

Environmental dimension of the EEP

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Climate and environmental policies of the EU

Multiple overlapping activities relevant to the EU energy policy:

- International regime of climate change mitigation (EU plays a significant role).
- Environmental dimension of the European energy policy:
 - Climate aims and tools to reduce GHG emissions – EU ETS, GHGs outside of the EU ETS, CCS.
 - Energy related environmental aims - RES, energy efficiency.
- Environmental policy of the EU – local environmental protection.
 - Air, land and water pollution, noise, light pollution.
 - Industrial (energy) waste.
 - Protection of biodiversity.
 - Extraction of non-conventional sources of energy.

Climate (GHG related) obligations of the EU relevant to energy

- Kyoto Protocol – EU15 to reduce its GHG emissions by 8% compared to base year (1990) during the first commitment period 2008 – 2012. Estimates of 16,3% without LULUCF.
- EU supports the Doha Amendment extending the KP from 2013 to 2020.
- Energy and climate package 2009 - A 20% reduction in EU greenhouse gas emissions from 1990 levels by 2020.
- Roadmap for competitive low carbon economy 2011 – up to 80% reduction to 2050 compared to 1990.
- 2030 Climate and energy framework – 40% by 2030 compared to 1990.

International climate regime

- Intergovernmental Panel on Climate Change – 1988.
- Rio Summit on Earth – 1992 (UN Conference on Environment and Development) → UNFCCC.
- Kyoto protocol.
- 1997, in force 2005.

= Existence of a generally accepted consensus on the climate change as well as the contribution of human activities to this process.

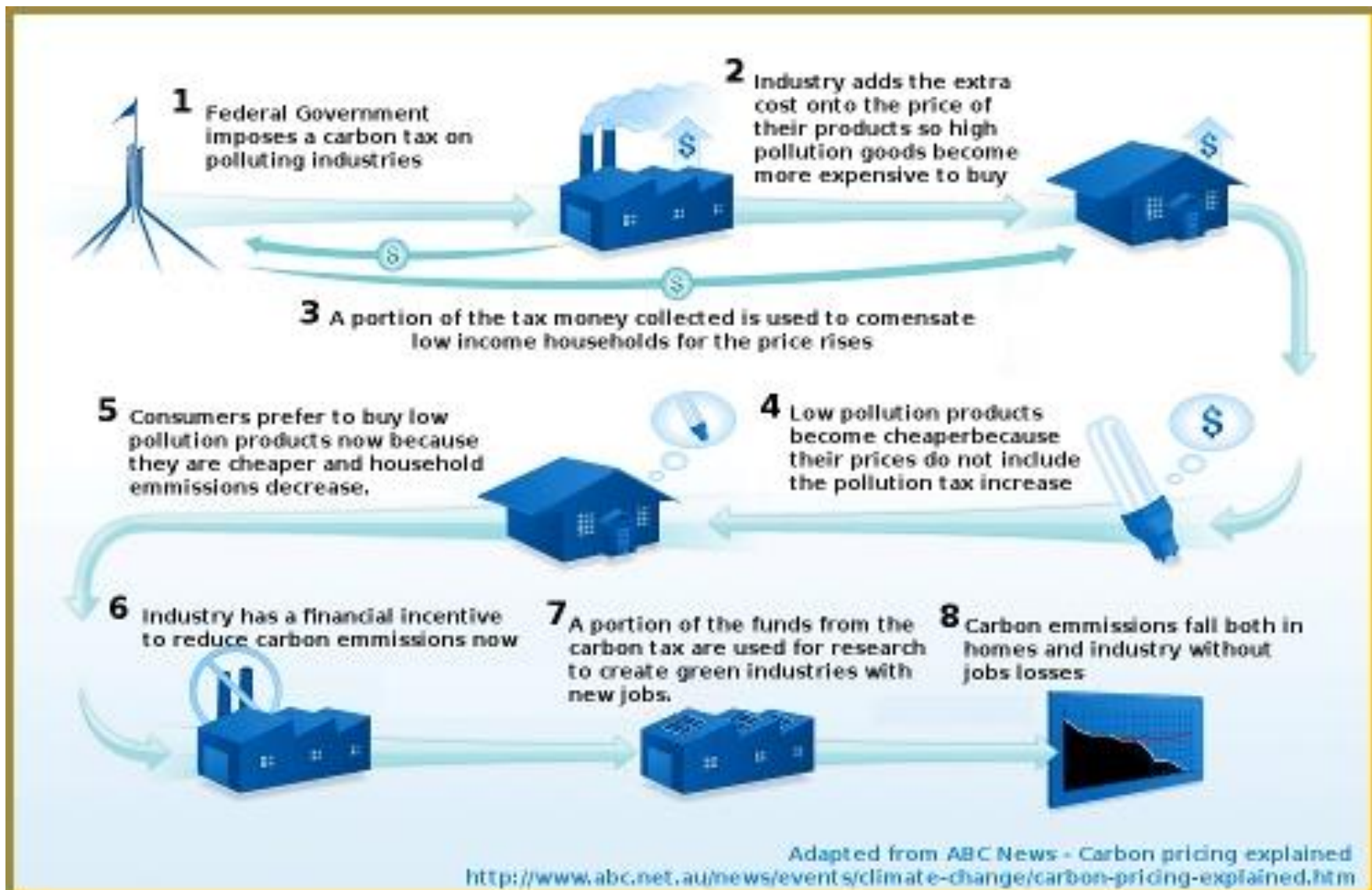
Kyoto protocol

- 4 GHG (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride) + hydrofluorocarbons and perfluorocarbons.
- Annex I. parties (37 industrialized countries + EU15), Non-annex I. parties.
- Reducing of GHG emissions by 5,2 % for the period of 2008-2012. (4,2 % after USA left). Base year 1990.
- Flexible mechanisms – Emission trading, CDM, JI.
- Art. 4 – burden sharing agreement of European Community.
- Common but differentiated responsibility.

Table of quantified emission limitation or reduction commitments for the purpose of determining the respective emission levels allocated to the European Community and its Member States in accordance with article 4 of the Kyoto Protocol

	Quantified emission reduction commitment as laid down in Annex B of the Kyoto Protocol (percentage of base year or period)
European Community	92 %
	Quantified emission limitation or reduction commitment as agreed in accordance with article 4(1) of the Kyoto Protocol (percentage of base year or period)
Belgium	92,5 %
Denmark	79 %
Germany	79 %
Greece	125 %
Spain	115 %
France	100 %
Ireland	113 %
Italy	93,5 %
Luxembourg	72 %
Netherlands	94 %
Austria	87 %
Portugal	127 %
Finland	100 %
Sweden	104 %
United Kingdom	87,5 %

EU and climate change: carbon tax



Emission trading

- EU firstly sceptical about international emission trading.
 - See it morally wrong – trading authorizes pollution, turning it into commodity to be bought and sold.
 - Questionable with regard to equity – that the richer industrialized countries can buy their way out of their obligations instead of lowering their disproportionate consumption of scarce sources.
- But – change in the position of the U.S. placed the EU in the forefront of the climate change movement.

EU and climate change: emission trading

ET: Central authority ... sets a limit ...on the amount of pollutant to be emitted ... the cap is sold/allocated as permitscompanies are required to hold those permits ...if they need to increase this volume...have to buy those permits or pay the fee.

= the buyer is paying a charge for pollution = he is motivated to invest in less-polluting technologies.

How the system works?

- It creates a dynamic monetary incentive so companies can sell their allowances to other producers and make profit.
- These incentives are based on real needs (scarcity) of allowances and on adequate monitoring and enforcement.
- This system (at least in theory) offers certainty of emission reduction corresponding to the stringency of the cap.
- Unlike domestic schemes, effective international systems are more difficult to establish.
- Even a well-designed system is not to work if it is not implemented correctly by the participants in the system (MS).

Run-up to the EU ETS

- 1988 EC's communication „The Greenhouse Effect and the Community“.
- 1998 EC's communication „Climate Change - Towards an EU post-Kyoto strategy“.
- 1999 EC's communication „Preparing for Implementation of the Kyoto Protocol“.
- 2001 – EU ETS legal preparation launched, approved in 2003.
- Designated the first period from 1.1.2005 to 31.12.2007, covering about 11,500 facilities in 25 MS = 45% CO₂ emitted in the EU.

EU ETS: The first phase 2005 - 2007

Country	Mil. EUAs	Share of the overall amount of EUA (%)	Number of incl. facilities	The aim of Kyoto
Belgium	188,8	2,9	363	-7,5
Czech Republic	292,8	4,4	435	-8
Denmark	100,5	1,5	378	-21
Estonia	56,85	0,9	43	-8
Finland	136,5	2,1	535	0
France	469,5	7,1	1 172	0
Ireland	67	1	143	+13
Italy	697,5	10,6	1 240	-6,5
Cyprus	16,98	0,3	13	-
Luxembourg	10,07	0,2	19	-28
Lithuania	36,8	0,6	93	-8
Latvia	13,7	0,2	95	-8

Sourcej: Massai, 2012, s. 174

EU ETS: The first phase 2005 - 2007

- Covers power stations and combustion installation of 20MW+, and some industries (oil refineries, coke ovens, iron and steel plants, production of cements, glass, lime, bricks, ceramics, pulp, paper, board).
- Problems with the decentralised system of distribution – the EU cap results from the aggregation of National Allocation Plans of each MS (also in the second phase).
- Nearly 100% free allocation.
- Overestimation of emissions – with the exemption of Germany and Slovenia (4% surplus).
- Drop in the prices of allowances.
- Very limited impact on emissions of GHG.
- NAP – only Austria, Denmark, Finland, Germany, Ireland and Slovenia in time.

Figure 2: EU ETS emissions allowance prices: April 2005 - December 2009



EU ETS: The first phase 2005 - 2007

Difficult calculations due to:

- Proneness to cheating.
- Changing level of industrial production.
- Changes in energy prices.
- Increasing deployment of RES (canibalism of targets).
- Permit stockpiling.
- Weather.
- And others.

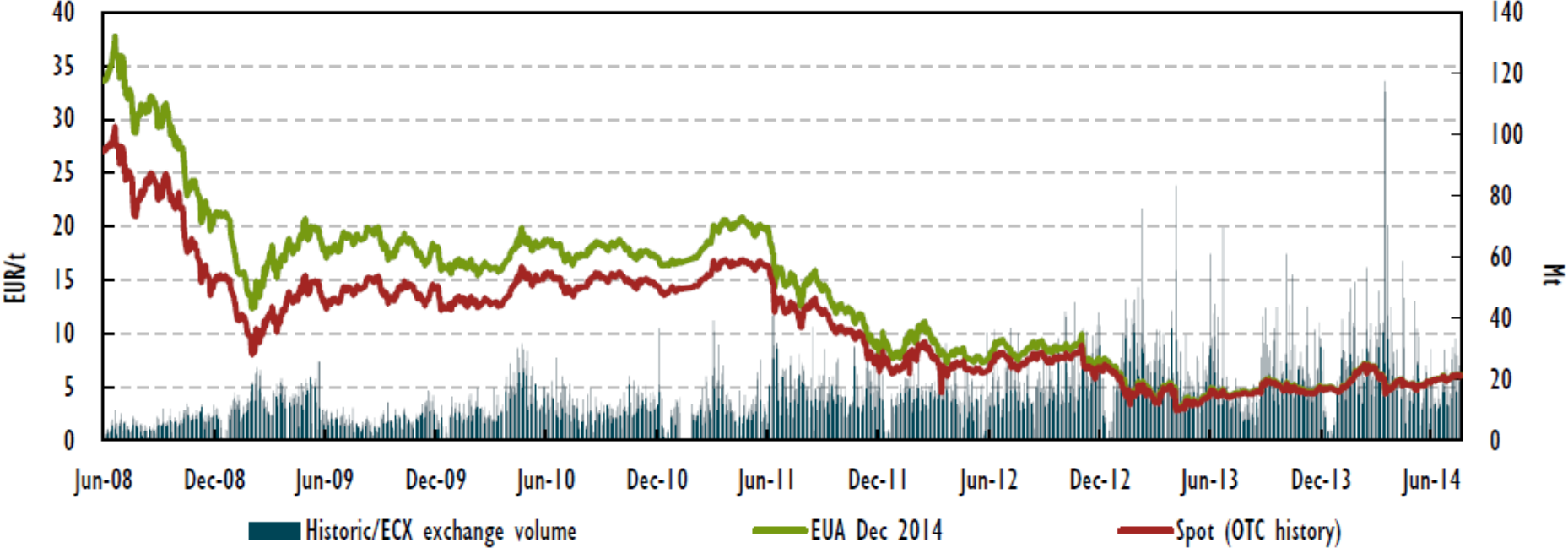
Not only GHGs decrease is desirable, but also the stability of price of EUAs.

EU ETS: The second phase 2008 - 2012

- Aviation added.
- More stringent approach of EC – cuts of NAP (litigation at ECJ), but still decentralized cap-setting. Overall number of EUAs reduced by 6,5% for this period.
- Only about 3% of allowances auctioned.
- Relatively stable (but low) price of allowances.
- Iceland, Liechtenstein and Norway part of ETS.
- Pressure to change the whole system.

„Nearly all 25 EU MS did not meet the 30 June 2006 deadline for the submission of the second phase NAPs (only Estonia was on time). Preinfringement letters were sent by the EC to 14 MS, namely Austria, Belgium, Cyprus, the Czech Republic, Denmark, Finland, Hungary, Latvia, Malta, the Netherlands, Portugal, Slovenia, Slovakia and Sweden.“

Historic evolution of volumes and spot prices for emission allowances under EU ETS



EU ETS: The second phase 2008 - 2012

- Between 2008 – 2012 the CO₂ price declined from around €20 MtCO₂ to around €8 MtCO₂.
 - The reduction of energy demand due to the financial and economic crisis starting in 2008.
 - Inflow of international credits (Certified Emission Reduction CER of CDM and others).
 - Impact of other EU policies such as RES and energy efficiency policy.
 - Rising prices of fuels.
 - The design of the EU ETS doesn't allow the adjustment of supply of EUA in reaction to the changes in demand.
- Since the banking is allowed between the second and third trading period = surplus of 2-2,5 bn EUA.

EU ETS: The third phase 2013 - 2020

- Changes introduced by Energy and climate package 2009.
- CCS installations, production of petrochemicals, ammonia, non-ferrous and ferrous metals, gypsum, aluminium, nitric etc. added.
- International aviation – requirements for extra-EU flights operating from or to non-EU countries suspended temporarily.

EU ETS: The third phase 2013 - 2020

- EU-wide emission cap to replace NAPs. 2084 MtCO₂e in 2013, a linear reduction factor of -1,74 %/y (38,3 mil.tons) applied.
- Auctioning of permits as a default method. More than 40 % of EUA to be auctioned in the first year of 3rd period with progressively rising shares each year.
 - End of free permits to the power sector. In other sector the progressive transition to the auctioning.
- Common auctioning platform for the sale of permits (except Germany, UK, Poland).
- 300 million EUA in the New Entrants Reserve to fund innovative RES technologies and CCS.
- An expanded list of restrictions on the use of credits from the CDM.

EU ETS: The third phase 2013 - 2020

- Distribution of auction revenues (88% to MS, 10 to MS with low per capita income and 2% to MS that had achieved a 20% emission reduction in their Kyoto protocol base by 2005).
- At least half of revenues to combat climate change.

Exceptions and derogations

- Countries, producing more than 60% of their electricity from coal or poorly interconnected to European grids could provide up to half of the allowances in energy sector freely.
 - Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Lithuania, Poland and Romania
- A risk of carbon leakage.
 - Process industries may get part or, if subject to carbon leakage, all of their EUA for free at the level of harmonized industry best practice practice.
 - Carbon leakage list to be published every 5 years (2009, 2014).

Surplus of allowances

- At the end of 2nd period 900 mil. EUA.
 - + the selling of left-over allowances in national phase 2 new entrant reserves.
 - + early auctioning to meet sector hedging demand.
 - + the forward selling of phase 3 allowances to generate funds for the NER300 program.
- About 2 – 2,2bn of EUAs surplus.
- Backloading: delaying the auctioning of emission allowances intended to be allocated in 2014-2016 until 2019-2020 (now directly to MSR).
- Market Stability Reserve (from 2019) – to address the surplus of EUAs (more than 822 million of EUA in circulation) by automatically adjusting the supply of EUAs to be auctioned.

Revision for the phase 4 (2021-2030)

- In 2015-2016 preparation of the revision of the EU ETS for its fourth phase (2021-2030), aiming at aligning the cap with the EU's 2030 target of at least 40% reduction.
- The overall number of EUAs to decline at an annual rate of 2,2% from 2021.
- Better targeted allocation of free allowances:
 - Update of benchmarks to reflect the technological progress
 - More targeted carbon leakage classification
 - Free allocation better aligned with production levels.
 - Innovation fund – support for innovative technologies
 - Modernisation fund – to boost energy efficiency of power sector in 10 lower income MS (free allowances still available in these countries).

EU ETS – Assessment

+ it works at a technical level. It is the first and the largest international scheme for trading allowances. 31 countries (EU28+Iceland, Liechtenstein, Norway). Central pillar of the EU's climate change policy. More than 11 000 installations, 45% of the EU's GHG emissions.

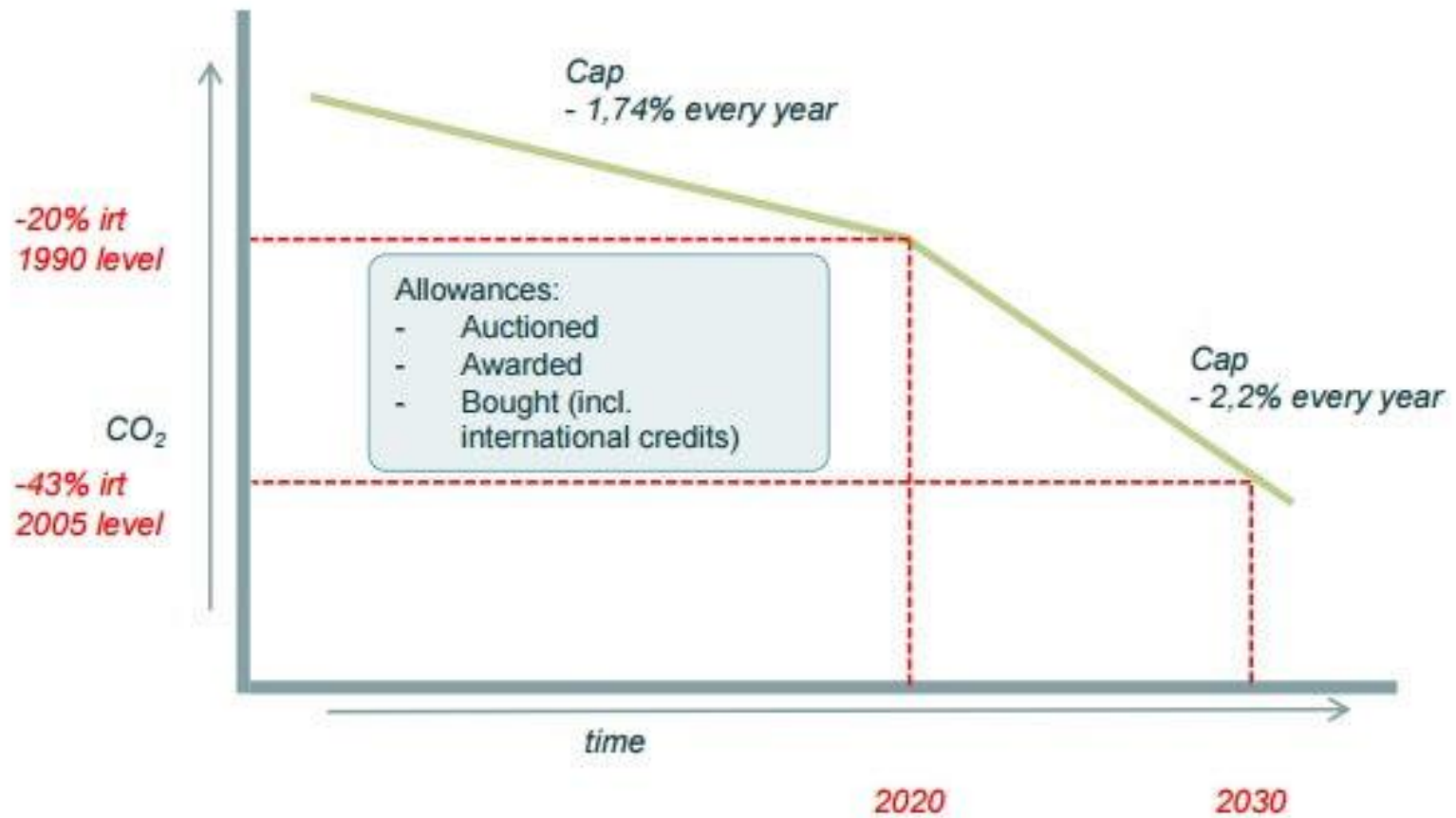
+It has a modest (but limited) effect on carbon emissions. Emission stayed within the cap.

+It generates some revenue to promote climate change objectives.

EU ETS – Assessment

- Low prices of EUA
- Tensions with other instruments.
- Perception of competitiveness problems.
- Lack of credibility.

= high price is necessary for profitability of low carbon technologies (CCS, nuclear, renewables)

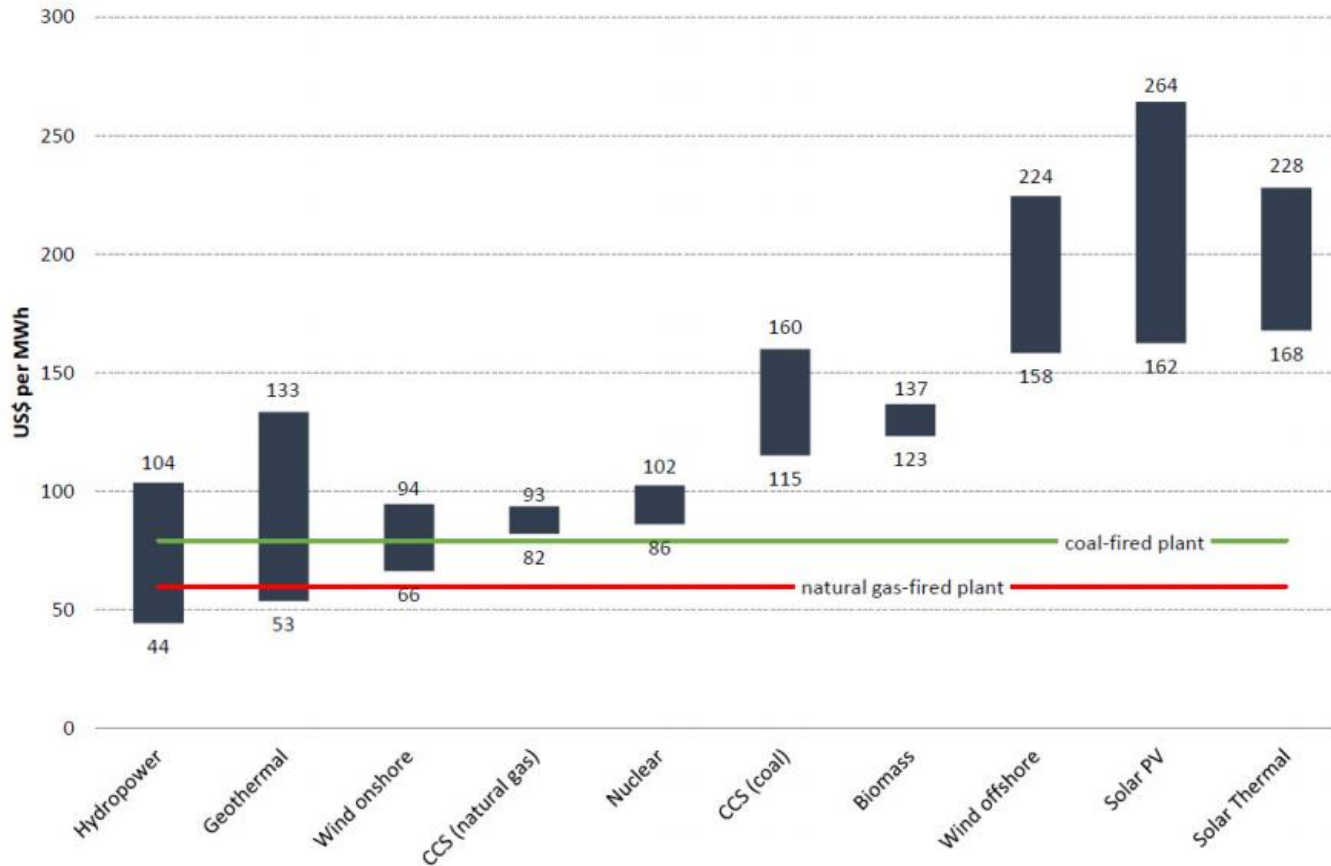


CAPEX, USA, USD 2014



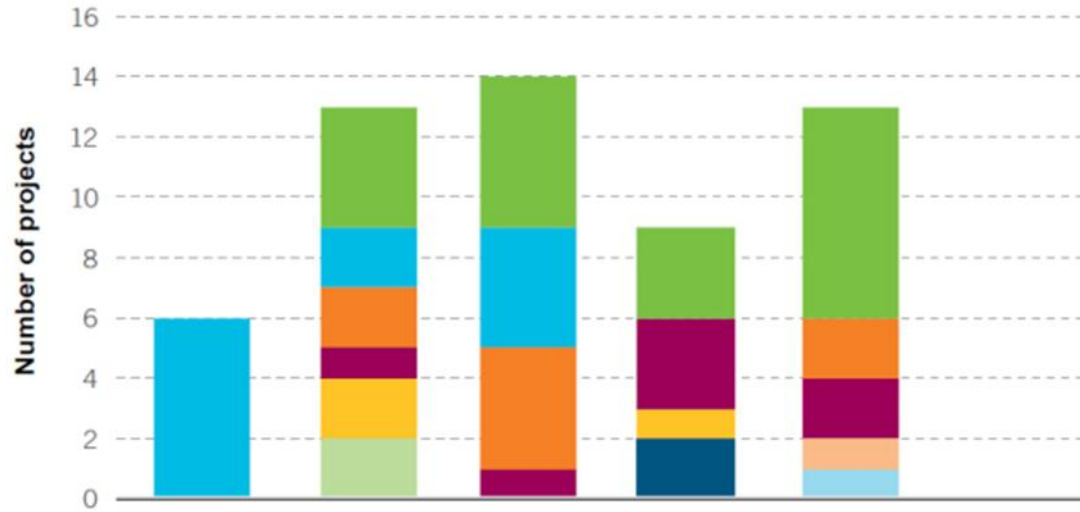
Source: Global CCS Institute analysis

LCOE, USA, USD 2014



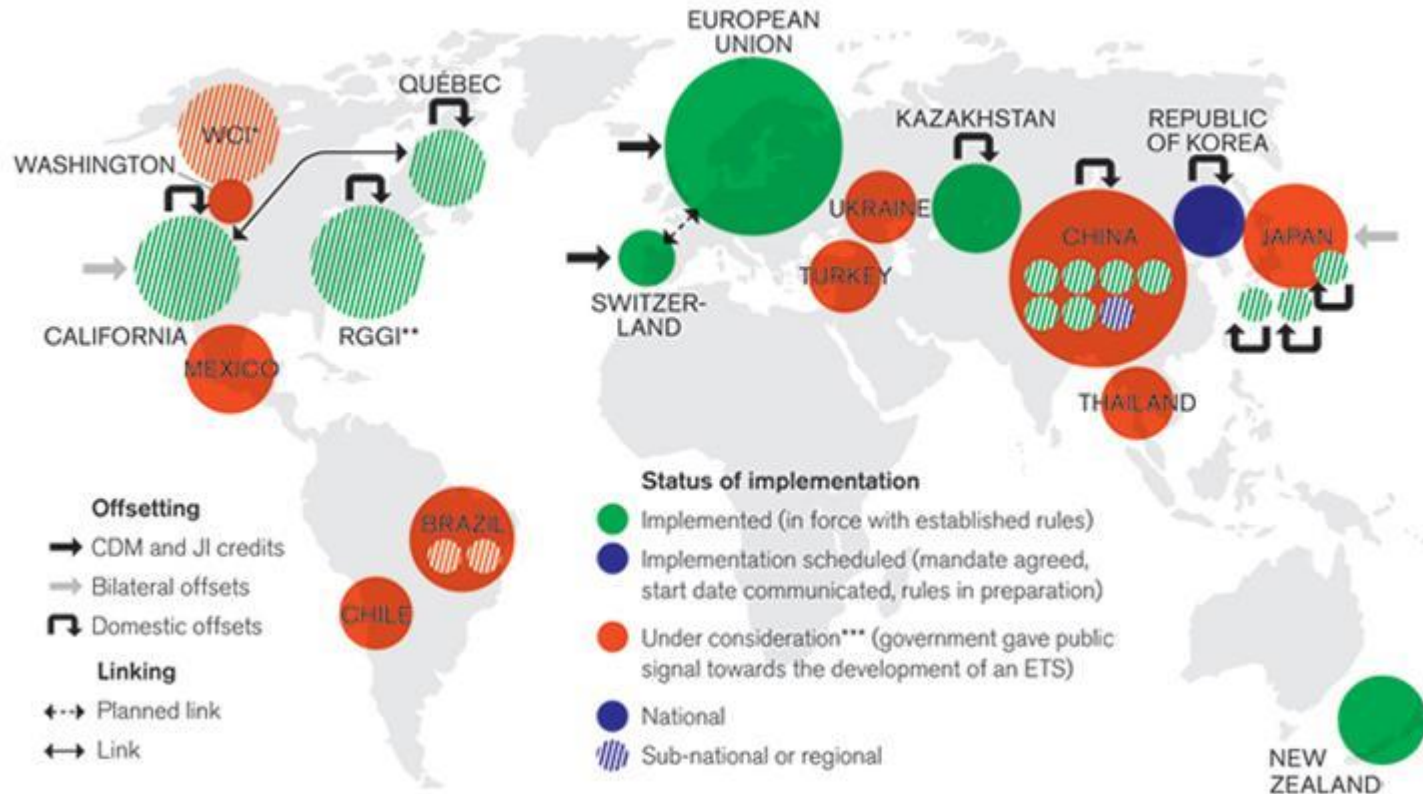
Source: Global CCS Institute analysis

CCS instalations 2014



	Identify	Evaluate	Define	Execute	Operate	Total
United States	0	4	5	3	7	19
China	6	2	4	0	0	12
Europe	0	2	4	0	2	8
Canada	0	1	1	3	2	7
Australia	0	2	0	1	0	3
Middle East	0	0	0	2	0	2
Other Asia	0	2	0	0	0	2
South America	0	0	0	0	1	1
Africa	0	0	0	0	1	1
Total	6	13	14	9	13	55

Existing and Emerging Emissions Trading Systems



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A shared effort
between sectors and MS

GHG Target:
-20% compared to 1990

-14% compared to 2005

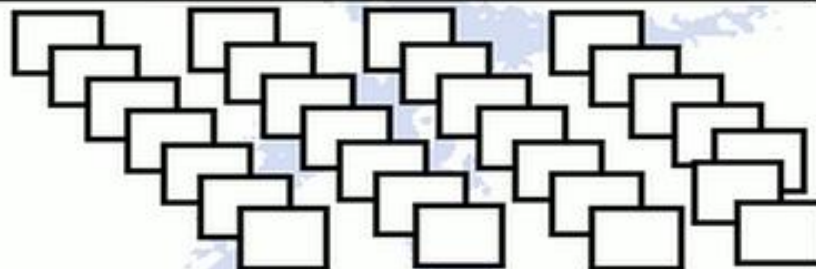
EU ETS

**-21% compared
to 2005**

ESD sectors

-10% compared to 2005

28 Member State targets, ranging from -20% to +20%



Non-EU ETS emissions

- 20% target is divided between a) a 21% target compared to 2005 for EU ETS emissions and b) a 10% target compared to 2005 for the non-ETS emissions.
- The later goal is split into national sub-targets.
 - Traffic management, low-GHG transport, biofuels, urban planning, improved energy performance standards for public building, labeling system, eco design...
- To support it some measures at the EU level – emission standards for vehicles, fuel quality directive...

Latest development in emission targets

- In Oct 2014, a binding target of 40% by 2030 compared to 1990. (Part of the 2030 Climate and energy framework – plus 27% for RES; plus 27% improvement in energy efficiency).
 - EU ETS to cut emissions by 43% (compared to 2005)
 - Non EU ETS sector to cut emissions by 30 (compared to 2005). National targets range from 0% - 40%.

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