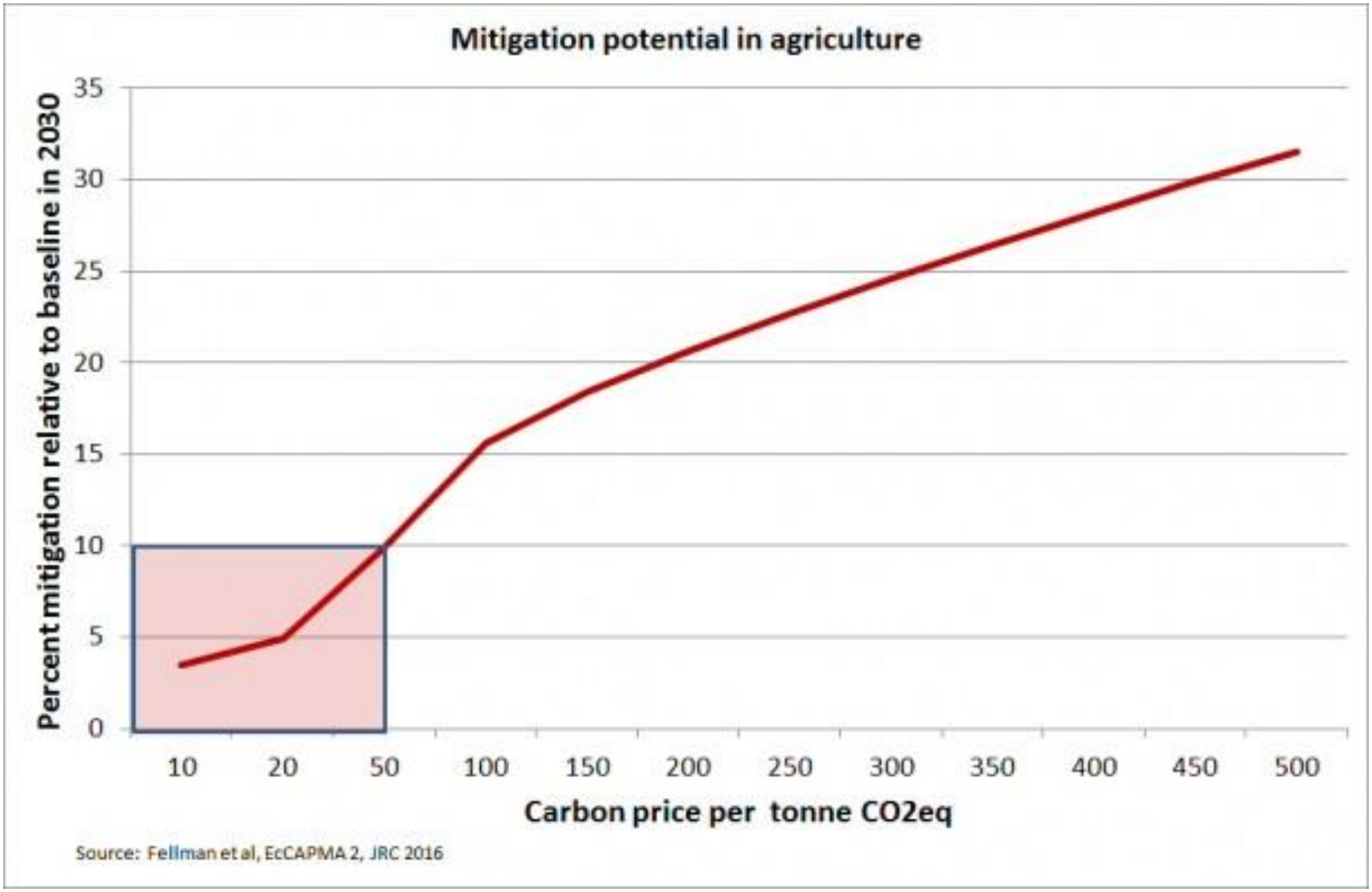
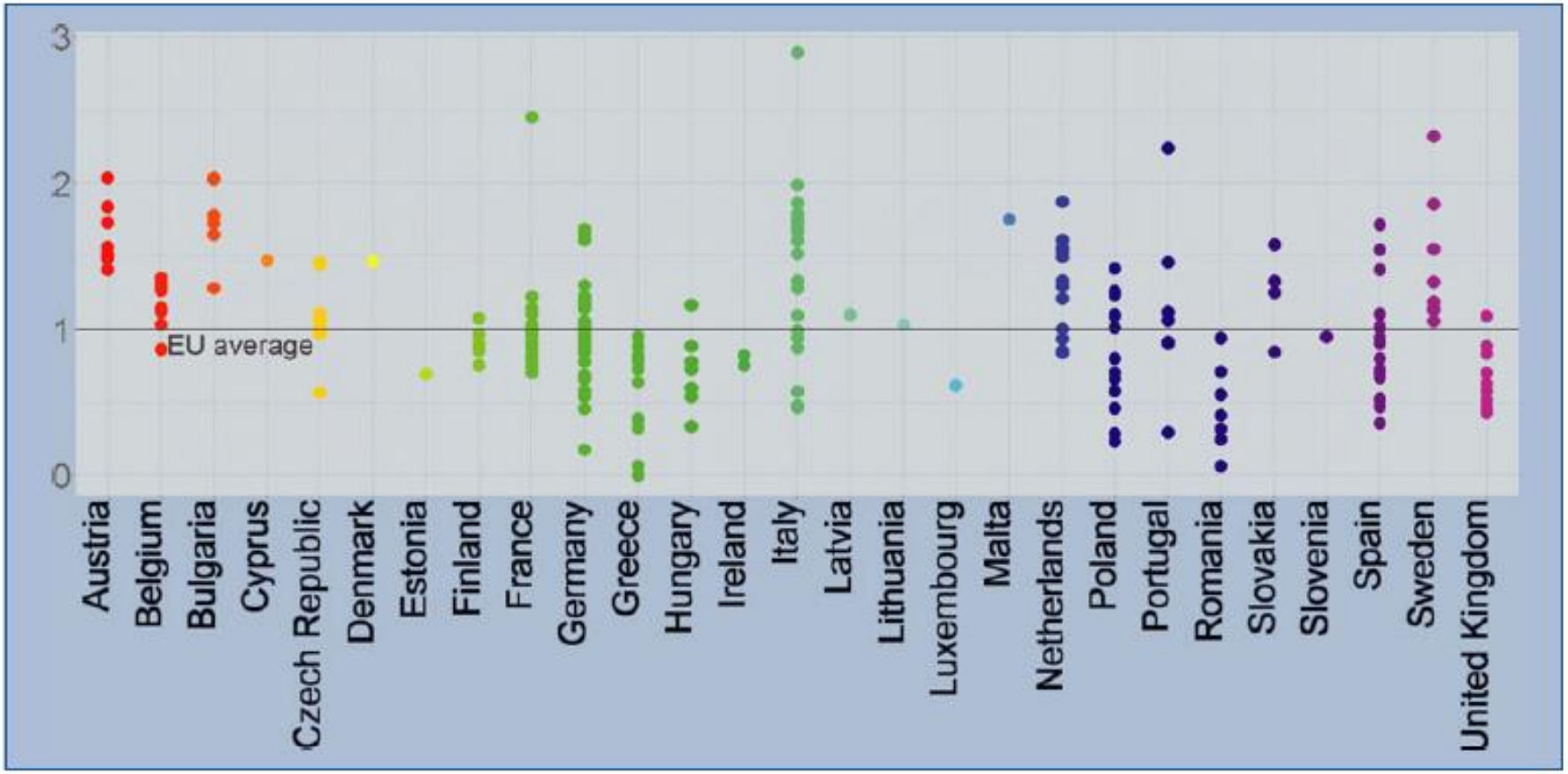


Figure 3: Distribution of regional abatement costs per tonne of CO_2 eq. grouped by EU Member State



Notes: The dots represent NUTS-2 regions grouped by Member State; values are normalised with respect to the EU-27 average (y-axis), (i.e. values above 1 imply higher abatement costs than the EU-27 average and values below 1 imply lower costs than the EU-27 average).
Source: Authors' own calculations with the CAPRI model.

Source: Pérez Domínguez and Fellmann, Eurochoices, 2015

Agricultural mitigation potential

- It is hard to make a direct comparison with the cost of abatement in the ETS or other NETS sectors because information on the implied carbon values of meeting the European Council targets in the ETS and NETS sectors is not given.
- The Reference Scenario 2016 shows a shortfall of 6% in relation to the 2030 target of a 30% reduction in emissions relative to 2005
- Assuming this shortfall could be eliminated by raising the price of carbon emitted in the NETS sector to €30-35/tonne, it would seem that agriculture could make a proportionate contribution to this reduction.
- Political constraint if mitigation occurs through changes in activity levels rather than through changes in technology?

Abatement costs in CAPRI?

- Measured as the carbon price which achieves the specified target reductions in emissions
- Distinction between private (costs to farmers) and economic (costs to society) costs
- Loss in economic welfare for marginal reduction in emissions is arguably the relevant policy indicator
- CAPRI shows increase in economic welfare with reduced emissions as increase in producer welfare exceeds consumer losses
- Agricultural production in CAPRI valued at market prices (i.e. including impact of border protection) overstates social value of maintaining, e.g. beef production. On the other hand, market prices do not reflect co-benefits or external costs of agricultural production

HOW TO INCENTIVISE AGRICULTURAL MITIGATION (WITH FOCUS ON THE CAP)

Making CAP more climate efficient

- “The CAP is already playing a crucially important role in combatting the effects of climate change. This year, some €16.3 billion of the CAP budget will be climate relevant…
  - *Hogan, DG AGRI Outlook Conference Dec 2015*
- Measured against carbon reduction achieved, my suspicion would be this is the most expensive abatement measure currently in place in the EU
- Recent inventory exercises (Frelih-Larsen et al 2015; Ricardo-AEA 2016) make clear the relatively limited mitigation options which can be supported by the CAP

Incentivising research

- We lack cost-effective supply-side options to reduce emissions from agricultural production
- Will the patchwork of varying national incentives to address agricultural emissions under the ESR give the necessary drive to undertake the necessary research?
- Projects like MACSUR are helping to lay the foundation but need to focus on mitigation as well as adaptation

- THANK YOU