BIOENERGIA

Bioenergy Day will take place on September 27th 2023

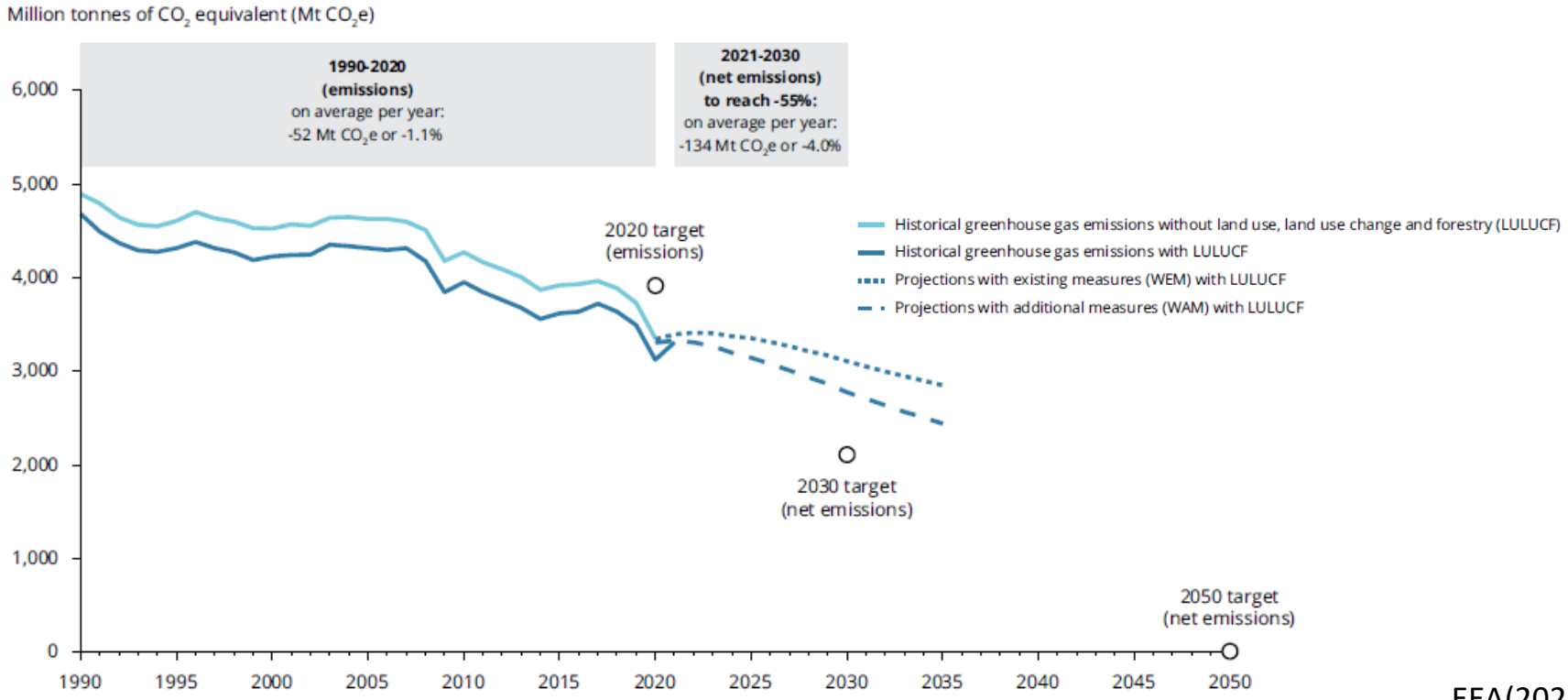
KIEL INSTITUTE FOR THE WORLD ECONOMY

Efficiency gains from the new ETS for transport and buildings

Prof. Dr. Sonja Peterson (joint work with Wilfried Rickels, Christian Rischer and Felix Schenuit)

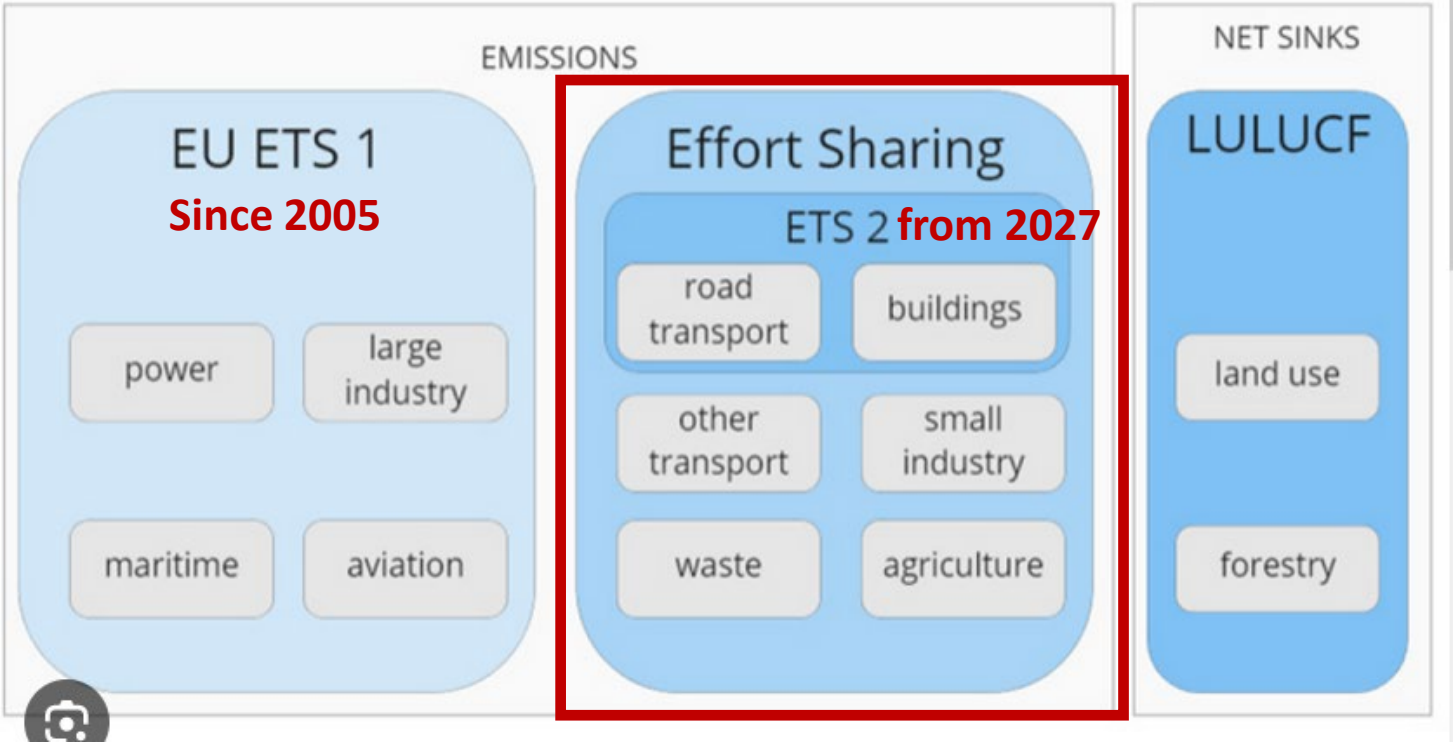
Member of Leibniz Association

The EU has ambitious emission reduction targets



EEA(2022)

The EU setting to reach emission targest



Source: Ecologic Institute (2022)

Target for 2030: 43% below 2005 levels

Targets – see next slide

2026 – 2030: -310 $MtCO_2e$

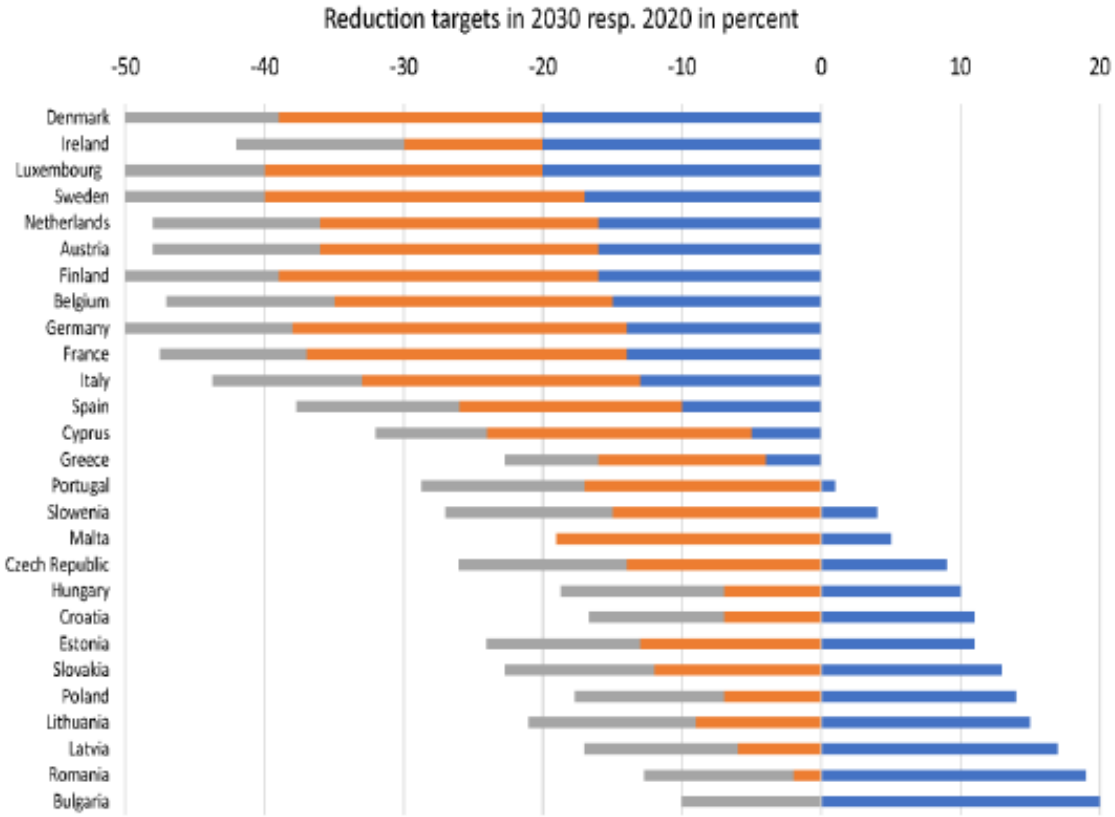
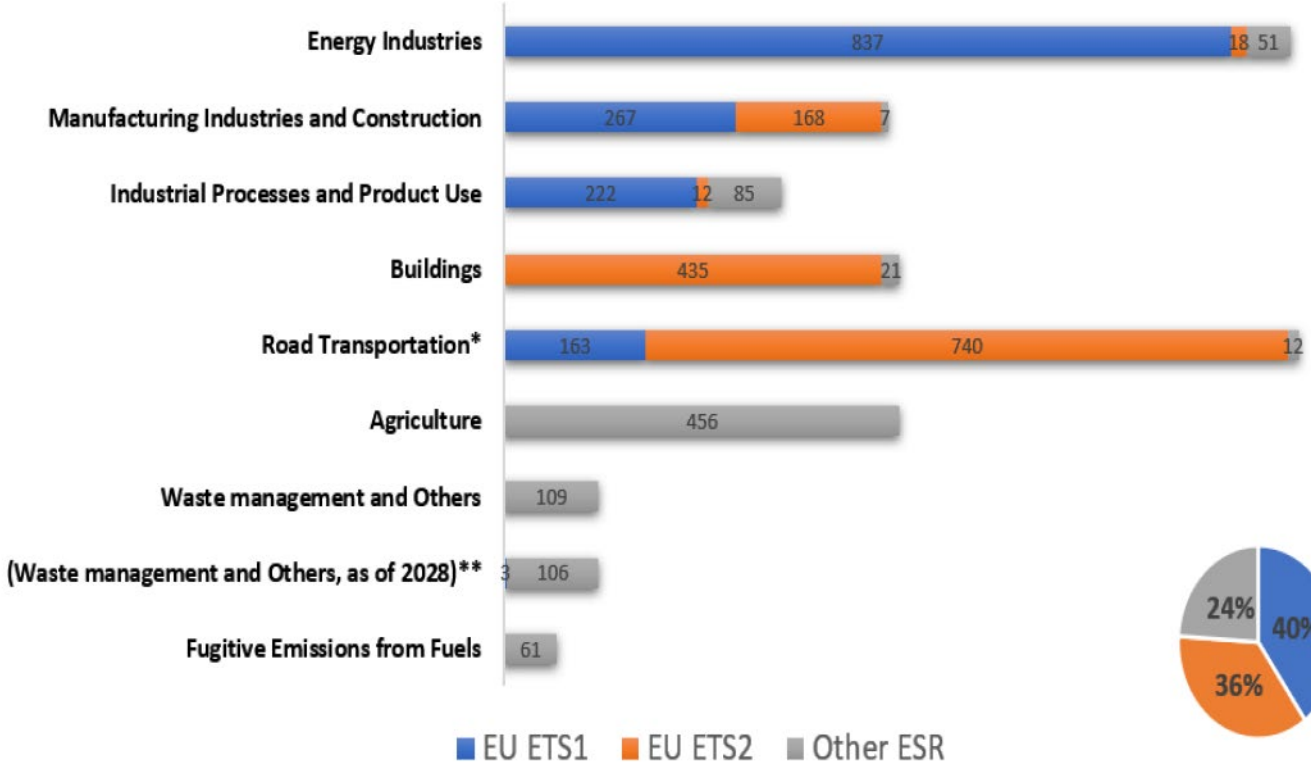
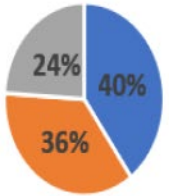


Figure 1: Development of Effort Sharing Targets (im Vergleich zu 2005)
Note: Own presentation, based on data from EEA (2022c) and the corresponding regulations (ESR and ESD). Figures are rounded.

Distribution of emissions by ETS1, ETS2 & other ESR



Based on 2021 emissions



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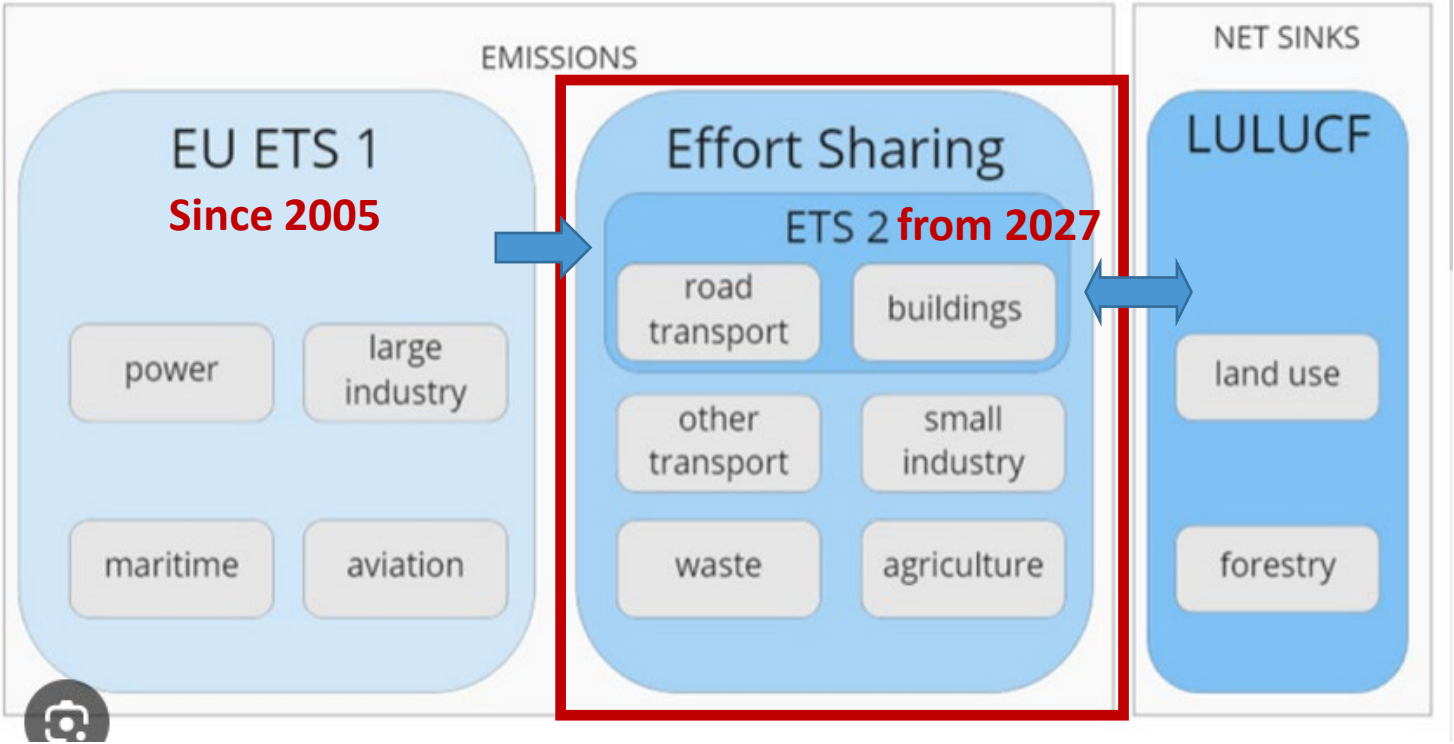

Source: Ecologic Institute (2022)

Target for 2030: 43% below 2005 levels

ESR-Targets

2026 – 2030: -310 $MtCO_2e$

Analysis with the Dynamic Applied Regional Trade (DART) model

Recursive dynamic, CGE model calibrated to GTAP data for 2014; covers CO_2 emissions from fossil fuels

Analysis for 2030

Countries and regions		Sectors	
United States (USA)	UK (UK)	Coal (COL)	Energy Intens. Industr. (EIT)
Canada (CAN)	**Germany (GER)**	Oil Products (OIL)	Other manufac. (MFR)
Brazil (BRA)	**France (FRA)**	Crude oil (CRU)	Transport (TRN)
Other Americans (OAM)	**Benelux (BLX)**	Natural Gas (GAS)	Agriculture (AGR)
Russia (RUS)	**South. Europe (SEU)**	Elect. from Coal (ECoal)	Services (SERV)
Japan (JPN)	**Scandinavia (SCA)**	Elect. from Gas (EGas)	
South Korea (KOR)	**Eastern Europe (EEU)**	Elect. from Oil (EOil)	HH consumption
China (CHN)	Rest of Europe (REU)	Solar-Power (ESolar)	
India (IND)		Wind-Power (EWind)	ETS1
Austral.& N. Zealand (ANZ)		Hydro-Power (EHydro)	ETS2
Other Asia (OAS)		Nucl. Power (ENuclear)	Rest ESR
Middle East (MEA)		Elect. Other (EOther)	
Africa (AFR)			

Scenarios

- In all scenarios: countries & regions outside EU reach NDCs with unilateral carbon prices
- Reference [REF] - EU: ETS1 in EIT & Energy-Sector & ESR-targets that are reached with unilateral carbon prices (-> 1+ 6 carbon prices in EU)
- Comprehensive ETS [ETS] with one EU uniform carbon price
- ESR-ETS: ETS1 + 2nd ESR-wide ETS.
- ETS2, ETS1 + ETS2 in transport & building sector + uniform national carbon prices to reach ESR targets in remaininig sectors

CO2-price in EUR/tCO2

	REF	ETS	ESR-ETS	ETS2	ETS2-Max
FRA	428	X	X	633	622
GER	501	X	X	633	624
BLX	438	X	X	588	583
SEU	213	X	X	296	288
SCA	500	X	X	834	944
EEU	89	X	X	68	67
Full-EU	X	155	X	X	X
EU-ETS1	79	X	77	76	68
ESR-ETS	X	X	307	X	X
EU-ETS2	X	X	X	297	50.56

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Welfare effects rel. to REF

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ETS2-Max: + ca 415 MtCO2 / + 40% above target in ESR

Conclusions

- Efficiency gains through ETS2 are significant (about a quarter of potential efficiency gains)
- Countries should use flexibilities
- Unclear how a price of 45€/tCO2 (in 2020 prices) could be reached
- Unclear how ETS2 goes together with ESR targets -> ex ante distribution of auction volumes would be better
- LULUCF sector will become more important to reach targets