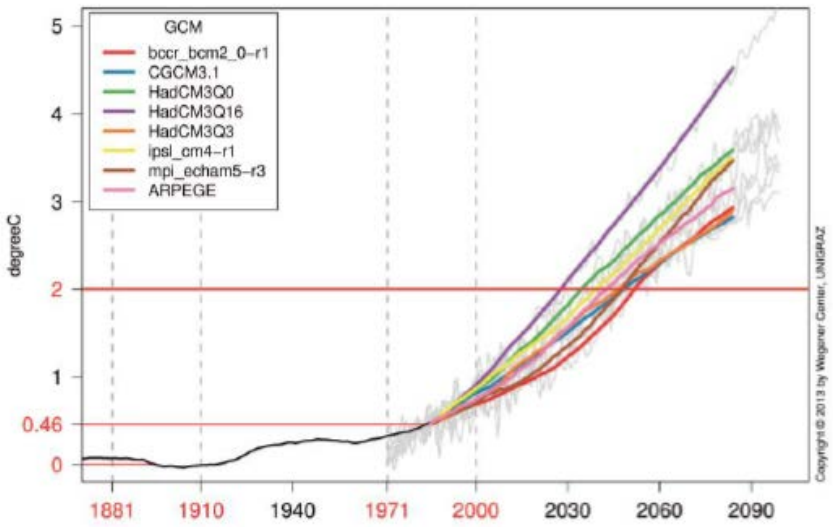
MICROECONOMICS 3
CASE MATERIAL #2

PUBLIC GOODS

Global climate policy

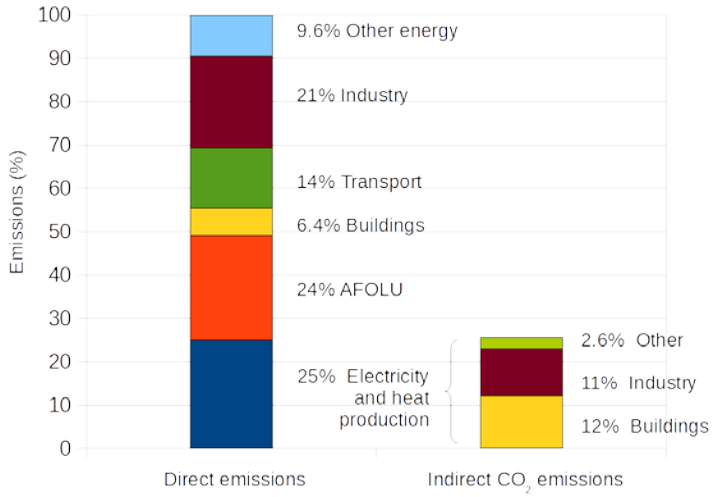
Many environmental goods and services have a public good nature, i.e. they are non-excludable (if a good has been provided, it is not possible to exclude anyone from using it) and non-rival (many agents can use the same unit of a good without deteriorating its characteristics). The existence of public goods is one of the examples of market failures, i.e. leads to sub-optimal allocation of resources. An example of such situation is the greenhouse effect. According to Stern's "Economics of Climate Change" (2007) report: "*Climate change is the biggest market failure the world has ever seen.*"

The increase of the average ground level and ocean temperature raised concern of the public already in the 1980's. In 1988 the Intergovernmental Panel on Climate Change (IPCC) was established. The results of the latter's research suggest that much of the observed increase in average global temperature since the mid-20th century is caused by an increase in concentration of greenhouse gases (of anthropogenic origin).



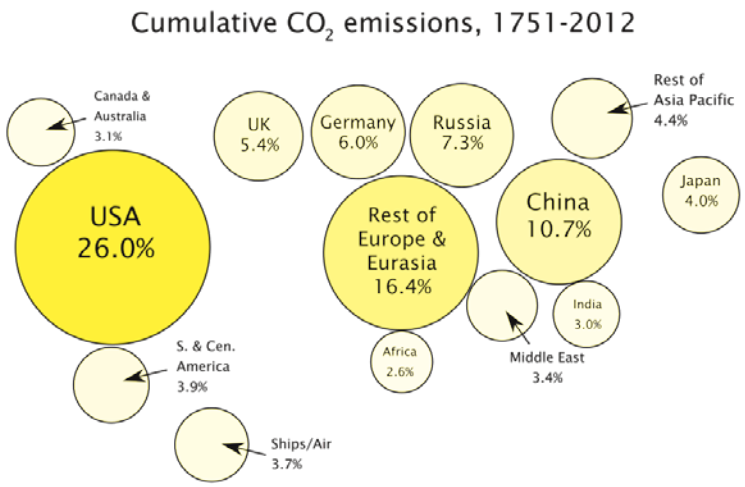
Source: Wegener Center for Climate and Global Change, University of Graz.

In 1992 the United Nations Framework Convention on Climate Change (UNFCCC), also called the Climate Convention, was signed in Rio de Janeiro. This document stipulates the foundations of international cooperation as concerns the reduction of greenhouse gas emission, which is responsible for the greenhouse effect (i.e. involving carbon dioxide, methane, mono-nitrogen oxides etc.). As with many other agreements of this sort, the Climate Convention does not burden its signatories with any specific requirements. However, it envisages annual conferences of the involved parties, which can result in stipulating such obligations.



Source: Edenhofer O. *et al.* (ed.) (2014).

The first of such conferences took place in Berlin in 1995. The participants confirmed that climate changes are a global problem, while noting at the same time that developed countries contributed more to these changes than developing countries. A group of wealthier countries (enumerated in Annex I) was expected to lower greenhouse gases emission, while a group of poorer countries (not included in the Annex) were not obliged to do so.



Source: Hansen J. *et al.* (2013).

At the third of such conferences in Kyoto in 1997 specific obligations were stipulated concerning the reduction of emissions by countries enumerated in Annex I. The Kyoto Protocol was supposed to enter into force following the ratification by at least 55 countries generating at least 55% of the global carbon dioxide emissions. The first condition was met relatively quickly, however the second one became more problematic when the United States (listed in Annex I) withdrew from signing the Protocol fearing the adverse effects of accepting such obligations on the competitiveness of their economy. Poland ratified the Protocol in 2002, as the tenth country. Following the refusal of the US to ratify the Protocol it

became clear that for the Protocol's entrance into force Russia's ratification is inevitable. Russian government, being aware of its bargaining power, ratified the Protocol only after the European Commission conceded to Russia in all matters which were of interest to the latter (concerning e.g. human rights abuses, conflict in Chechnya, gas pipeline below the Baltic Sea).

The Kyoto Protocol entered into force in 2005. The first obligations period was 2008-2012. For this period it was planned that global reduction of global greenhouse gas emission will be reduced by 5% relative to the 1990 level. Achieving this goal required that developed countries, responsible for most of the emission, will reduce their emission by 8%, while countries which commenced economic transition in the 1990's by 6%. The EU countries came up with an agreement concerning the "division on the burden" so that some EU member states are allowed to increase emissions, while others must reduce them.

In the period 2008-2012 an average reduction of 5.2% was achieved by countries listed in Annex I (relative to the predicted increase in emission under the "policy of no change" this was a 30% reduction). EU countries were leaders in executing the Protocol's stipulations achieving an 8% reduction in greenhouse gas emission.

In 2012 at the Doha conference the emission reduction levels were stipulated for the subsequent years (2013-2020). Some of the countries listed in Annex I, which participated in executing the obligations during the first period, refused to take up those obligations for the second period (e.g. Canada, Russia, and Japan). From the group of larger polluters only the EU took up these obligations and additionally increased the requirements for its members states unilaterally. A "20-20-20 program" of goals was set, i.e. 20% reduction of greenhouse gas emission by 2020 (base=1990), a 20% share of renewable energy sources in energy consumption, and a 20% increase in energy efficiency. The EU countries also agreed that at least 20% of the EU budget for 2014-2020 (amounting in total to €960 billion) should be devoted to climate policy activities.

References:

Edenhofer O. *et al.* (ed.), 2014, *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III (WG3) to the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC)*, Cambridge University Press, http://mitigation2014.org/report/final-draft/.

Hansen J. *et al.*, 2013, Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature, *PLoS ONE,* 8 (12), http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0081648, doi:10.1371/journal.pone.0081648

Useful links:

http://unfccc.int/resource/docs/convkp/conveng.pdf

http://www.wwf.se/source.php/1169158/Stern%20Summary_of_Conclusions.pdf

http://www.oecd.org/eco/greeneco/40133781.pdf