

CT-AT Winter School
11 February 2008, Graz

Comparative analysis of EU energy systems

Structural indicators and simulation of EU 2020 targets

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EU Target Sharing 2020

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EU Target Sharing 2020

■ The ambitious energy and emissions targets for 2020

- Minus 20 percent GHG emissions over 1990 – unilateral
- Minus 30 percent GHG emissions over 1990 – multilateral
- 20 percent increase of energy productivity – over BaU
- 20 percent share of renewables
- 10 percent share of biofuels

■ How shall these Community targets be allocated to the Member States?

- Target or Effort Sharing (not Burden Sharing)



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Indicators

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Indicators



- **Ad-hoc indicators**
 - e.g. GHG emissions per GDP or per person
- **Sectoral indicators**
 - Reveal sectoral differences, e.g. in transport or electricity sectors
- **Structural indicators**
 - Reveal causalities in the energy sector, e.g. population, economic activity and technologies
 - Very adequate for simulating Target Sharing agreements

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Ad-hoc Indicators



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Ad-hoc Indicators

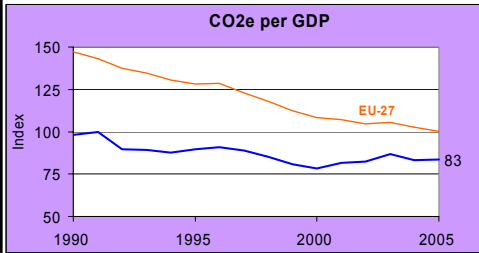
- **Indikatoren**
 - CO₂e per GDP
 - CO₂e per person
 - CO₂e per Total Energy Supply
 - Total Energy Supply per GDP
- **Remarks**
 - Very popular but only of limited use
 - Requires weighting for aggregation

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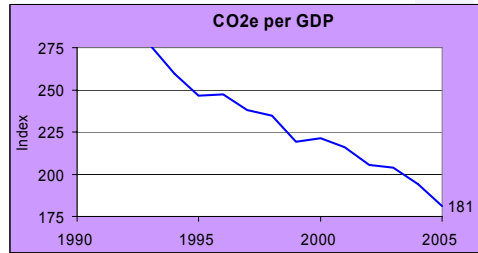
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Ad-hoc Indicators CO₂e per GDP

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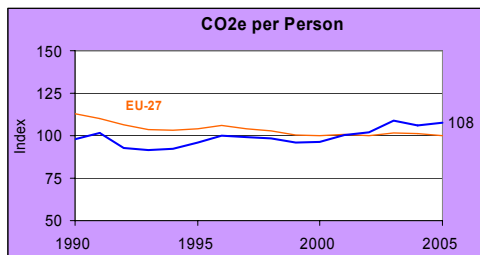
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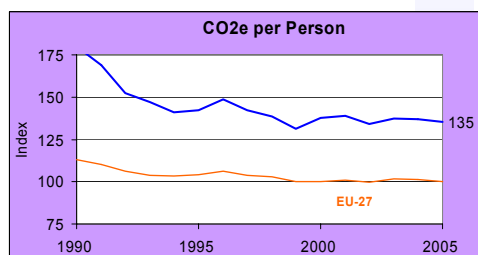


Ad-hoc Indicators CO₂e per Person

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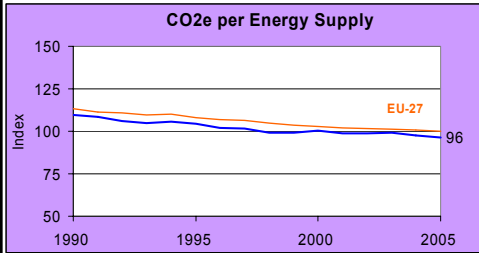
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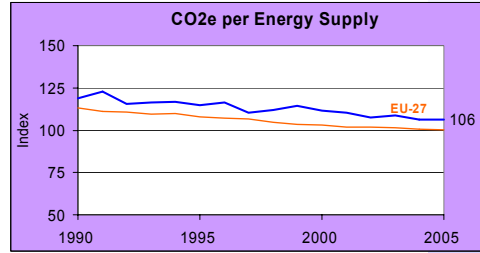


Ad-hoc Indicators CO₂e per Total Energy Supply

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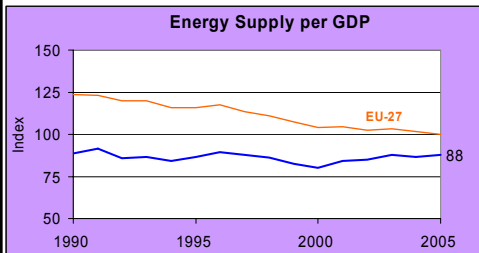
EU Target Sharing 2020

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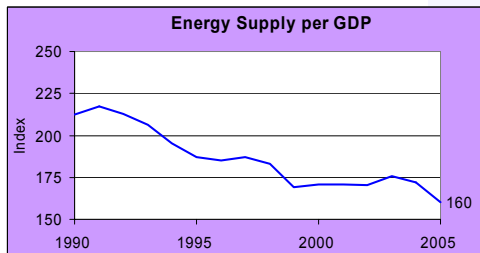


Ad-hoc Indicators Total Energy Supply per GDP

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Sectoral Indicators

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Sectoral Indicators

- **Indicators**
 - CO₂e
 - CO₂, CH₄, N₂O, CFCs
 - CO₂ Energy, CO₂ Manufacturing and Construction
 - CO₂ Transport, CO₂ Other Sectors
 - CO₂ Industrial Processes
- **Normalization of indicators**
 - Per BIP real ppp
 - Index: EU-27 in 2005 = 100
- **Remarks**
 - Very adequate for forecasting

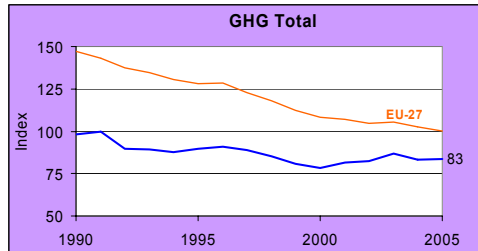
EU Target Sharing 2020

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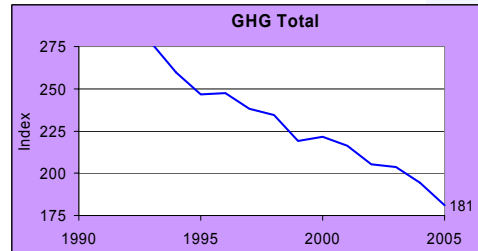


Sectoral Indicators GHG Total

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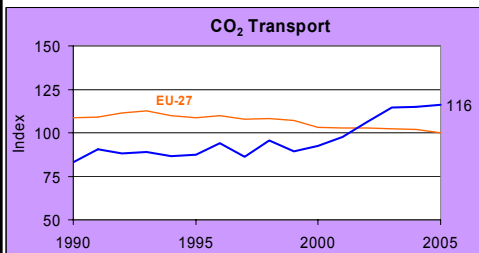
EU Target Sharing 2020

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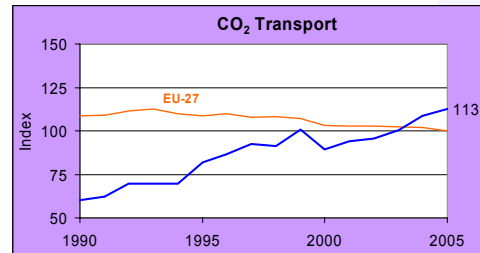


Sectoral Indicators CO₂ Transport

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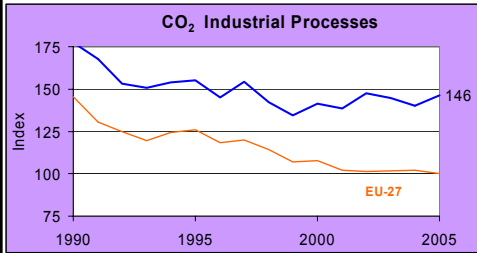
EU Target Sharing 2020

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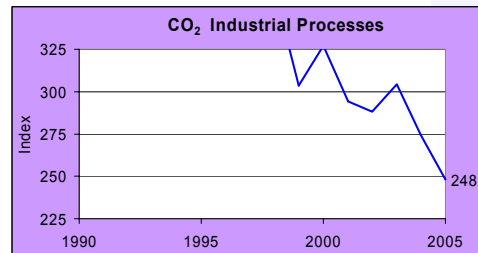


Sektoral Indicators CO₂ Industrial Processes

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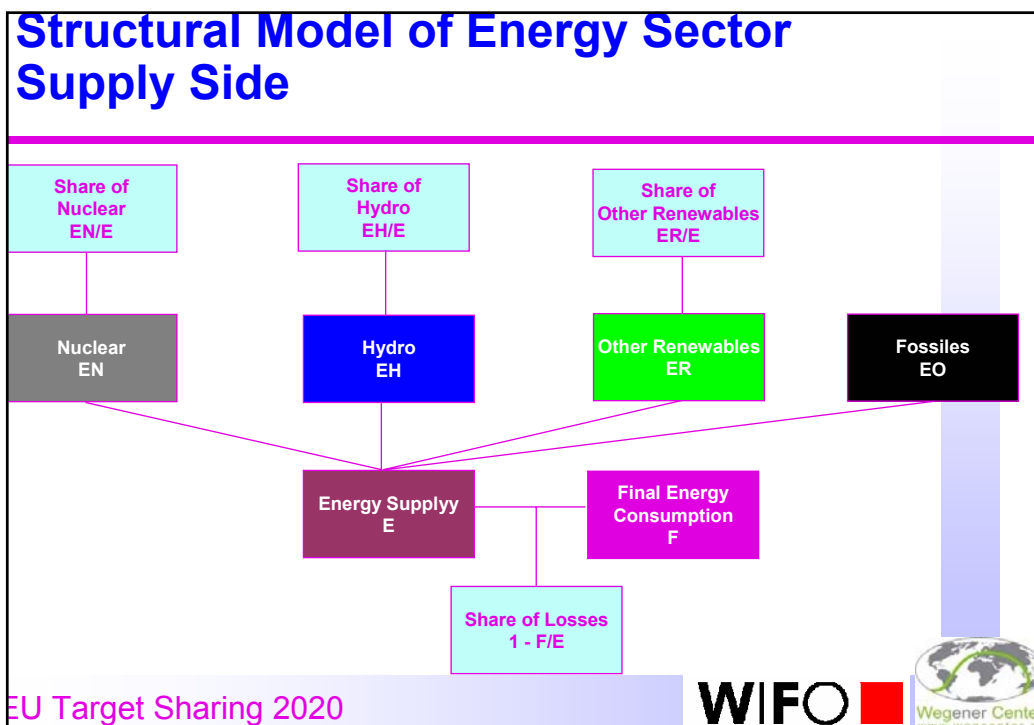
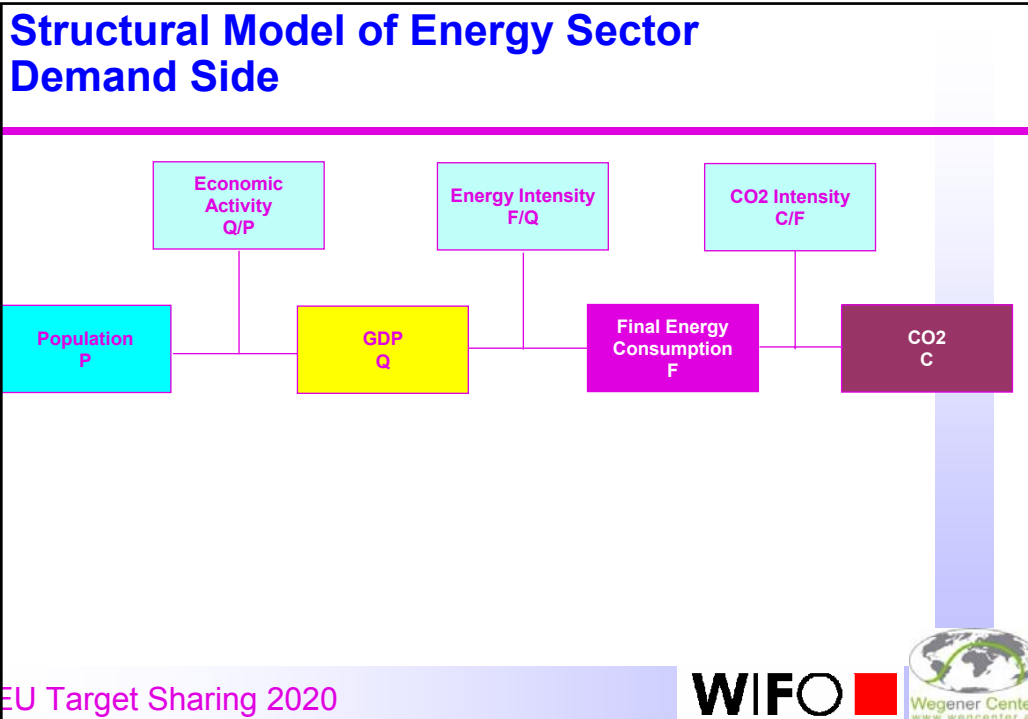


Structural Indicators

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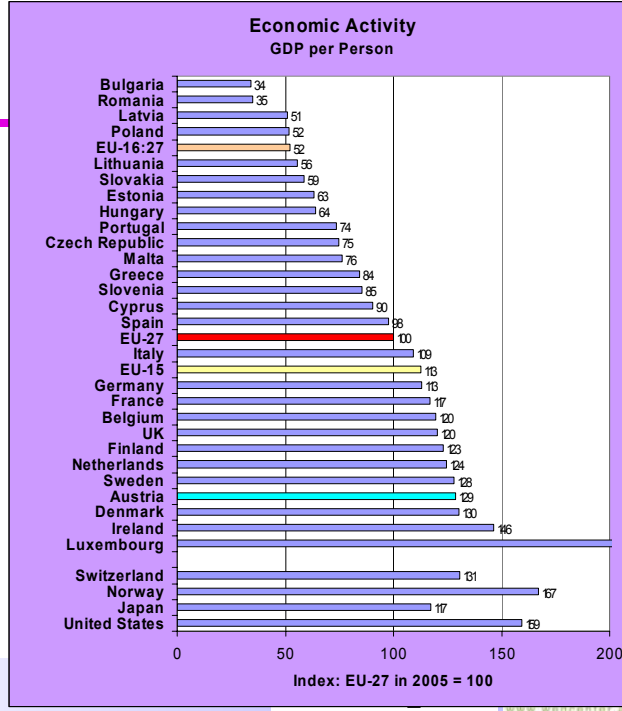




Structural Indicator Economic Activity

GDP per Person

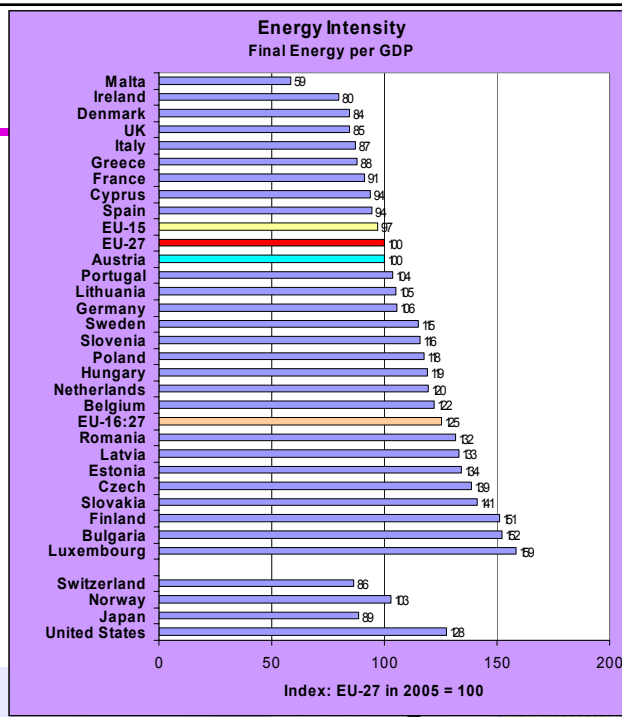
EU Target Sharing 2020

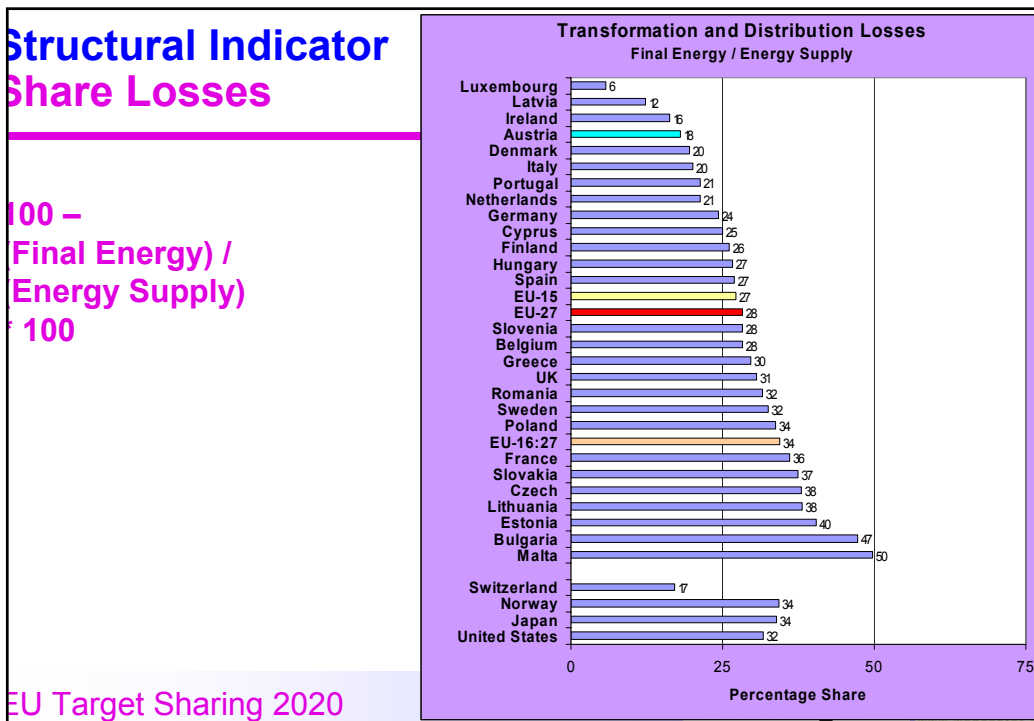
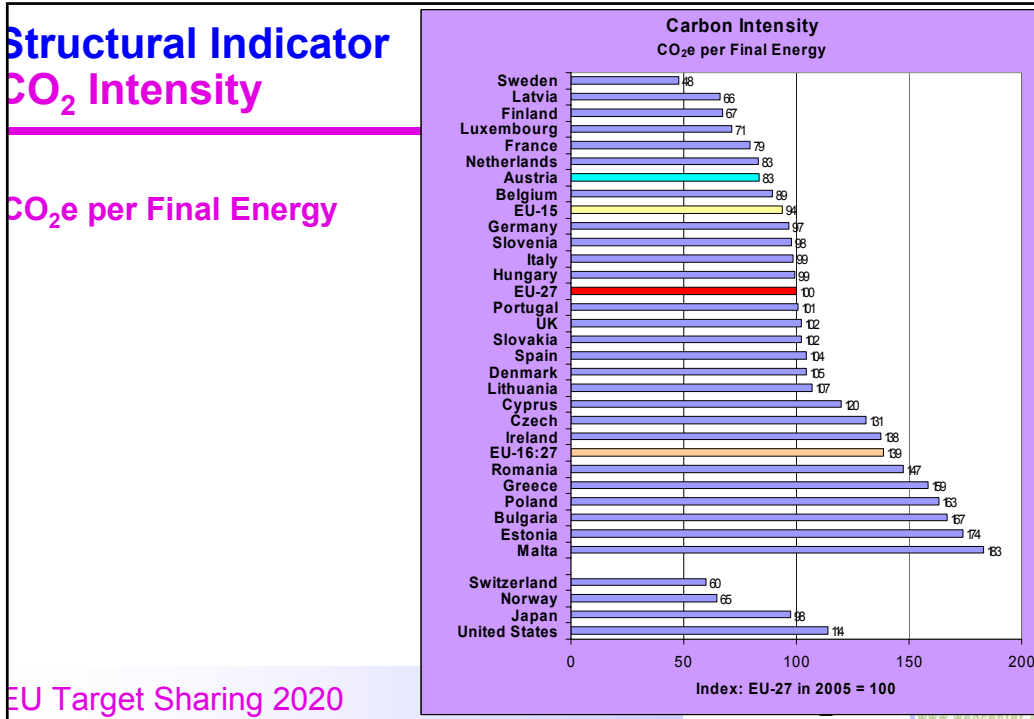


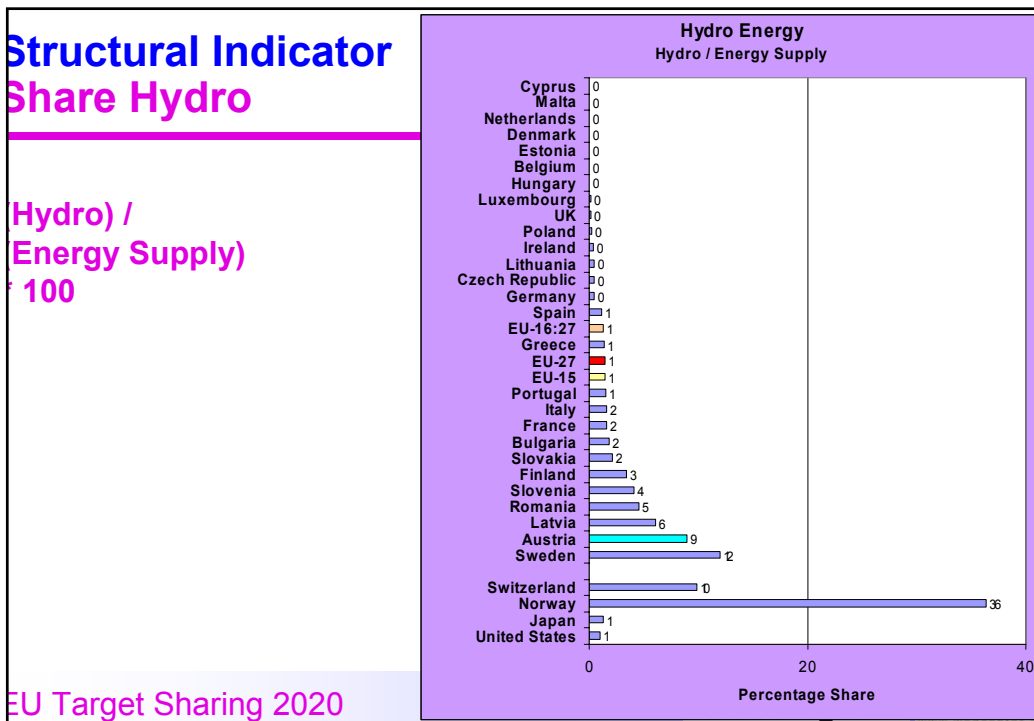
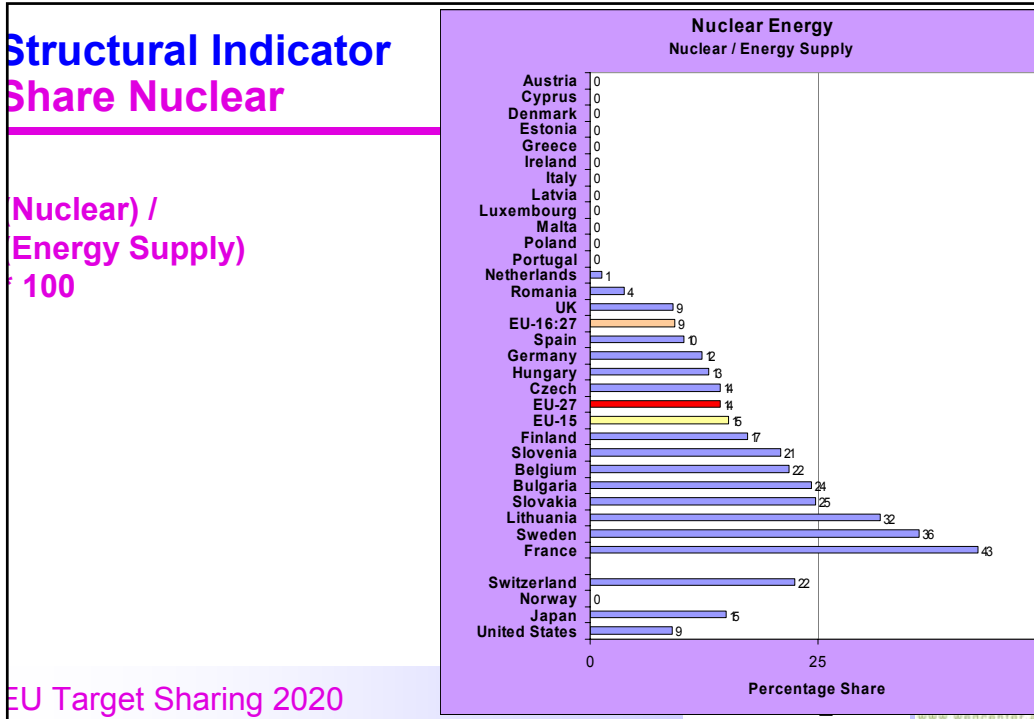
Structural Indicator Energy Intensity

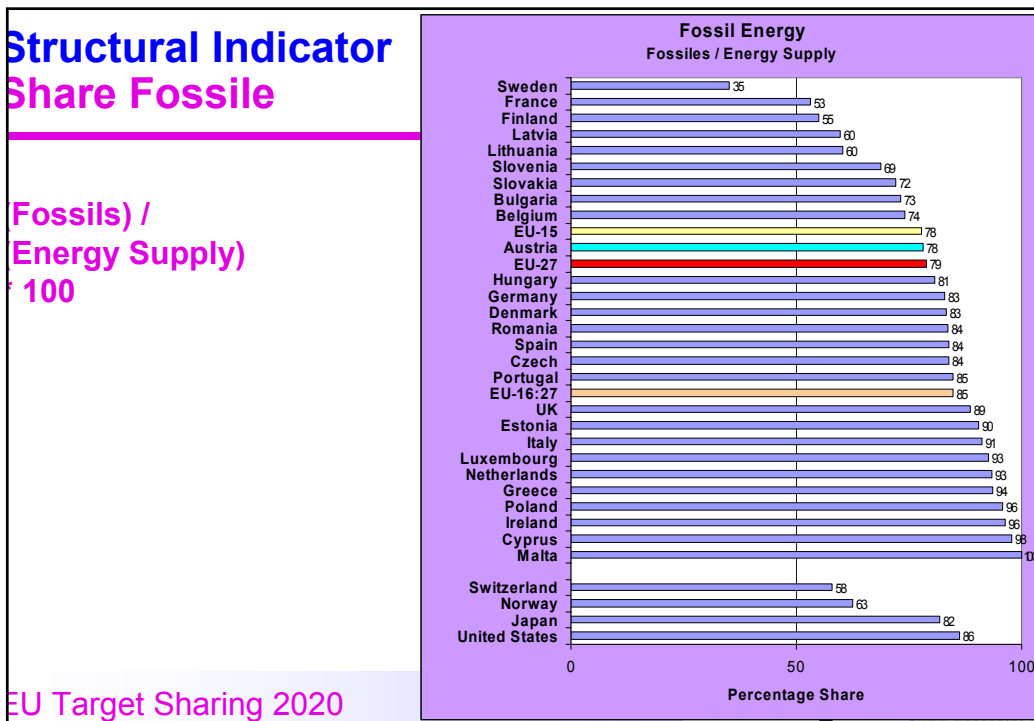
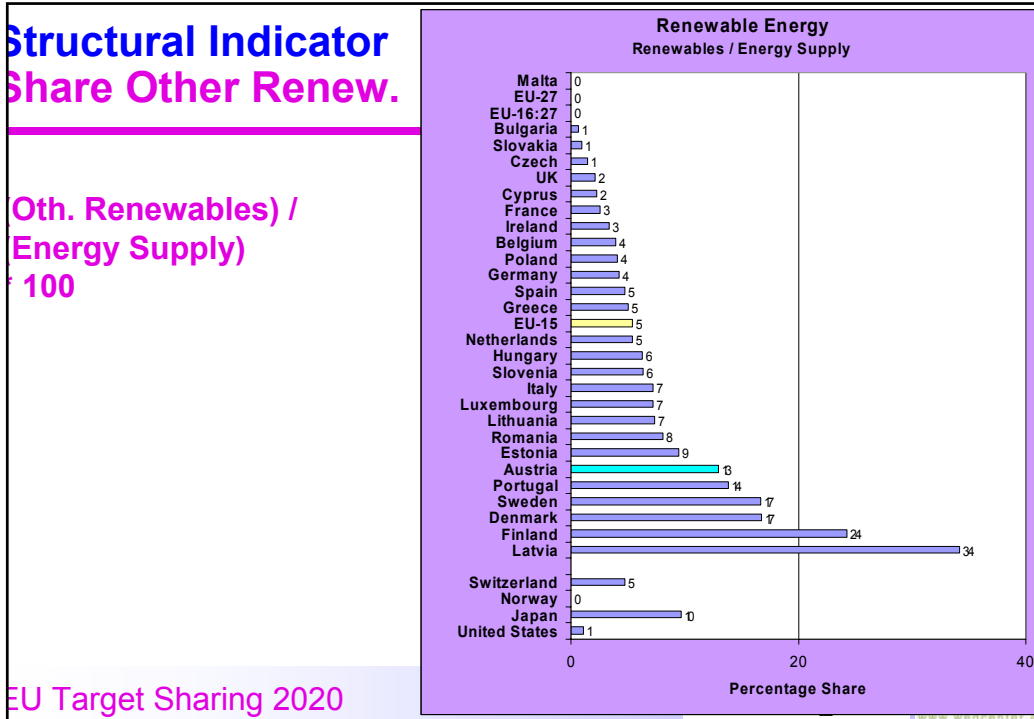
Final Energy per GDP

EU Target Sharing 2020





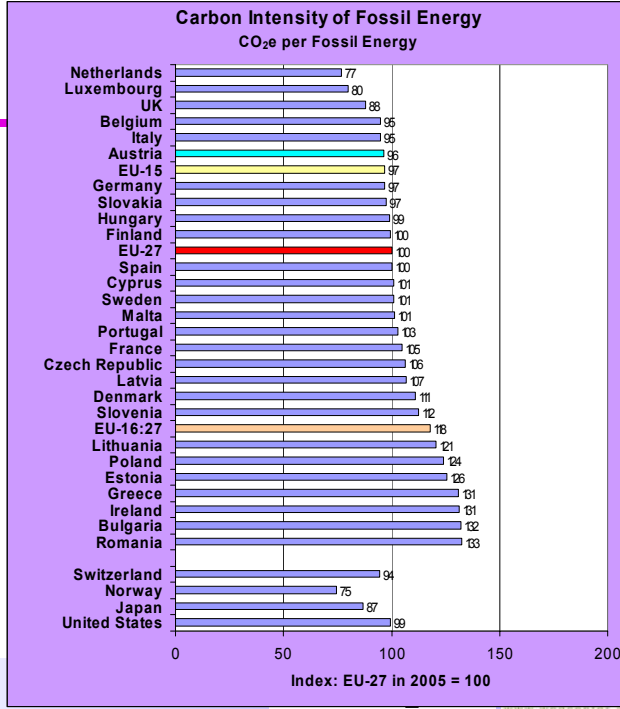




Structural Indicator
CO₂ Intensity Fossils

CO₂ / (Fossils)

EU Target Sharing 2020



Simulation of
Target Sharing Agreements

EU Target Sharing 2020

Simulation of Target Sharing Agreements

- Simulation of two policy decisions
- Step 1: Determine EU target
e.g. 20 increase of energy productivity
- Step 2: Determine convergence paths to this target
e.g. 50 percent

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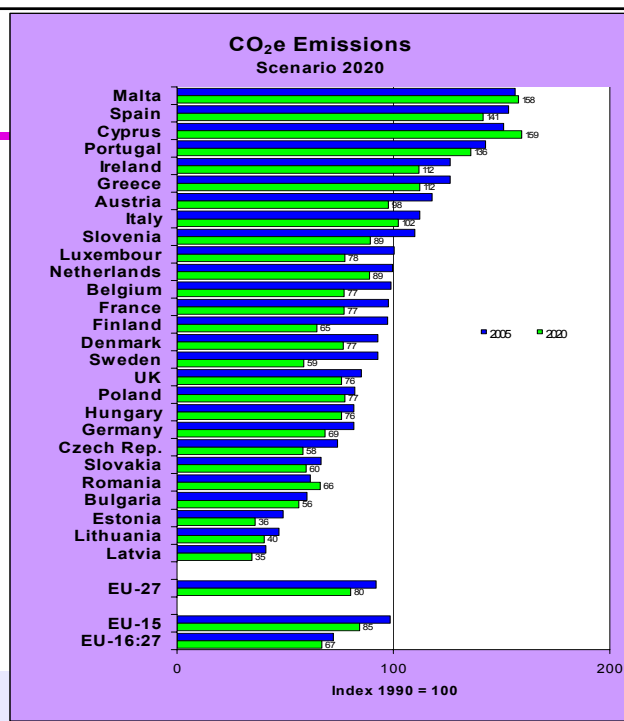
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CO₂e 2020

Scenario 2020
-20 % CO₂e over 1990

EU Target Sharing 2020



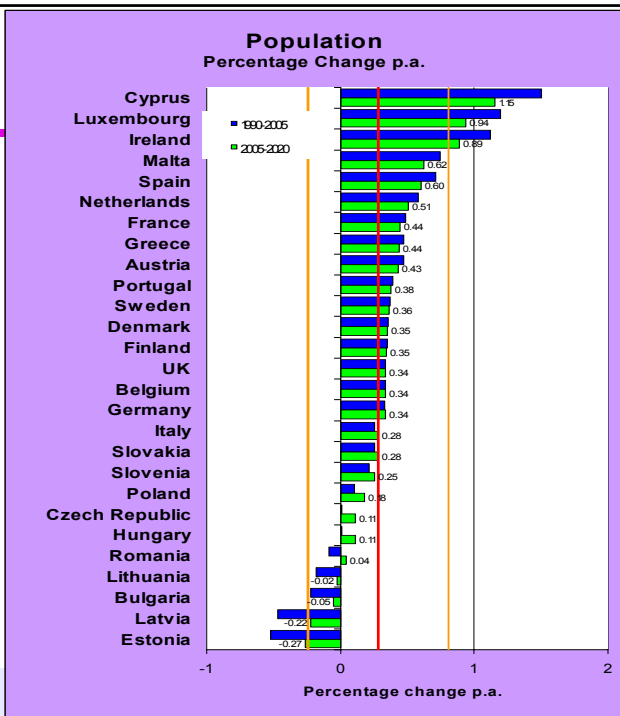
Population

Scenario 2020
-20 % CO₂e over 1990

EU Target
+0,26 % p.a.EU-27

MS Convergence
30 %

EU Target Sharing 2020



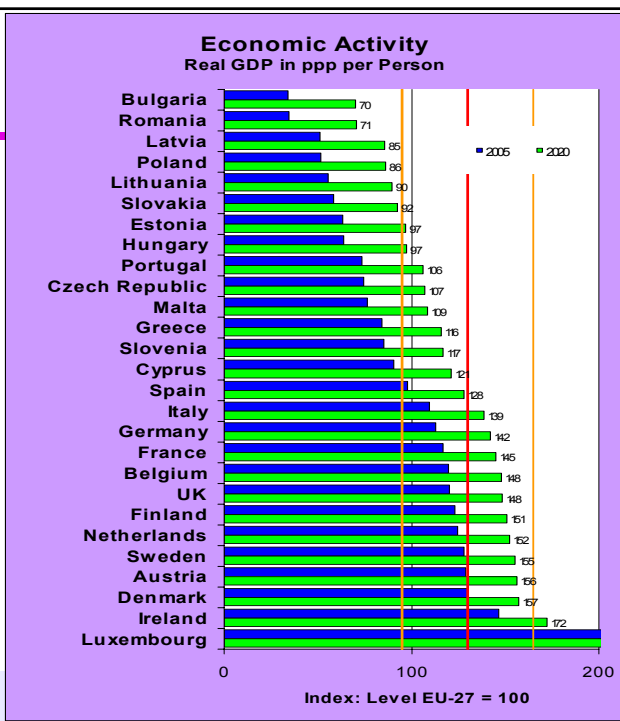
Economic Activity

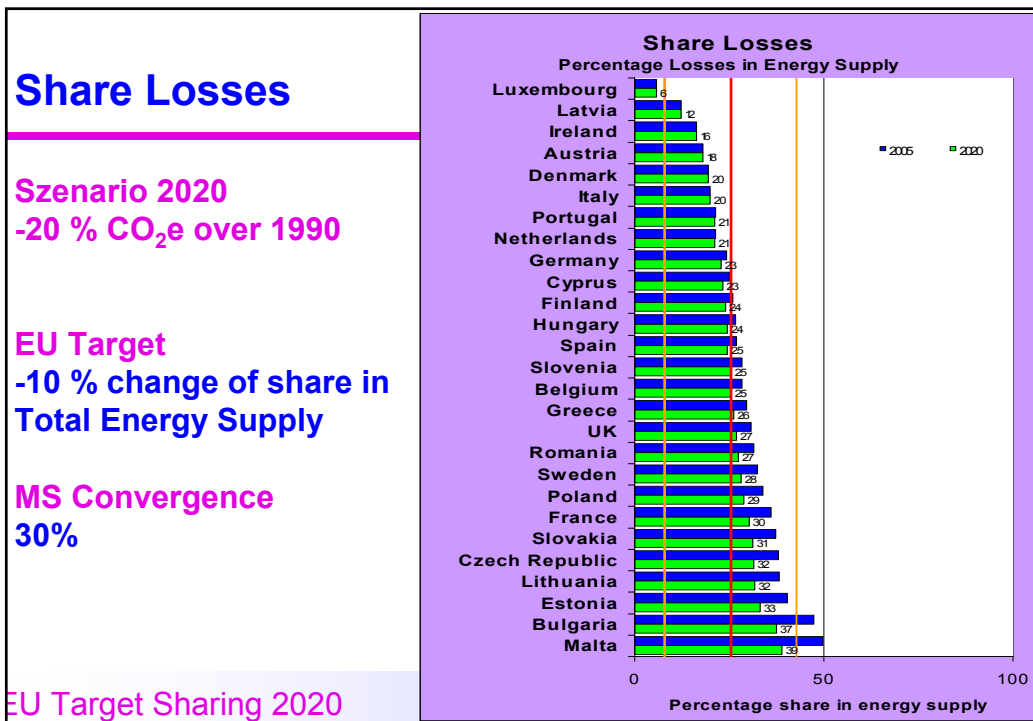
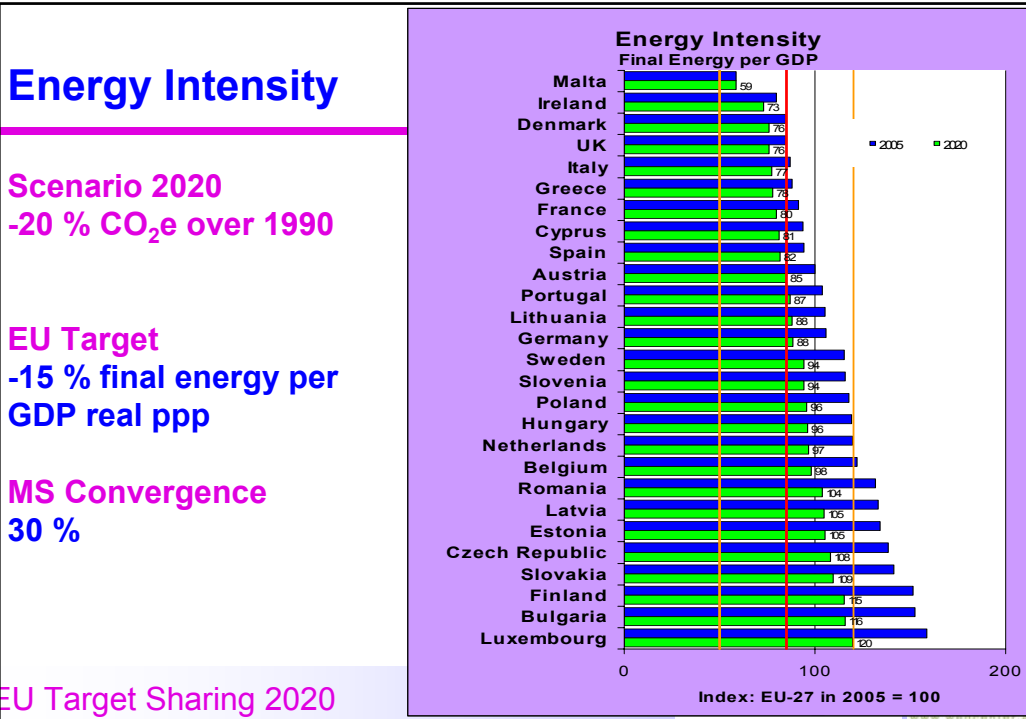
Scenario 2020
-20 % CO₂e over 1990

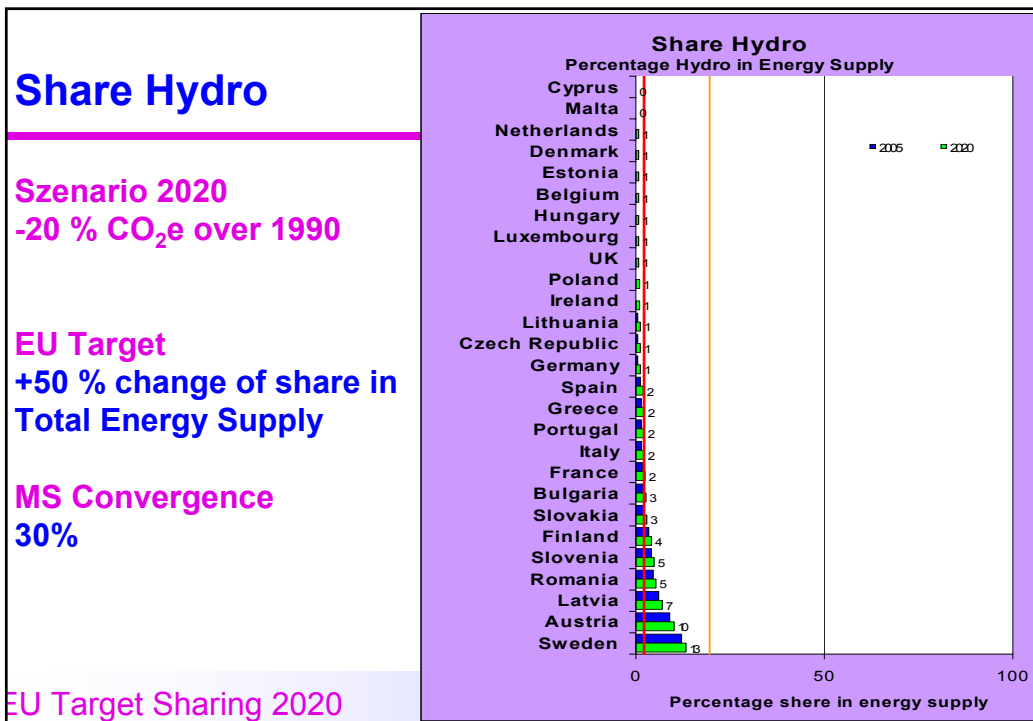
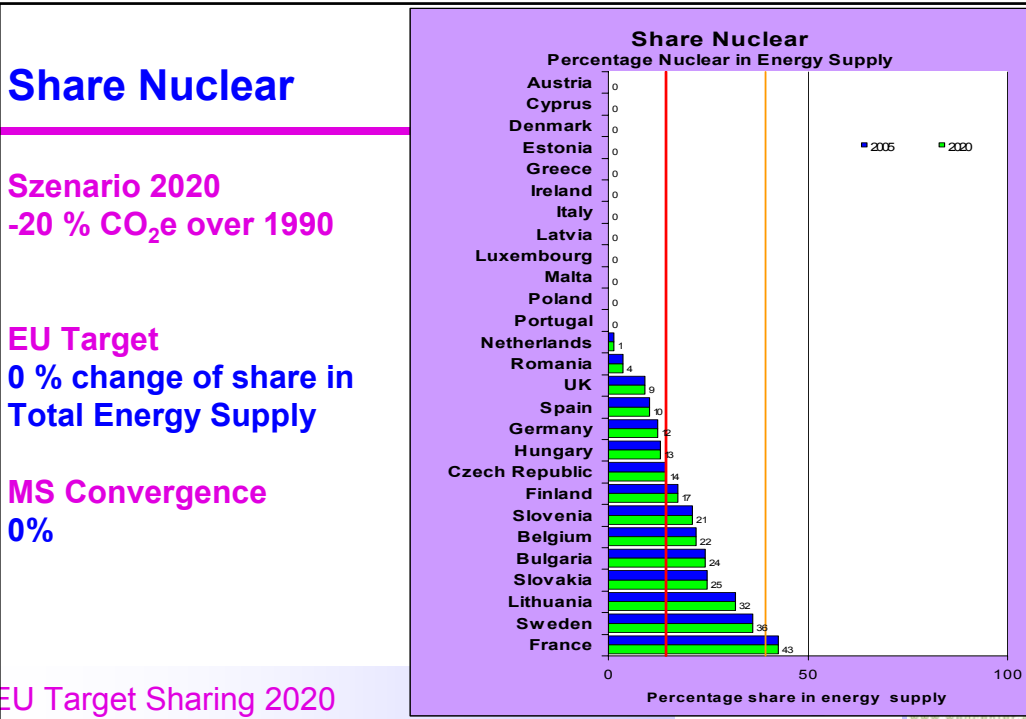
EU Target
+30 % GDP real ppp
per person

MS Convergence
30 %

EU Target Sharing 2020







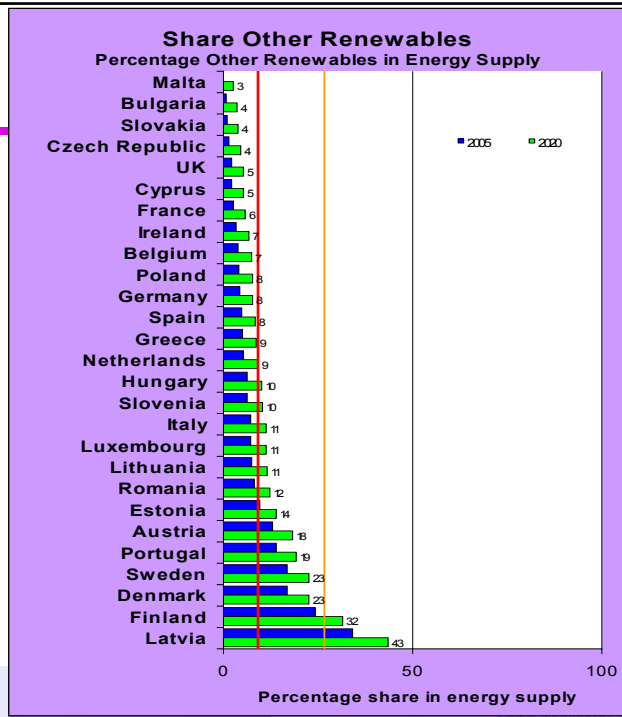
Share Oth. Renew.

Szenario 2020
-20 % CO2e over 1990

EU Target
+70 % change of share in
Total Energy Supply

MS Convergence
30%

EU Target Sharing 2020



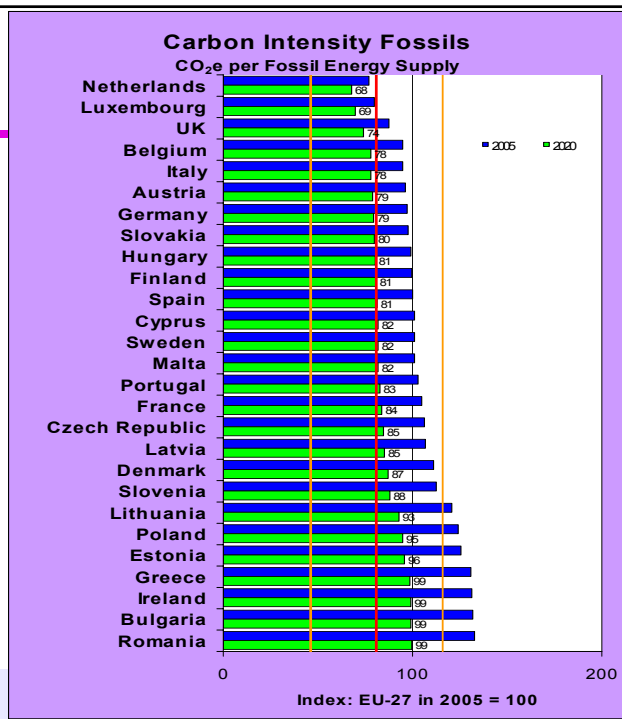
CO2 Intensity Fossils

Szenario 2020
-20 % CO2e over 1990

EU Target
-19 % change

MS Convergence
30%

EU Target Sharing 2020



Thank You.



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EU Target Sharing 2020

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