
The EU 20 + 20 in 2020 energy and climate package

The economic context

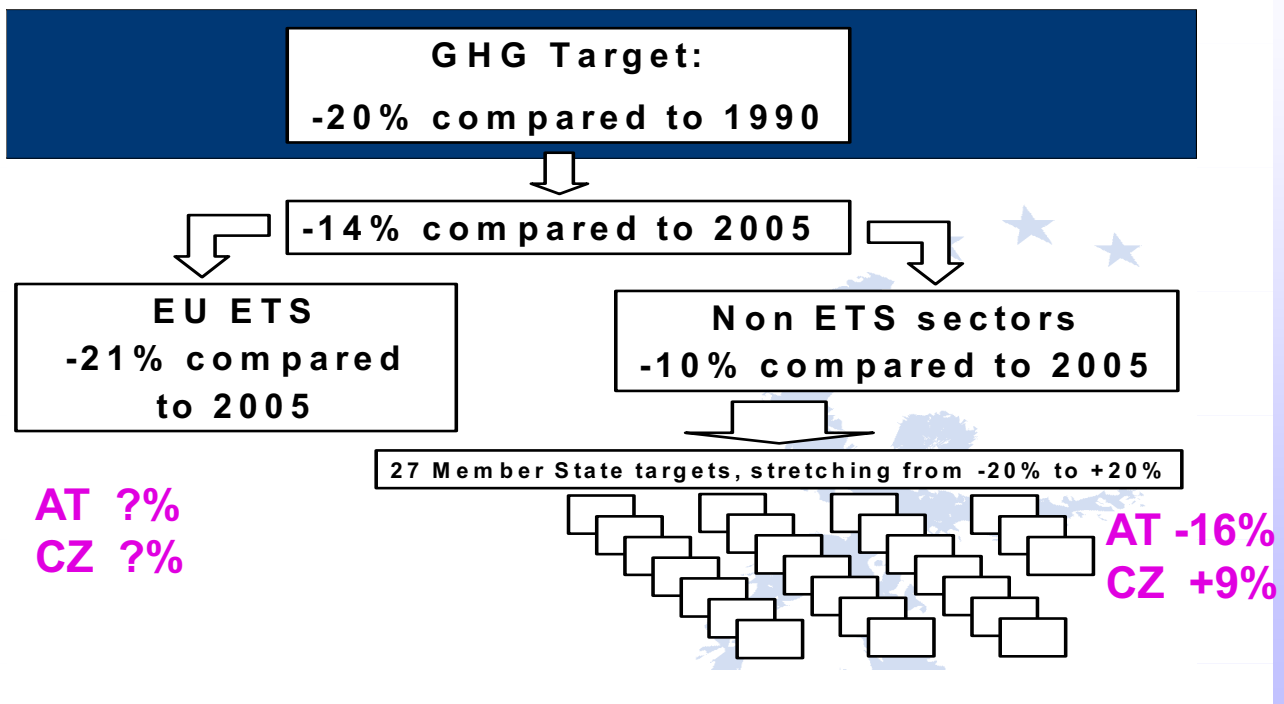


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20 + 20 in 2020 The EU energy and climate targets

The big bang

(1) The 2020 EU GHG target



(2) The 2020 EU renewables target

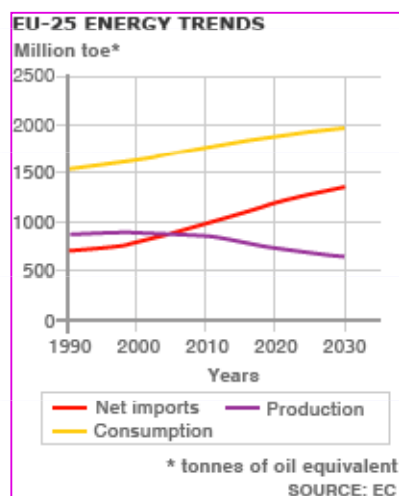
- **EU-27: 20% share of renewables in 2020 in final energy consumption**
 - 8,5% in 2005
 - Adds incentive for energy efficiency
 - Has a side-effect on nuclear energy
- **Allocation of this target to Member States**
 - AT: from 23,3% in 2005 to 34,0% in 2020
 - CZ: from 6,1% in 2005 to 13,0% in 2020
- **Trading of certificates for renewables**
 - Guarantees of Origin

What motivates the EU?

The transition to a post-carbon society The Lisbon targets

What motivates these ambitious targets?

■ Security of energy supplies



■ Climate change



■ Technology leadership

➤ „A new industrial revolution“

The starting point

The EU Emissions Trading Scheme (ETS)

Phase 1: 2005 - 2007

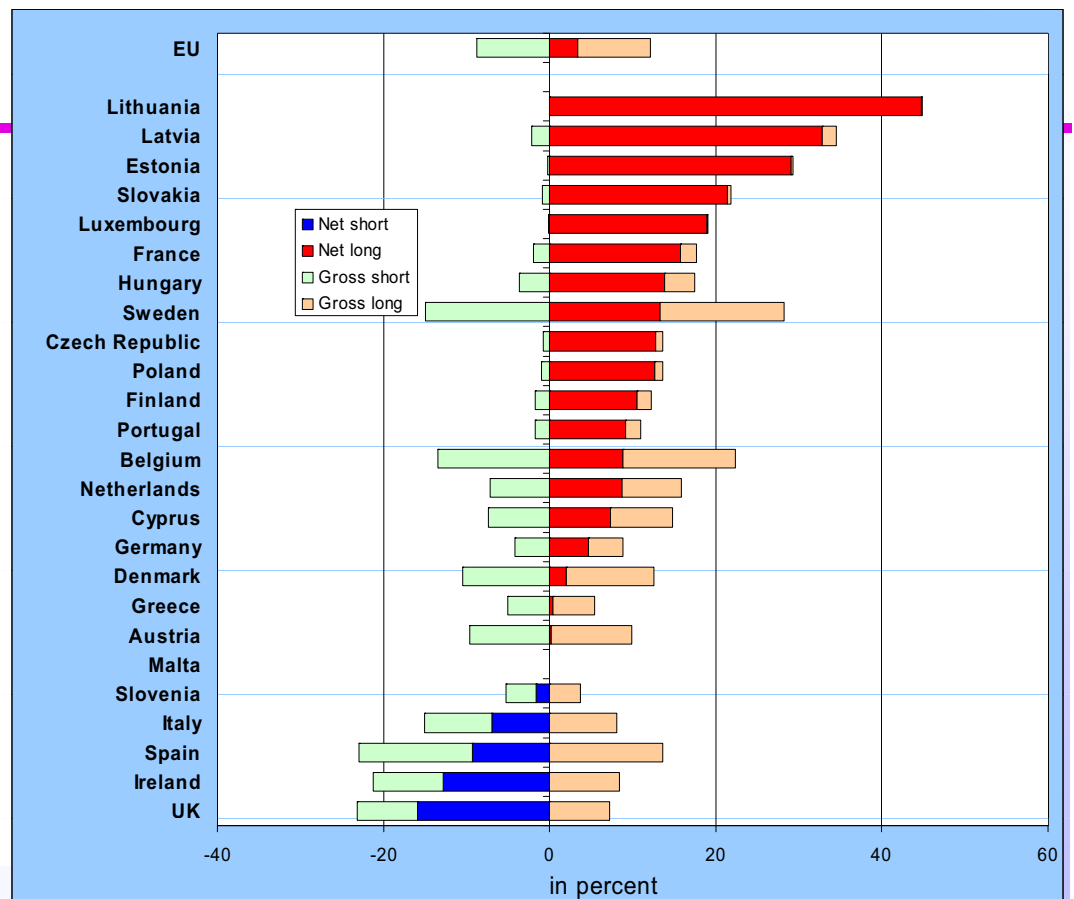
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EU ETS 2005 - 2007

Allocation position by countries



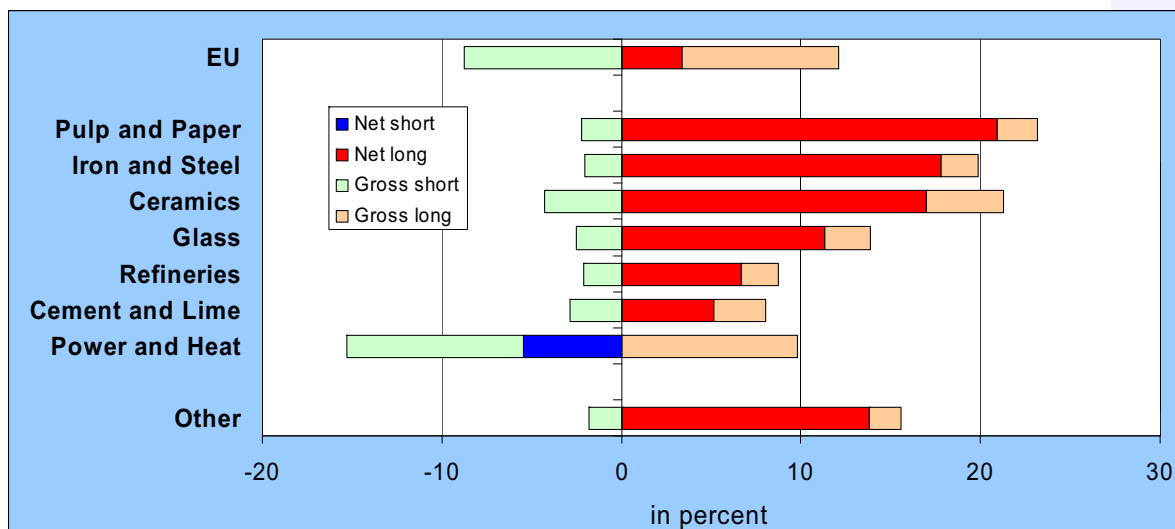
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EU ETS 2005 - 2007

Allocation position by sectors



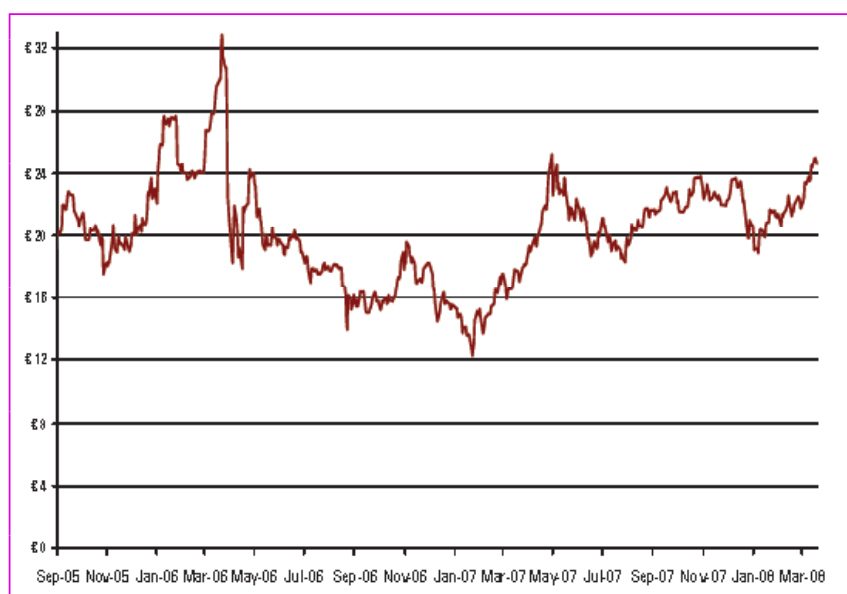
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EU ETS Phase 2: 2008 - 2012

The dawning of a carbon constraint economy



Forward Rate
Dec 2008

for one ton of CO₂

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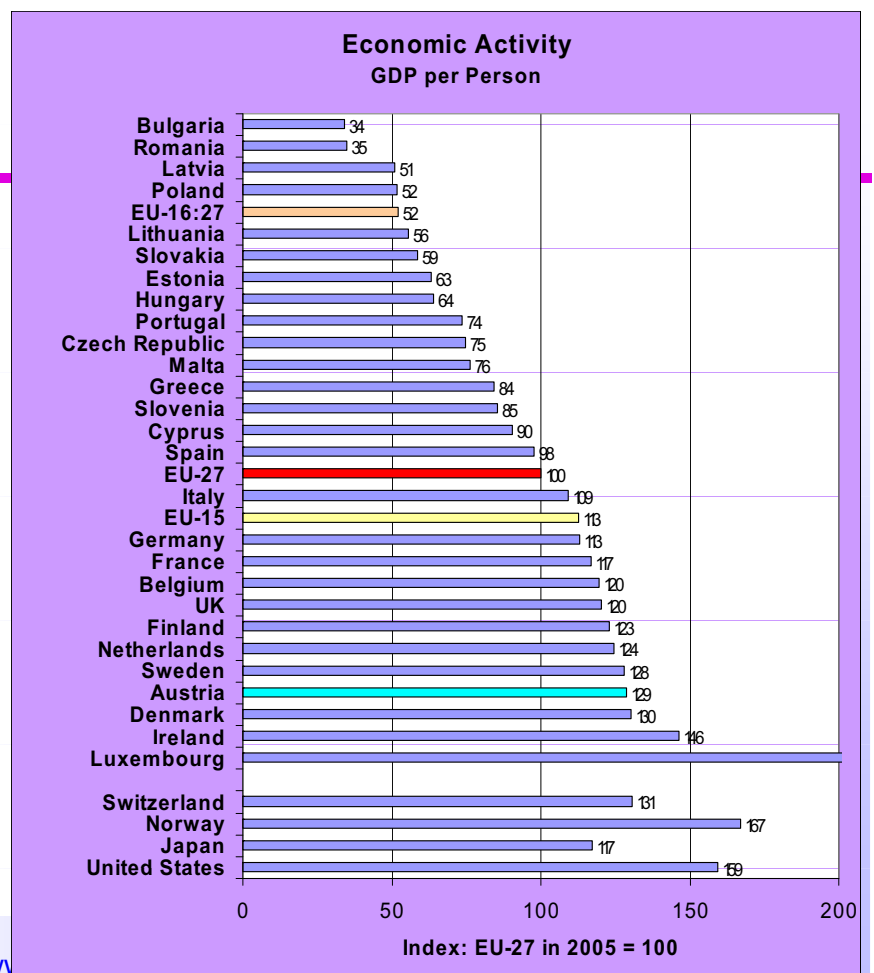
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The structure of the EU energy sector

The differences of Member States

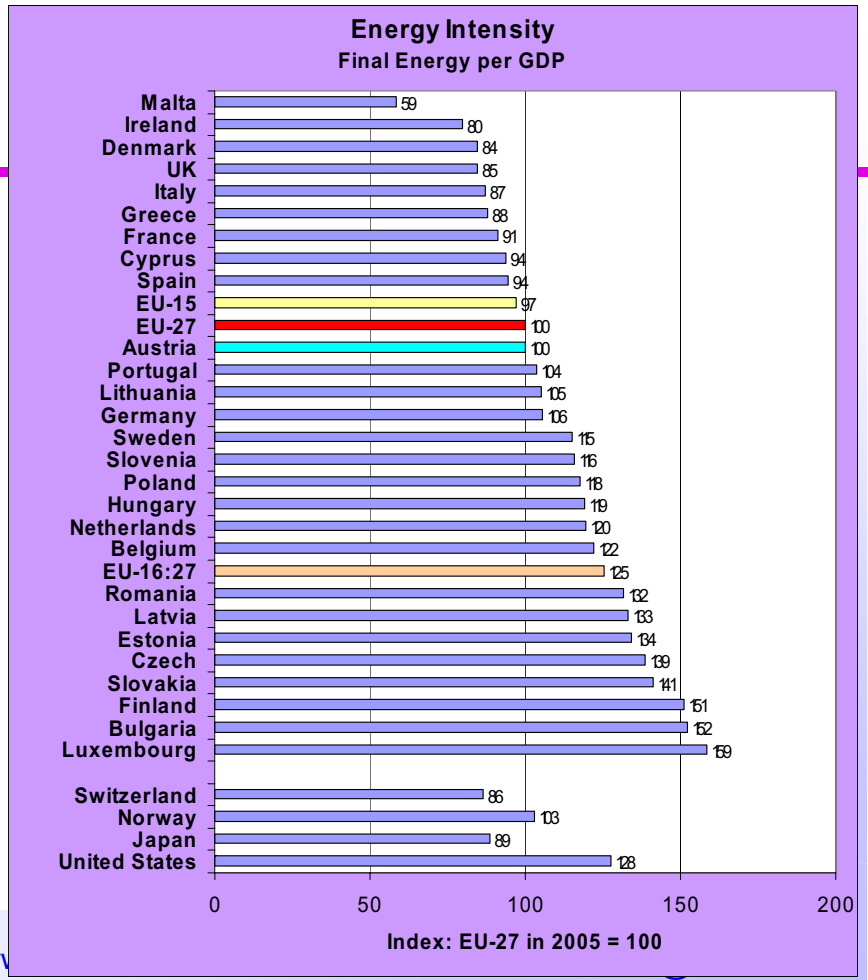
GDP per person

EU-27 **100**
AT **129**
CZ **75**



Final energy per GDP

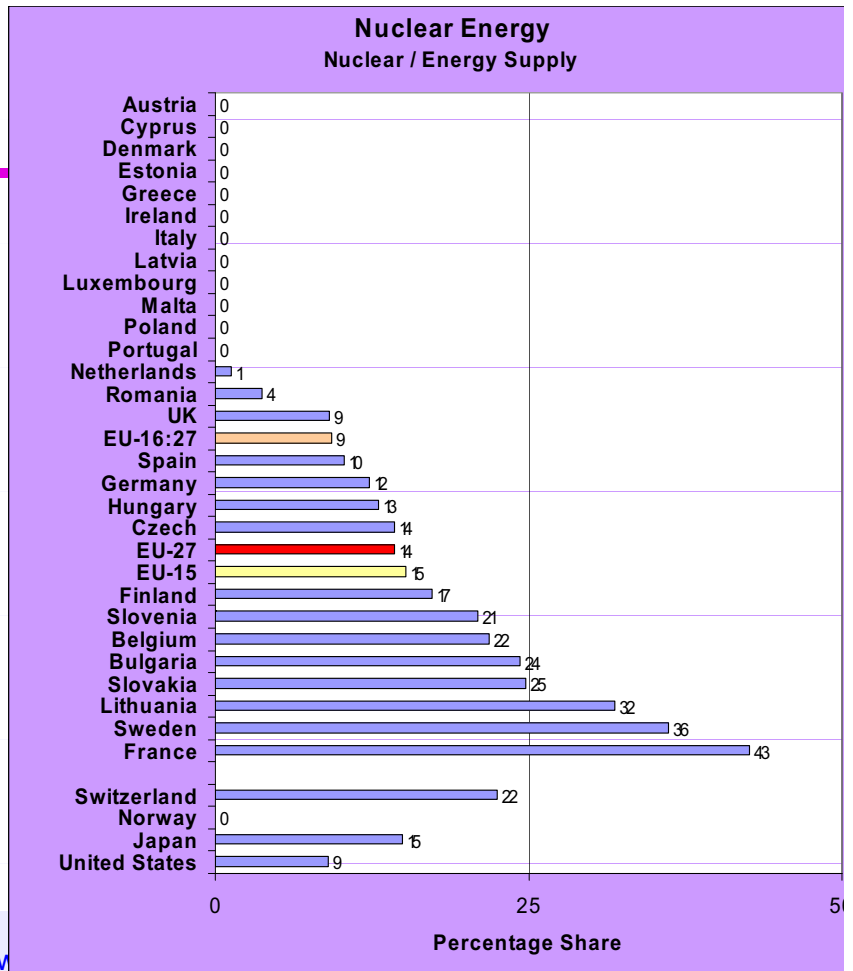
EU-27 **100**
AT **101**
CZ **139**



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Nuclear

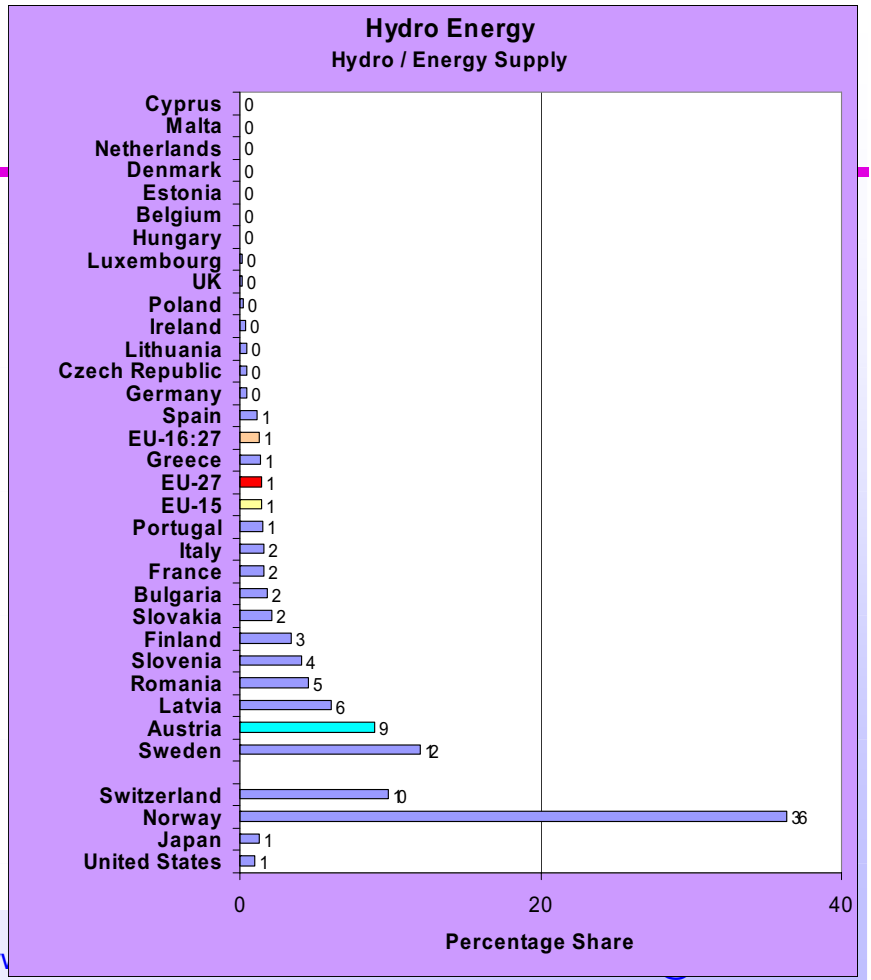
EU-27 **14%**
AT **0%**
CZ **14%**



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Hydro

EU-27 **1%**
AT **9%**
CZ **<1%**

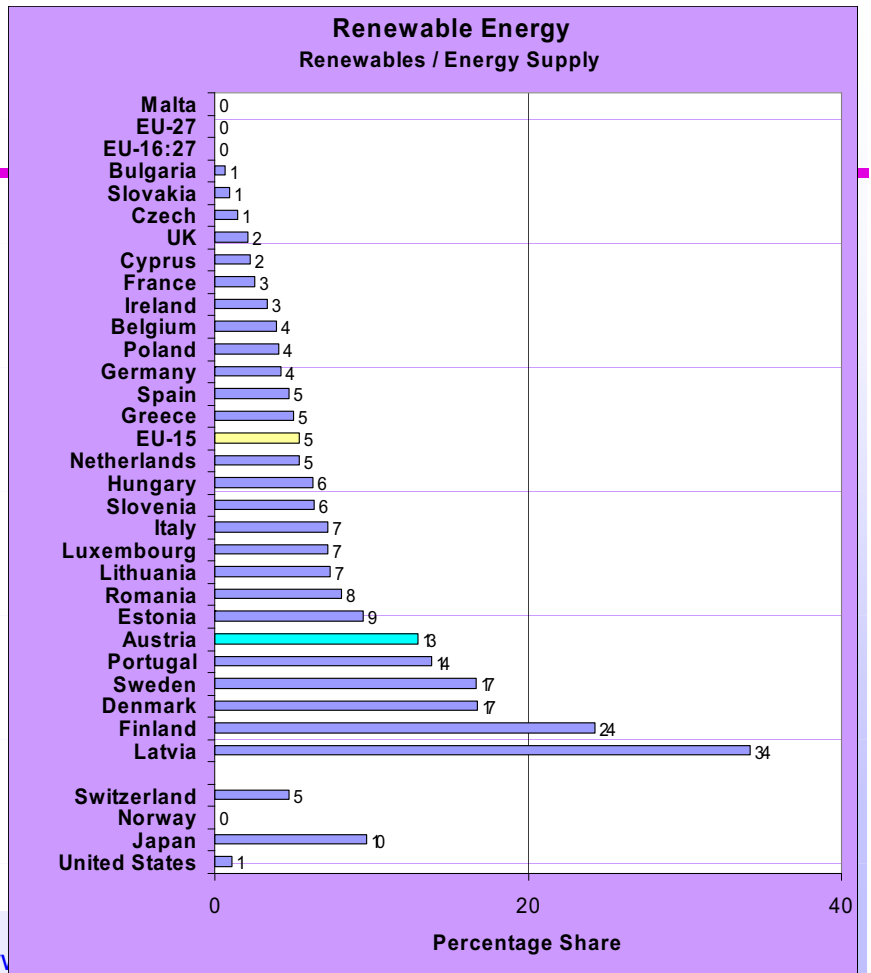


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Other Renewables

EU-27 **5%**
AT **13%**
CZ **1%**



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WV

Simulating the EU 2020 targets

The impact of sector allocations

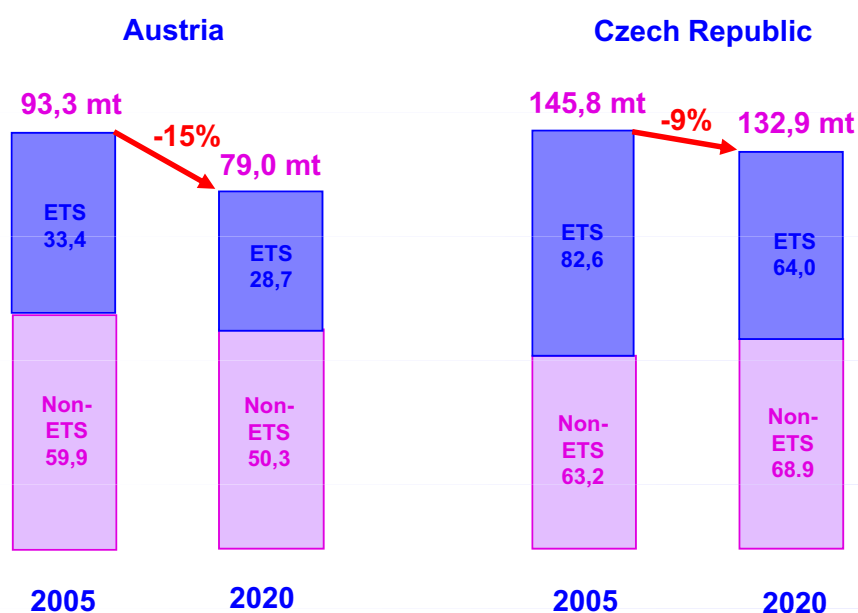
EU Total

	1990 mt CO ₂ e	2020 mt CO ₂ e	2020/1990 %-Change	EC %-Change
EU Total	5,616.5	4,493.2	-20.0%	-20%
	2005 mt CO ₂ e	2020 mt CO ₂ e	2020/2005 %-Change	
EU Total	5,182.3	4,493.2	-13.3%	-14%
EU ETS	2,119.3	1,713.8	-19.1%	-21%
EU Non-ETS	3,063.0	2,779.5	-9.3%	-10%

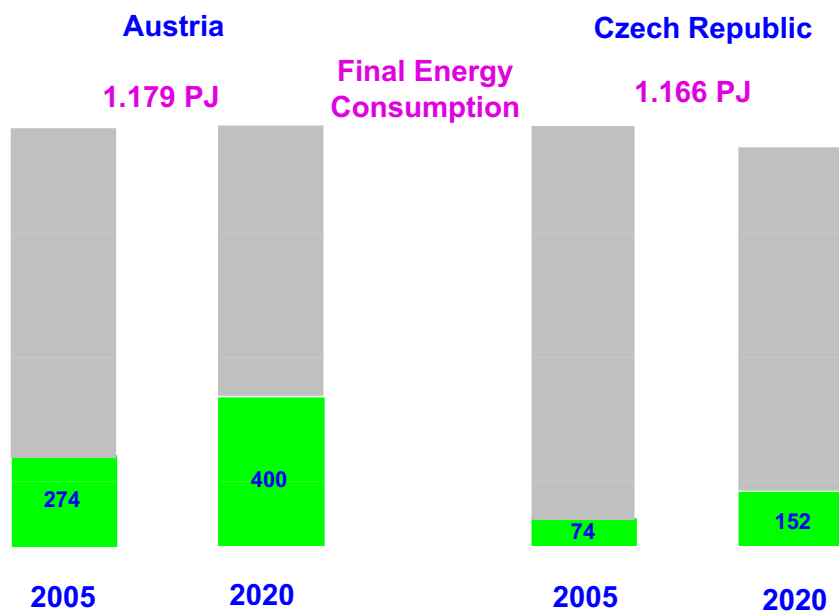
Scenario for ETS allocations

	2005	2020	
	mt CO ₂ e	mt CO ₂ e	%-Change
ETS Total	2,119.3	1,713.8	-19.1%
Cement & Lime	184.2	175.0	-5.0%
Ceramics	16.0	14.4	-10.0%
Glass	20.1	18.1	-10.0%
Iron & Steel	173.2	164.5	-5.0%
Power & Heat	1,165.2	837.2	-28.1%
Pulp & Paper	34.4	31.0	-10.0%
Refineries	151.0	135.9	-10.0%
Other ETS Sectors	375.1	337.6	-10.0%

Scenario for GHG



Scenario for renewables



Some conclusions

- Compared to **2005** the relative **GHG reductions** could be **15% for AT** and **9% for CZ**
- Compared to **Business as Usual** the effective **GHG reductions** could be beyond **30%** for both countries
- Both the **GHG target** and the **renewables target** require a **reduction of final energy consumption**
- This perspective still lacks **political consensus**

Non-ETS

	2005		2020	
	mt CO ₂ e		mt CO ₂ e	%-Change
EU Total	3,063.0		2,779.5	-9.3%
Austria	59.9		50.3	-16.0%
Belgium	87.0		73.9	-15.0%
Bulgaria	29.9		35.9	20.0%
Cyprus	4.8		4.6	-5.0%
Czech Republic	63.2		68.9	9.0%
Denmark	37.8		30.2	-20.0%
Estonia	6.7		7.4	11.0%
Finland	35.9		30.2	-16.0%
France	429.1		369.0	-14.0%
Germany	530.0		455.8	-14.0%
Greece	62.6		60.1	-4.0%
Hungary	54.0		59.4	10.0%
Ireland	48.0		38.4	-20.0%
Italy	352.0		306.2	-13.0%
Latvia	8.3		9.7	17.0%
Lithuania	16.1		18.5	15.0%
Luxembourg	10.7		8.5	-20.0%
Malta	1.5		1.5	5.0%
Netherlands	131.4		110.4	-16.0%
Poland	199.7		227.7	14.0%
Portugal	50.8		51.3	1.0%
Romania	81.2		96.6	19.0%
Slovakia	24.1		27.2	13.0%
Slovenia	11.7		12.2	4.0%
Spain	258.0		232.2	-10.0%
Sweden	47.5		39.4	-17.0%
United Kingdom	421.3		353.9	-16.0%

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	2005								
	Cement & Lime mt CO ₂ e	Ceramics mt CO ₂ e	Glass mt CO ₂ e	Iron & Steel mt CO ₂ e	Power & Heat mt CO ₂ e	Pulp & Paper mt CO ₂ e	Refineries mt CO ₂ e	Other Sectors mt CO ₂ e	ETS Total mt CO ₂ e
EU Total	184.2	16.0	20.1	173.2	1165.2	34.4	151.0	375.1	2119.3
Austria	3.2	0.9	0.2	10.9	11.5	2.1	2.9	1.7	33.4
Belgium	8.0	0.6	1.4	9.6	22.6	0.7	5.6	6.9	55.4
Bulgaria	4.0	0.2	0.3	4.1	26.2	0.2	5.5	0.0	40.6
Cyprus	1.5	0.1	0.0	0.0	3.5	0.0	0.0	0.0	5.1
Czech Republic	3.6	0.7	0.8	4.7	58.4	0.8	1.0	12.6	82.5
Denmark	2.7	0.3	0.1	0.0	18.0	0.1	0.9	4.4	26.5
Estonia	0.8	0.1	0.0	0.0	11.7	0.1	0.0	0.0	12.6
Finland	1.6	0.0	0.2	6.3	14.7	3.5	2.7	4.1	33.1
France	17.0	1.0	3.7	26.8	39.4	3.7	17.5	22.1	131.3
Germany	28.1	1.8	4.0	30.3	345.0	6.8	24.4	34.7	475.0
Greece	11.6	0.8	0.1	0.4	52.6	0.2	3.6	2.0	71.3
Hungary	2.4	0.6	0.3	1.7	16.5	0.2	1.3	3.2	26.2
Ireland	4.1	0.0	0.0	0.0	15.1	0.0	0.4	2.7	22.4
Italy	30.3	0.7	3.0	13.9	137.3	5.0	19.8	16.0	226.0
Latvia	0.3	0.0	0.1	0.4	1.9	0.0	0.0	0.2	2.9
Lithuania	0.8	0.0	0.0	0.0	3.5	0.3	1.9	0.1	6.6
Luxembourg	0.7	0.0	0.2	0.4	0.0	0.0	0.0	1.2	2.6
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0
Netherlands	0.6	0.2	0.6	6.5	41.7	1.8	12.1	16.7	80.4
Poland	9.9	1.5	1.3	5.3	0.0	0.3	3.2	181.5	202.9
Portugal	7.0	0.9	0.6	0.2	21.9	0.3	3.0	2.5	36.4
Romania	7.7	0.4	0.4	11.4	38.0	0.4	6.0	6.5	70.8
Slovakia	3.0	0.1	0.1	9.1	0.0	0.1	2.3	10.5	25.2
Slovenia	0.9	0.1	0.1	0.2	6.3	0.5	0.0	0.7	8.7
Spain	29.2	4.9	2.5	8.3	104.0	4.7	15.5	13.9	182.9
Sweden	0.0	0.0	0.0	4.1	7.0	2.0	3.2	3.0	19.4
United Kingdom	5.0	0.1	0.3	18.8	168.5	0.8	18.1	25.8	237.4

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	2020								
	Cement & Lime mt CO ₂ e	Ceramics mt CO ₂ e	Glass mt CO ₂ e	Iron & Steel mt CO ₂ e	Power & Heat mt CO ₂ e	Pulp & Paper mt CO ₂ e	Refineries mt CO ₂ e	Other Sectors mt CO ₂ e	ETS Total mt CO ₂ e
EU Total	175.0	14.4	18.1	164.5	837.2	31.0	135.9	337.6	1713.8
Austria	3.0	0.8	0.2	10.4	8.2	1.9	2.6	1.6	28.7
Belgium	7.6	0.6	1.2	9.2	16.2	0.7	5.0	6.2	46.6
Bulgaria	3.8	0.1	0.3	3.9	18.8	0.2	5.0	0.0	32.2
Cyprus	1.4	0.1	0.0	0.0	2.5	0.0	0.0	0.0	4.0
Czech Republic	3.4	0.6	0.7	4.4	42.0	0.7	0.9	11.3	64.0
Denmark	2.5	0.3	0.1	0.0	12.9	0.1	0.8	4.0	20.7
Estonia	0.7	0.0	0.0	0.0	8.4	0.0	0.0	0.0	9.3
Finland	1.6	0.0	0.1	6.0	10.5	3.1	2.4	3.7	27.5
France	16.2	0.9	3.3	25.4	28.3	3.3	15.8	19.9	113.2
Germany	26.7	1.6	3.6	28.8	247.9	6.1	21.9	31.2	367.8
Greece	11.0	0.7	0.1	0.4	37.8	0.2	3.3	1.8	55.2
Hungary	2.3	0.5	0.2	1.6	11.8	0.1	1.2	2.9	20.8
Ireland	3.9	0.0	0.0	0.0	10.9	0.0	0.4	2.4	17.6
Italy	28.8	0.6	2.7	13.2	98.6	4.5	17.8	14.4	180.7
Latvia	0.3	0.0	0.0	0.3	1.4	0.0	0.0	0.2	2.3
Lithuania	0.8	0.0	0.0	0.0	2.5	0.3	1.7	0.1	5.4
Luxembourg	0.7	0.0	0.2	0.4	0.0	0.0	0.0	1.1	2.4
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.8
Netherlands	0.6	0.2	0.6	6.2	30.0	1.6	10.9	15.0	65.1
Poland	9.4	1.3	1.2	5.0	0.0	0.2	2.9	163.4	183.4
Portugal	6.6	0.8	0.6	0.2	15.7	0.3	2.7	2.2	29.2
Romania	7.3	0.4	0.3	10.8	27.3	0.4	5.4	5.8	57.8
Slovakia	2.9	0.1	0.1	8.6	0.0	0.1	2.1	9.4	23.3
Slovenia	0.9	0.1	0.1	0.2	4.5	0.4	0.0	0.7	6.8
Spain	27.7	4.4	2.2	7.8	74.8	4.3	13.9	12.5	147.6
Sweden	0.0	0.0	0.0	3.9	5.0	1.8	2.9	2.7	16.4
United Kingdom	4.8	0.1	0.3	17.9	121.1	0.7	16.3	23.2	184.3

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Countries

		2005 mt CO ₂ e	2020		2020	
			Non ETS mt CO ₂ e	ETS mt CO ₂ e	Total mt CO ₂ e	%-Change
EU-27	EU Total	5,182.3	2,779.5	1,713.8	4,493.2	-13.3%
AT	Austria	93.3	50.3	28.7	79.0	-15.3%
BE	Belgium	142.3	73.9	46.6	120.5	-15.3%
BG	Bulgaria	70.5	35.9	32.2	68.1	-3.5%
CY	Cyprus	9.9	4.6	4.0	8.6	-13.2%
CZ	Czech Reput	145.6	68.9	64.0	132.9	-8.8%
DK	Denmark	64.2	30.2	20.7	50.9	-20.8%
EE	Estonia	19.3	7.4	9.3	16.7	-13.5%
FI	Finland	69.0	30.2	27.5	57.7	-16.4%
FR	France	560.4	369.0	113.2	482.2	-13.9%
DE	Germany	1,005.0	455.8	367.8	823.6	-18.0%
GR	Greece	133.8	60.1	55.2	115.2	-13.9%
HU	Hungary	80.2	59.4	20.8	80.2	0.0%
IE	Ireland	70.3	38.4	17.6	56.0	-20.4%
IT	Italy	577.9	306.2	180.7	486.9	-15.8%
LV	Latvia	11.1	9.7	2.3	11.9	7.3%
LT	Lithuania	22.7	18.5	5.4	23.8	5.1%
LX	Luxembourg	13.3	8.5	2.4	10.9	-17.6%
MT	Malta	3.4	1.5	1.8	3.3	-3.6%
NL	Netherlands	211.8	110.4	65.1	175.5	-17.1%
PL	Poland	402.7	227.7	183.4	411.1	2.1%
PT	Portugal	87.2	51.3	29.2	80.5	-7.7%
RO	Romania	152.0	96.6	57.8	154.4	1.6%
SK	Slovakia	49.3	27.2	23.3	50.5	2.5%
SI	Slovenia	20.5	12.2	6.8	19.0	-7.2%
ES	Spain	440.9	232.2	147.6	379.8	-13.9%
SE	Sweden	66.9	39.4	16.4	55.8	-16.6%
GB	United Kingd	658.7	353.9	184.3	538.2	-18.3%

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Thank you.

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