

# ENVIRONMENTAL DIMENSION OF THE EEP

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# Environmental dimension of EEP

- Climate Change
  - CCS
- Renewables
  - Biofuels
- Energy efficiency
- Technology and innovation
- ...
- ...



Tento projekt je spolufinancován Evropským sociálním fondem a státním rozpočtem České republiky.



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# Climate change and global warming

- <https://www.youtube.com/watch?v=6yiTZm0y1YA>
  
- **Climate change**
  - it is a significant and lasting change in weather patterns over periods of time ranging from decades to millions of years. It may be a change in average weather conditions or it could be connected to more or fewer extreme weather events. Sometimes also the results of human activity are included, but not necessarily.
  - **Caused by: ...?**
  
- **Global warming**
  - the rise in the average temperature of Earth's atmosphere and oceans since the late 19th century and its projected continuation. Since the early 20th century, Earth's temperature has increased by about 0,8 °C, with about two-thirds of the increase occurring since 1980.
  - **Caused by...?**

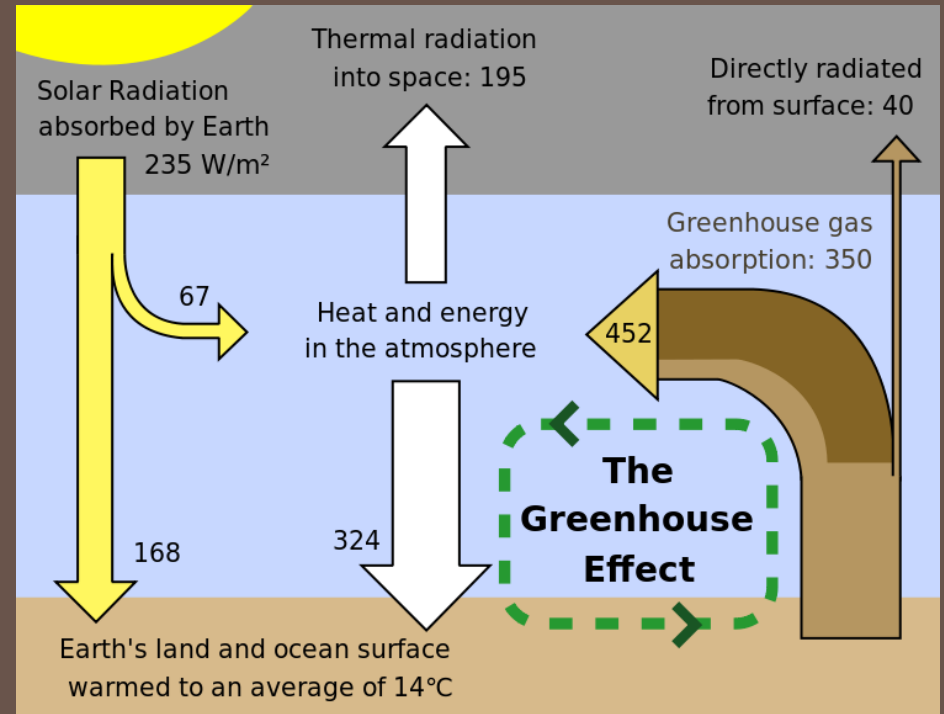
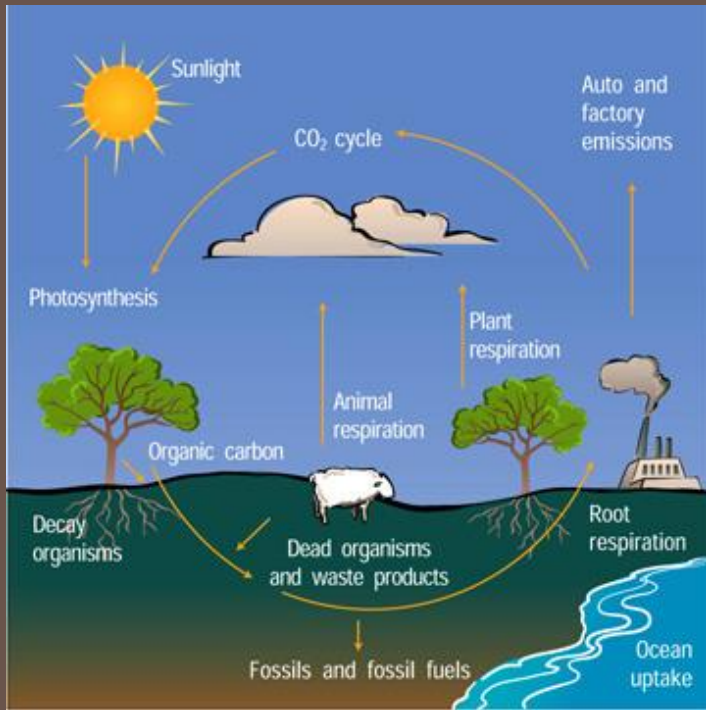
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# Climate change and global warming

<https://www.youtube.com/watch?v=4-V4qLWnuuM>

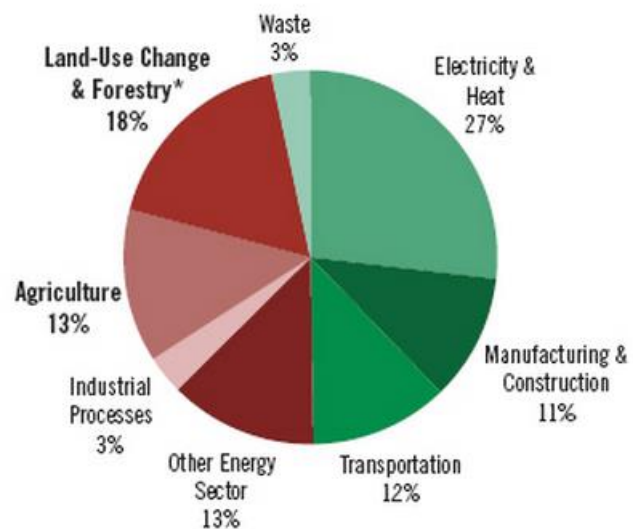


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# Energy sector and global warming



Sources of global GHG emissions

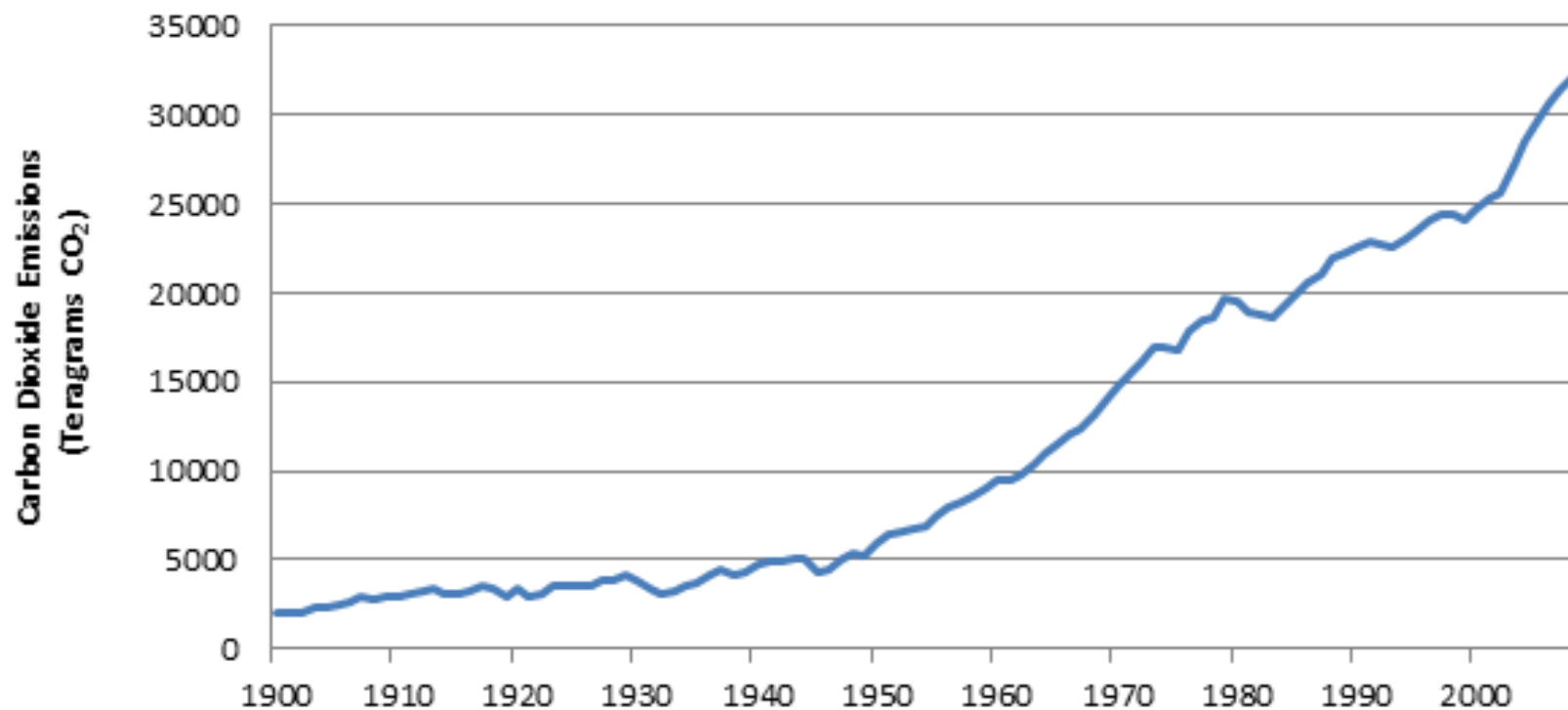
Credit: Work found at <http://earthtrends.wri.org/updates/node/296> / <http://creativecommons.org/licenses/by-nc-sa/2.5/>

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## Global Carbon Dioxide (CO<sub>2</sub>) emissions from fossil-fuels 1990–2008



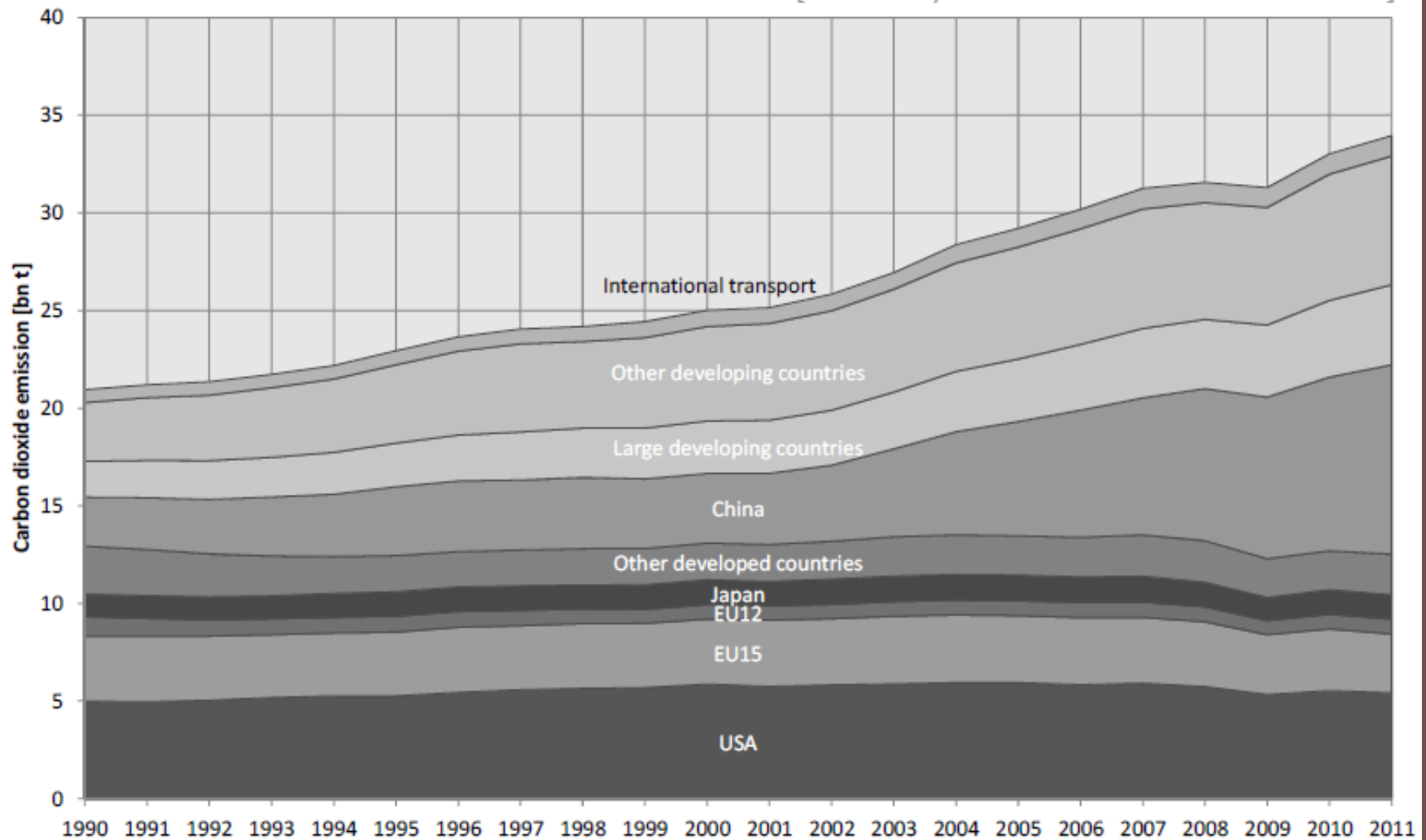
Source of data: Boden, T.A., G. Marland, and R.J. Andres (2010). Global, Regional, and National Fossil-Fuel CO<sub>2</sub> Emissions. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. doi 10.3334/CDIAC/00001\_V2010.

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Chart 1.2. GHG Emission 1990-2011 [Oliver JGJ, Janssens-Maenhout G and Peters]



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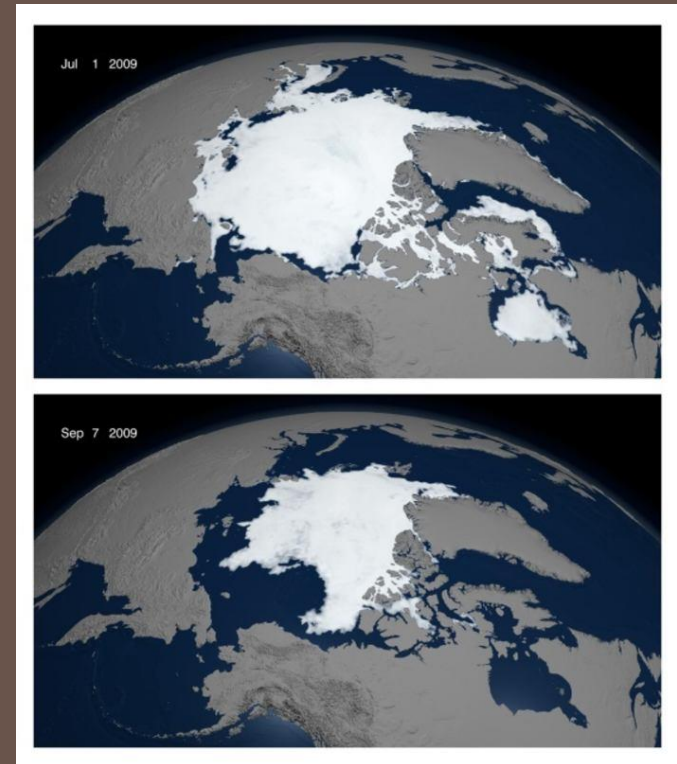


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# Impacts of the global warming

- ❑ Melting of glaciers – Northwest passage
- ❑ Up to 90 bn barrels of oil and 45 bcm of natural gas in Arctic Ocean.
- ❑ Rising of a sea level, changes in weather patterns – climate refugees,
- ❑ Impact at the first place on the third world – crop failure, lack of drinking water, illnesses....
- ❑ Wars for water and natural resources.



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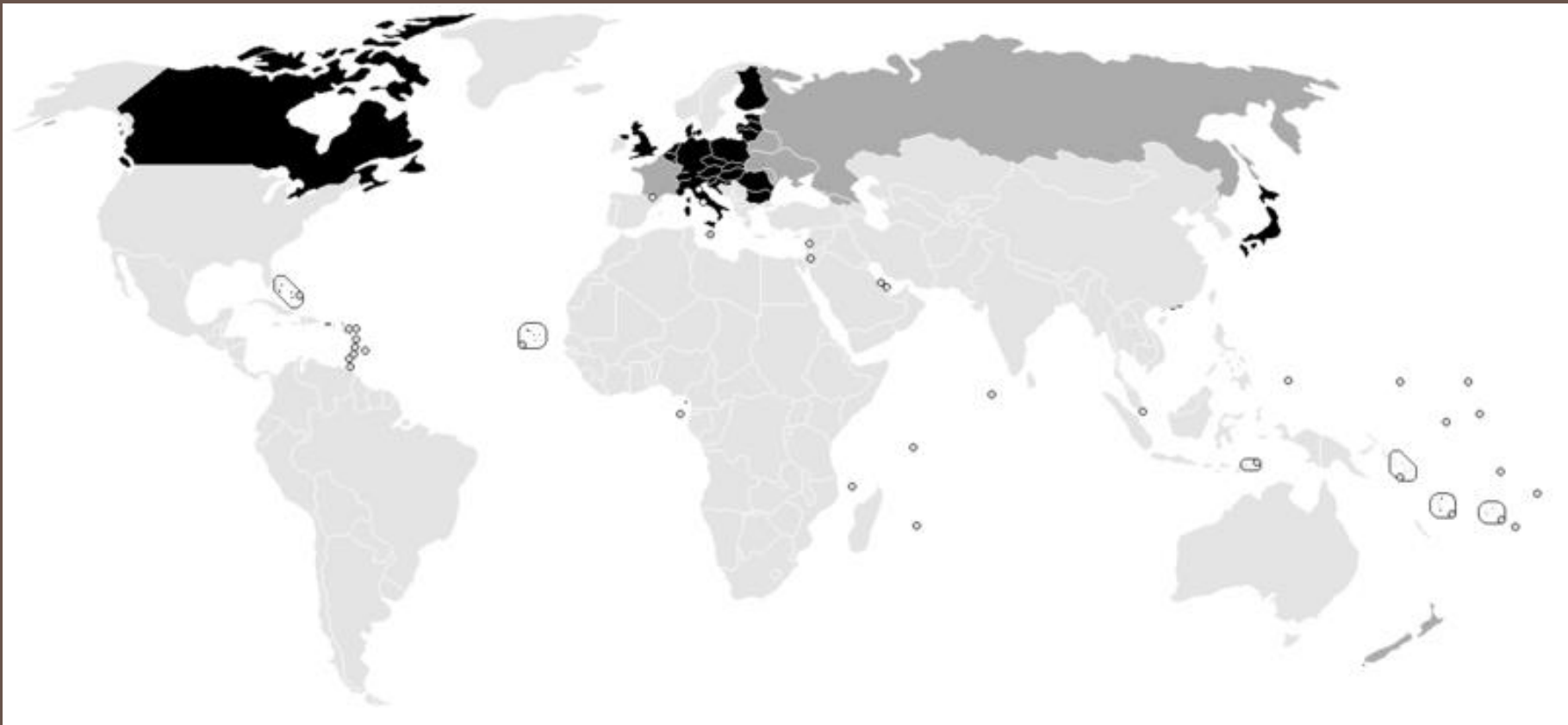
# International regime to fight climate change

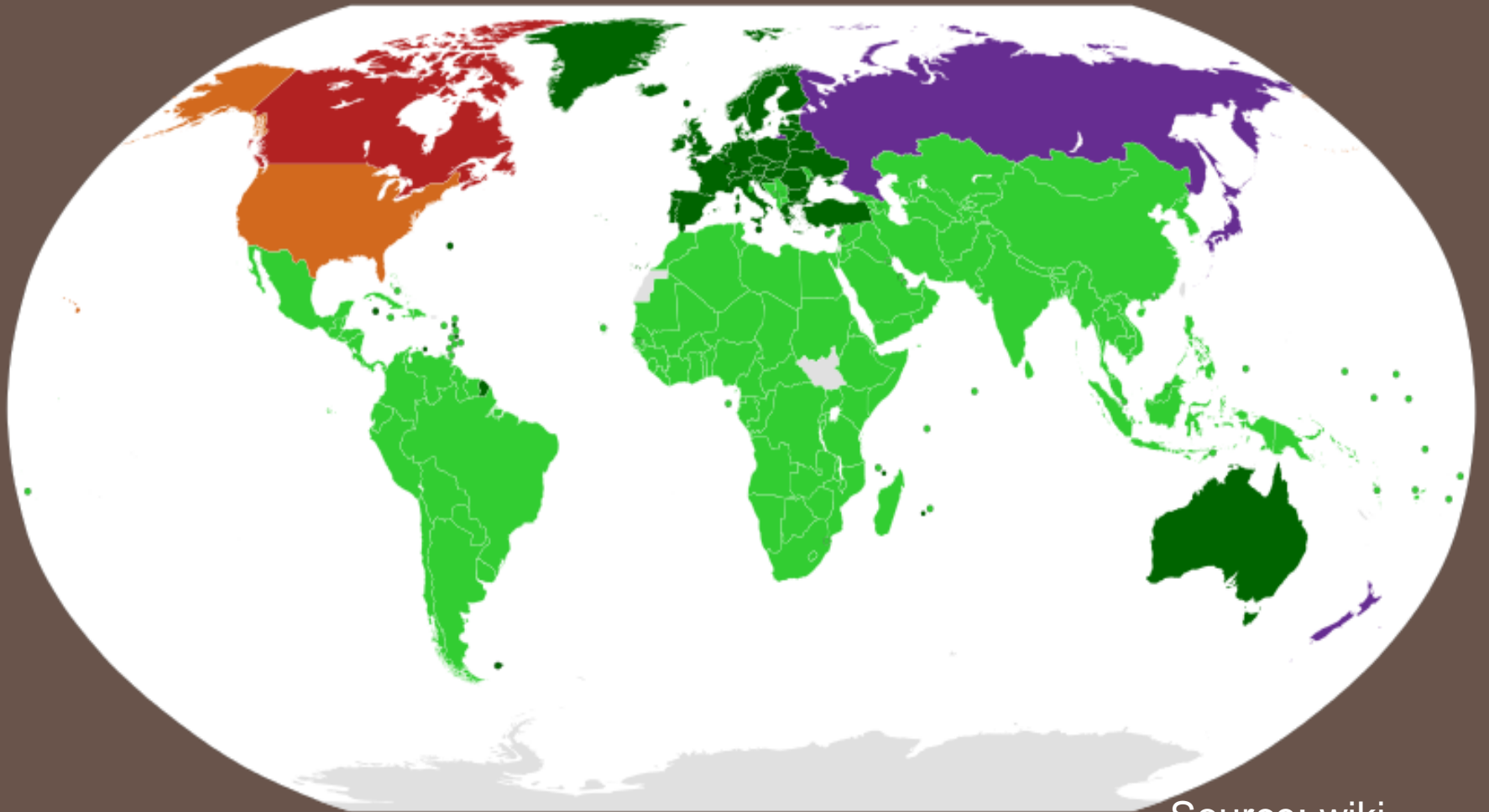
- Intergovernmental Panel on Climate Change – 1988.  
= to provide comprehensive scientific assessments of current scientific, technical and socio-economic information about the risk of climate change, its potential environmental and socio-economic consequences and possible options for adaptin to these consequences or mitigating the effects.
- Rio Summit on Earth – 1992
- UNFCCC
- **Kyoto protocol**
- – 1997, in force 2005  
= Existence of a generally accepted consensus on the climate change as well as the role of man in this process.

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Source: wiki

# Kyoto protocol

- 4 GHG (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride) + hydrofluorocarbons and perfluorocarbons.
- Annex I. countries (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.
- Common but differentiated responsibility

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# EU and climate change

*“The needs of the environment are coming together with the needs of the EU: one is a cause looking for a champion, the other a champion in search of a cause.*

*D.Miliband, UK environmental secretary,2006*

- Environmental awareness
- Preemptive environmental measures
- EU well equipped to address the problem
- Common market
- Raison d'être

Source: D. Buchan, OIES

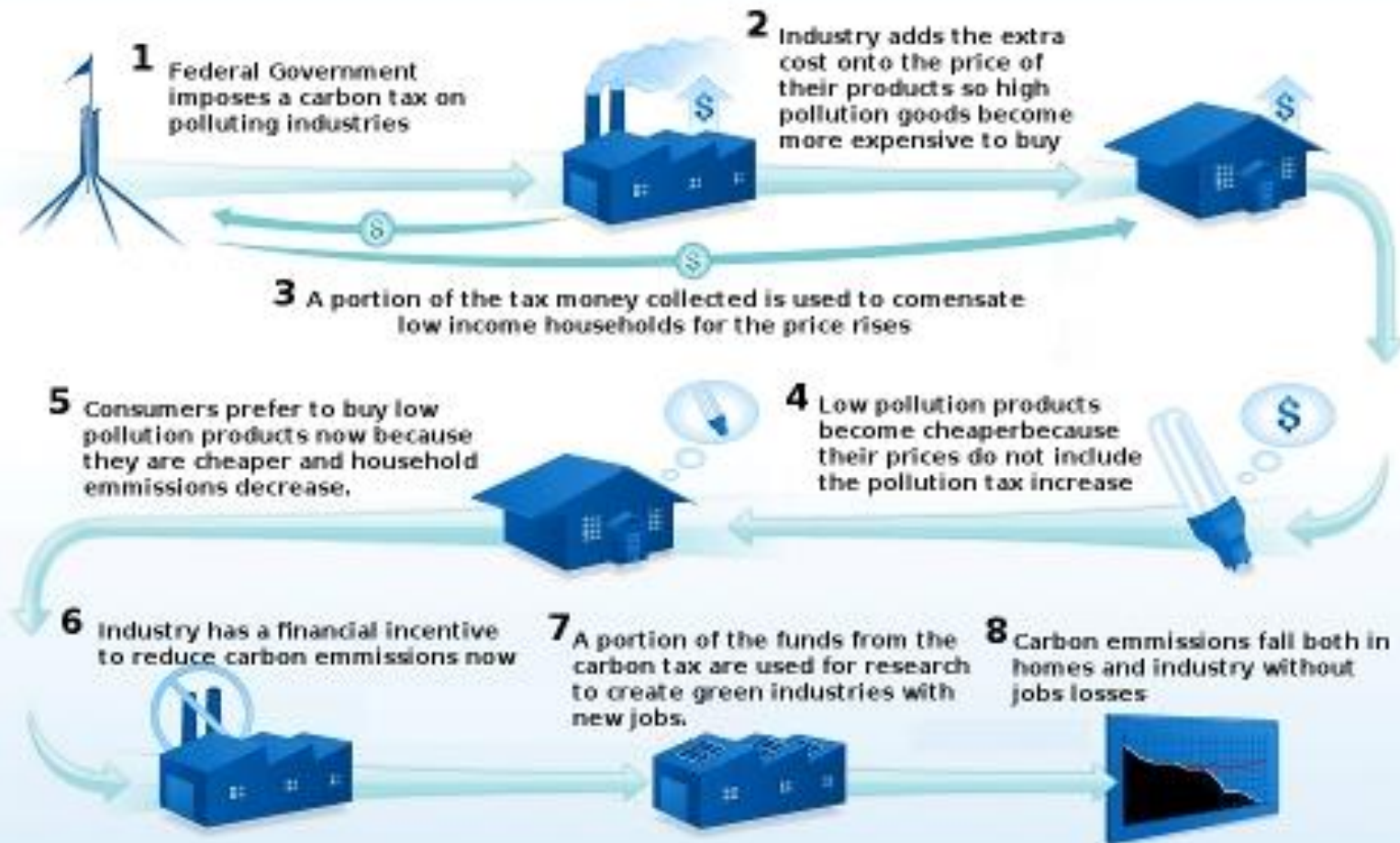
*130r (TEU) „...Community policy on the environment...shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified as source and that the polluter should pay“.*

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# EU and climate change: carbon tax



Adapted from ABC News - Carbon pricing explained  
<http://www.abc.net.au/news/event/s/climate-change/carbon-pricing-explained.htm>

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# 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 permits .... companies are required to hold those permits ... if they need to increase this volume ... have to buy those permits.
- = 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).

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# 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% CO<sub>2</sub> emitted in the EU.

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# EU and climate change: emission trading

- 
- EU firstly highly sceptical about international emission trading.
  - See the very concept 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

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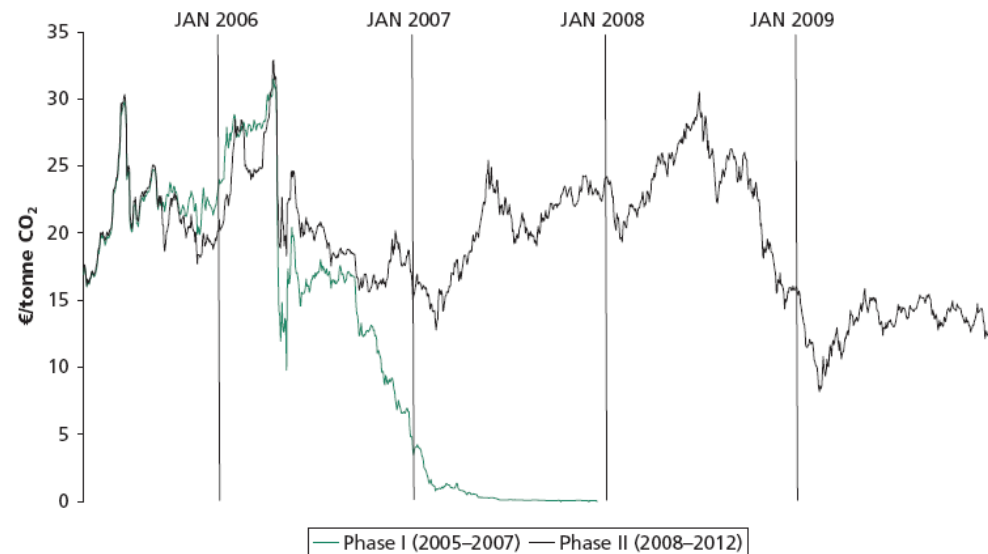
# EU ETS: The first phase 2005 - 2007

- ▣ Problems with the decentralised system of distribution
- ▣ Drop in the prices of allowances
- ▣ Very limited impact on emissions of GHG

Difficult calculations due to:

- Proneness to cheating
- Changing level of industrial production
- Changes in energy prices
- Increasing deployment of RES
- Permit stockpiling
- Weather
- The supply of permits associated with other EU targets

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



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# EU ETS: The first phase 2005 - 2007

Country	Mil. EUA	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
Denemark	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

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# EU ETS: The second phase 2008 - 2012

- ❑ Considerably stricter approach of EC
- ❑ Relatively stable price of allowances
- ❑ 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.*



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# EU ETS: The third phase 2013 - 2020



- Increased coverage of GHG and activities – from 40 to 43 % of emissions
- EU-wide emission cap to replace national allocation plans
- Single and central registry instead of national registries
- Auctioning of permits, with more than 50 % being sold (compare to 5 % in previous phases).
- Common auctioning platform for the sale of permits (save Germany, UK, Poland)
- 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)
- End of free permits to the power sector of most MS (derogation)
- An expanded list of restrictions on the use of credits from the CDM.

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# EU ETS: The third phase

- 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
  
- Results?

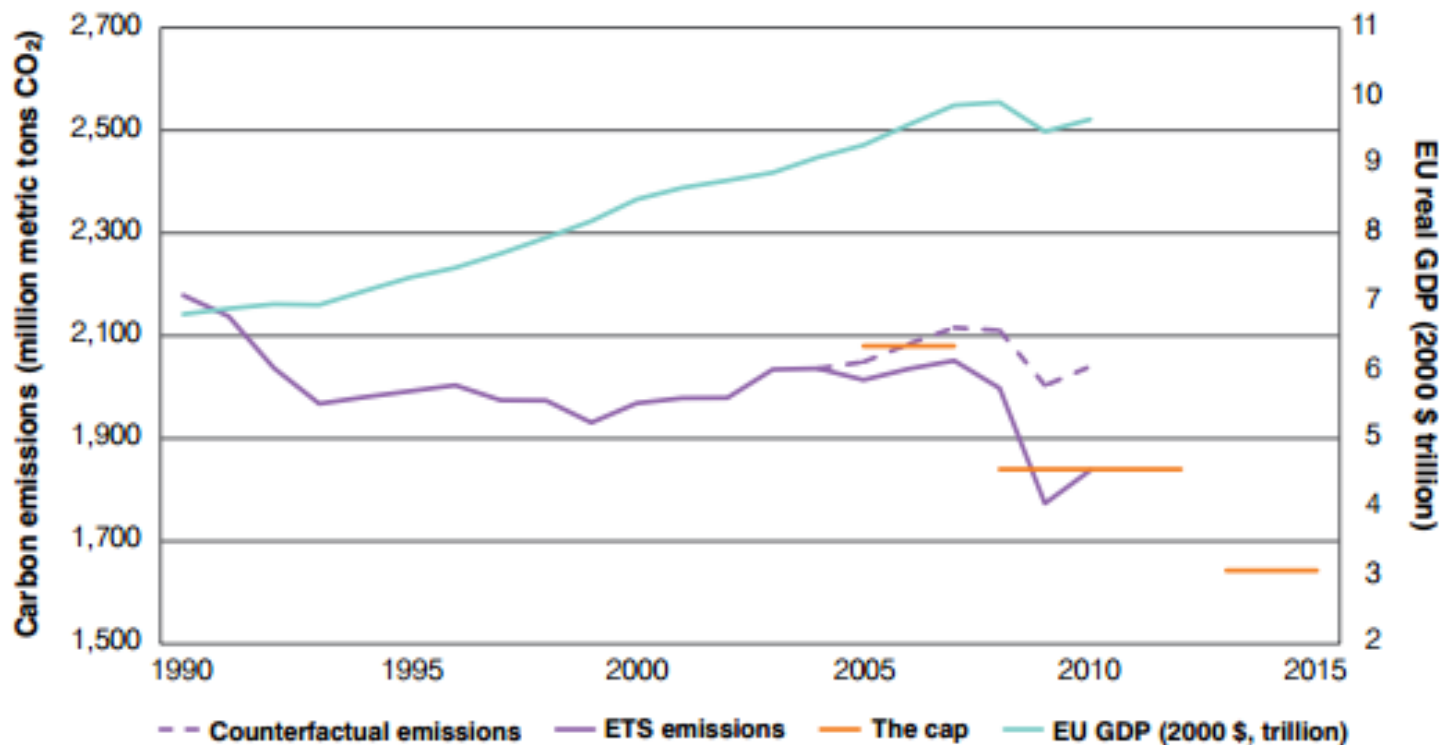
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## EU ETS sector emissions (million metric tons CO<sub>2</sub>), emissions caps, and EU GDP, 1990–2015



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# EU ETS: conclusion

- Carbon leakage
  - Problem of companies moving out of the EU
  - May the EU pass the higher (power) costs on to customers without losing market share in relation to the companies without such costs to bear?
- Cheating
  - <http://www.youtube.com/watch?v=oL-e33oal94&feature=relmfu>

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# EU ETS: Latest development

- Surplus of 900 mil. EUA. And is going due to three sources:
  - +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 programme
  - = total surplus of approx. 1,5 – 2 bn EUA
- Backloading: delaying the auctioning of emission allowances intended to be allocated in 2013-2015 until 2018-2020

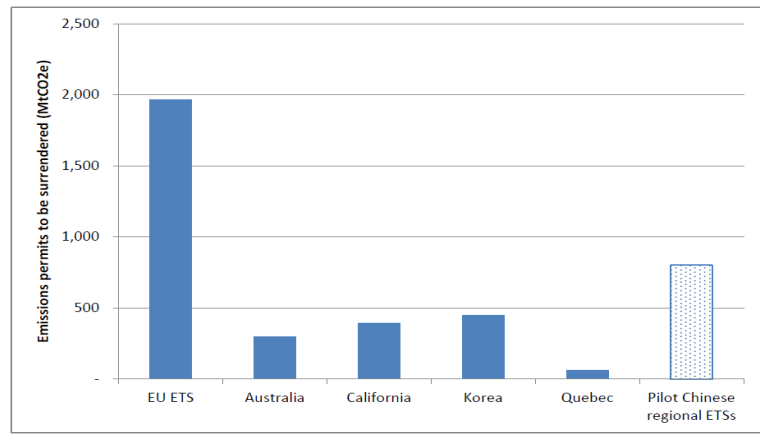
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# EU ETS: Latest development

Estimated total liability for participants under selected existing emissions trading schemes, 2015 (MtCO<sub>2</sub>e)



Trade in emissions permits, 2010 to 2012

Permit type	Volume (Mt CO <sub>2</sub> e)			Value (\$A million)		
	2010	2011	2012	2010	2011	2012
EUA	5,172	6,057	7,478	103,688	102,741	67,854
CER	1,508	2,012	2,408	25,934	23,926	7,604
ERU	59	101	574	731	962	1,126
AAU	63	69	119	663	545	187
North America	189	100	130	526	297	715
New Zealand	8	10	8	130	142	37
Australia	-	-	0.3	0	0	7
Other	35	25	-	297	157	0
<b>Total</b>	<b>7,035</b>	<b>8,373</b>	<b>10,717</b>	<b>131,968</b>	<b>128,772</b>	<b>77,531</b>

Note: EUA = EU Allowance, CER = Certified Emissions Reduction, AAU = Assigned Amount Unit, ERU = Emission Reduction Units.

Source: Point Carbon, 'Carbon market monitor: A review of 2012', 7 February 2013. Australian dollar value estimated by the Parliamentary Library based on average [exchange rate data](#) for each year as published by the Reserve Bank of Australia

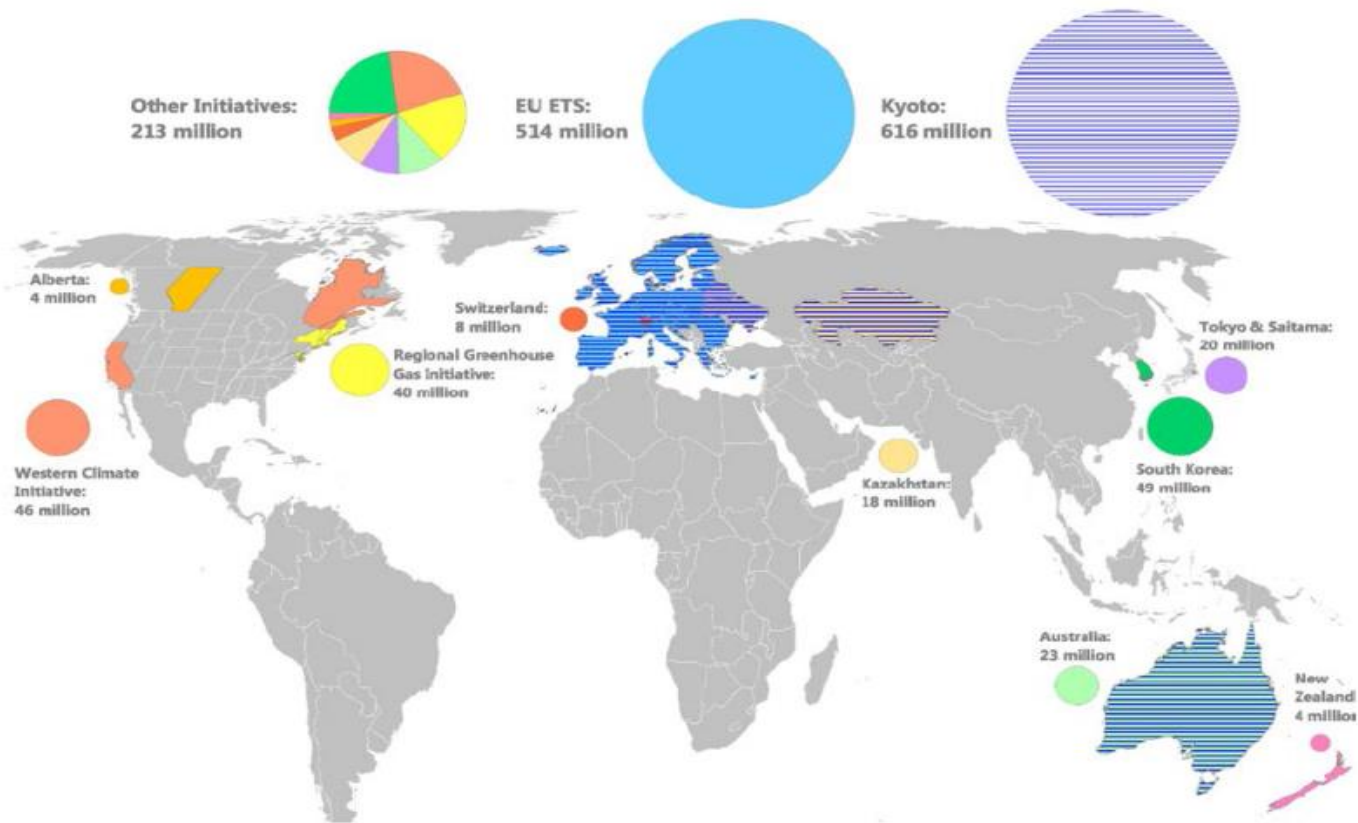
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# EU ETS: Latest development

Map showing countries with an ETS and their populations



Source: Map generated by the Parliamentary Library; sources for population data: CIA World Factbook and census data for US, Canada and Japan.

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