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In Focus: Climate Change Agenda in the EU10: Between the Kyoto Protocol and the EU Package “3x20 by 2020”

In early December 2008, Poznań, Poland will host the 14th Conference of the Parties (COP14) to the United Nations Framework Convention on Climate Change (UNFCCC). The COP14 will be a next step in the negotiations process on the new international climate change framework. It is supposed to deliver commitments to reduce greenhouse gases (GHG) emissions after 2012, when the first commitment period of the Kyoto Protocol ends. The new international agreement is to be approved during the COP15 starting in late November 2009 in Copenhagen, Denmark.

All EU10 countries and Croatia have ratified the Kyoto Protocol, which came into force in 2005. In addition to the commitments to the Kyoto Protocol, however, the EU10 countries are subject to EU policies, especially the *Climate Action and Renewable Energy Package*, proposed by the European Commission (EC) in January 2008 in order to implement the major energy and climate decisions taken by the European Council in March 2007. During the Spring 2007 Summit, the Council committed: (a) to reduce the EU's GHG emissions by 20 percent below 1990 levels by 2020 (or 30 percent conditional on an international “post-Kyoto” agreement), (b) increase renewable energy sources (RES) to 20 percent of the EU's overall energy mix by 2020 (including a minimum of 10 percent biofuels in overall fuel consumption), (c) improve energy efficiency by 20 percent by 2020. The package of measures is referred to as “3x20 by 2020”.

The EU package extends and deepens the EU commitments to greenhouse gas emission reduction contained in the Kyoto Protocol. While the Kyoto targets are being exceeded by all EU10 countries except Slovenia (since the base year was around 1990), the new EU targets are more ambitious and will require more efforts and resources by the EU10 countries to achieve.

The Kyoto Protocol⁸

The Kyoto Protocol sets binding targets for 37 industrialized countries (including EU10+1) and the European Community for reducing GHG emissions by an average of 5 percent against 1990 levels over the five-year period 2008-2012. The Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force in 2005. By mid-2008, 182 Parties of the Convention⁹ (Rio de Janeiro, 1992) have ratified its Protocol, which covers 63.7 percent of global emissions in 1990. The Protocol was not ratified by the U.S.

Countries must meet their targets primarily through national measures, but the Protocol offers three (mitigating) mechanisms:

- Emissions trading (“the carbon market”),
- The clean development mechanism (CDM),
- Joint implementation (JI), supporting sustainable development through technology transfer and investment, helping countries with Kyoto commitments to reduce emissions or removing CO₂ in other countries, encouraging the private sector and developing countries (non-Annex 1 Parties) to contribute to emission reduction efforts.

Countries with Kyoto commitments (Annex 1 Parties) accepted targets for reducing emissions, which are expressed as assigned amounts over the 2008-2012 period. The allowed emissions are divided into “assigned amount units” (AAUs). They are expressed in terms of tonnes of CO₂-equivalent emissions.

Emissions trading allows countries that have emissions permitted but not “used” to sell them to countries which have problems with meeting their targets. Because carbon dioxide is the principal greenhouse gas, the market is called “carbon market.” Units other than those for actual emissions can be traded on the carbon market. These other units, each equal to one tonne of CO₂, are:

⁸ The write-up largely derives from UNFCCC website.

⁹ UN Members, both Annex 1 Parties and non-Annex 1 Parties.

- A removal unit (RMU) on the basis of land use, land-use change and forestry (LULUCF) activities such as reforestation,
- An emission reduction unit (ERU) generated by a *joint implementation* project¹⁰
- A certified emission reduction (CER) generated from a *clean development mechanism*¹¹ project.

The emissions trading systems (ETs) may be established as climate policy instruments at the national or regional level. At present, the European Union ETS (EU ETS) is the largest in operation¹².

For most countries with Kyoto commitments, the base year is 1990, but the EU10 could select another year. This option was granted for countries undergoing the process of transition to a market economy. Hence, the following choices: Bulgaria (1988), Hungary (1985-1987 on average), Poland (1988), Romania (1989), and Slovenia (1986). Base-year emissions are defined as the aggregate anthropogenic CO₂ equivalent emissions of the GHGs. Moreover, if LULUCF activities constitute a net source of greenhouse gas emissions in the base year, then net emissions from the part relating to the deforestation are included in the total national emissions for that year.

Recent available data show that most EU10 countries and Croatia will easily fulfill the Kyoto targets with a large margin. Table 4 shows that the exceptions in the regions are Croatia and Slovenia. Worldwide, by 2005, emissions were also significantly reduced in Ukraine and Russia as compared to the base year. However, the developed countries reduced emissions by much less than targeted in Kyoto (EU15 *en bloc*) or considerably increased the emissions (other developed countries).

Table 4. Kyoto Targets and Actual Emissions of GHGs (in millions of tonnes of CO₂ equivalent)

	Base year	Emissions, 2005	Reduction relative to	
			base (in percent)	2005 (in percent)
Bulgaria	132.6	70.0	-8.0	-47.2
Croatia	31.6	30.5	-5.0	-3.4
Czech Republic	196.2	145.6	-8.0	-25.8
Estonia	42.6	20.9	-8.0	-50.9
Hungary	115.7	80.2	-6.0	-30.7
Latvia	26.4	10.9	-8.0	-58.9
Lithuania	49.4	22.7	-8.0	-54.1
Poland	586.9	399.0	-6.0	-32.0
Romania	282.5	153.7	-8.0	-45.6
Slovakia	72.1	47.9	-8.0	-33.6
Slovenia	20.3	20.4	-8.0	0.4
EU 15	4257.8	4192.6	-8.0	-1.5
Australia	418.3	525.4	8.0	25.6
Canada	596.0	746.9	-6.0	25.3
Japan	1272.0	1359.9	-6.0	6.9
New Zealand	61.9	77.2	0.0	24.7
Russian Federation	2989.8	2132.5	0.0	-28.7
Ukraine	923.8	418.9	0.0	-54.7
United States	6229.0	7241.5	...	16.3

Sources: Eurostat, UN and World Bank staff. Note: Without LULUCF in 2005 in selected Annex 1 Parties

EU Climate Action and Renewable Energy Package¹³

The EU Package includes four main elements:

1. An expansion of the “cap and trade system”¹⁴ (EU ETS) in the Phase III (2013-2020) and new EU-wide rules to harmonize the allocation of emission allowances (AU) across the Member States (ETS sectors, mainly energy, account for about 40 percent of EU GHG emissions),

¹⁰ A JI project must provide a reduction in emissions by sources, or an enhancement of removals by sinks, that is additional to what would otherwise have occurred. Projects starting as from the year 2000 may be eligible as JI projects, but ERUs may only be issued for a crediting period starting after the beginning of 2008.

¹¹ Since 2006, the mechanism has registered more than 1,000 projects and is anticipated to produce CERs amounting to more than 2.7 billion tonnes of CO₂ equivalent in 2008-2012. Also, CO₂ Capture and Storage (CCS) is treated as a CDM activity.

¹² In the summer of 2008, the UNFCCC secretariat and the EC successfully tested the linking of UNFCCC's International Transaction Log (ITL) and the Community Independent Transaction Log (CITL), together with the EU member States national registries and some registries of non-EU countries. The linking of EU's registries and CITL to UNFCCC's ITL can start in the first half of October 2008.

¹³ Proposed by the EC on 23 January, 2008

¹⁴ Recent WB paper discusses the design of CO₂ taxes at the domestic and international level and the choice

2. **Individual emission reduction targets**, as compared to 2005 as a base year, at the Member State level for **sectors not covered by the EU ETS**, covering sectors such as: transport, construction, services, smaller industrial energy installations, agriculture, and waste (Non-ETS sectors). They account for about 60 percent of EU GHG emissions¹⁵,
3. **Legally enforceable renewable energy targets** for Member States,
4. **New guidelines on carbon capture and storage (CCS) and environmental state aid.**

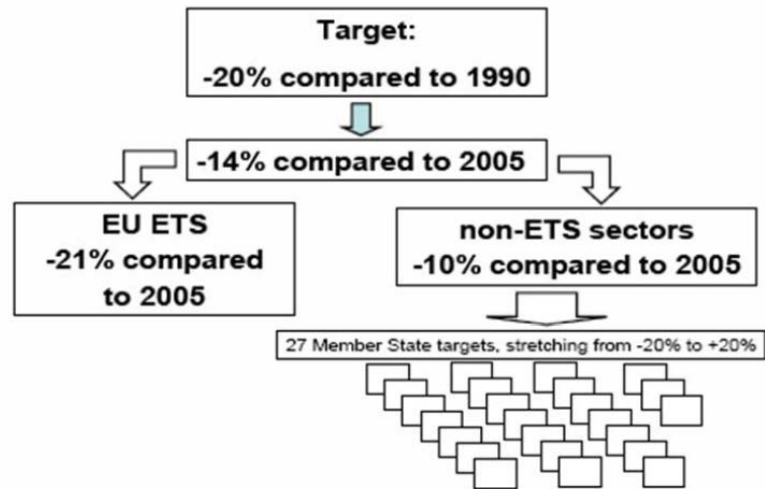
To meet the EU-wide target by 2020, a 14 percent reduction of CO₂ emissions is required as compared to 2005 levels. Figure 42 demonstrates the breakdown of EU's 2020 targets, as proposed by the EC. The way to achieve a 21 percent emissions reduction in EU ETS sectors is presented in Table A1 in the Annex, while the breakdown of individual targets for non-ETS sectors, renewable energy, and biofuels is presented in Table 5, Columns 2-4. Moreover Table A2 in the Annex envisages the breakdown into ETS and non-ETS sectors.

In the region, the fulfillment of the GHG reduction targets will be the most challenging for countries generating a vast majority of electricity production based on coal (Poland, Estonia, the Czech Republic, Bulgaria), especially if they cannot rely on diversified energy sources including nuclear energy (see Table 5, Columns 7-8). If an enterprise (ETS installation) does not surrender enough allowances to cover its emission, it will have to pay a penalty of €40 per ton of CO₂ emissions between 2005 and 2007 and €100 from 2008.¹⁶

The expansion of the EU ETS is a key element of the EU package. In line with the EC proposal, the EU ETS will include GHGs other than CO₂ and all major industrial emitters. The power sector - contributing most to EU emissions - will face full auctioning from 2013. Other industrial ETS sectors and aviation will step up to full auctioning gradually, although an exception may be made for sectors particularly vulnerable to competition from producers in countries without comparable carbon constraints (carbon leakage). In addition, auctions will be open, thus any EU operator will be able to buy allowances in any member state. Revenues from the ETS will add to member states' revenues in proportion to the emissions traded through the national system, and should be used in part to help the environmental EU goals. Part of the revenues should also go towards helping developing countries adapt to climate change. The EC estimates that revenues from the auctions could amount to €50 billion a year by 2020.

While the EU is committed to reducing emissions in non-ETS sectors by 10 percent between 2005 and 2020, the EU10 countries are allowed to increase their emissions by a range from 4 percent (Slovenia) to 20 percent (Bulgaria) (Table 6, Column 2). The EU10's shares of renewables in final energy demand are to increase from a current range of less than 4 percent in Hungary to 35 percent in Latvia to a range of 13 percent

Figure 42. Illustration of EU's 2020 climate change and energy targets



Source: A note by PEW Center on Global Climate Change, European Commission's Proposed "Climate Action and Renewable Energy Package" January 2008.

of taxes versus a cap-and-trade system. There is a strong case for taxes on uncertainty, fiscal, and distributional grounds, though this critically hinges on policy specifics and how revenues are used (see more in: Joseph E. Aldy, Eduardo Ley, and Ian Parry, *A Tax-Based Approach to Slowing Global Climate Change*, World Bank, PREMEconomics of Climate Change Discussion Paper No. 1, August 2008.

¹⁵ The EC proposed individual targets for Member States based on incomes per capita. The targets range from +20% to -20% relative to 2005. All EU10 may increase their emissions.

¹⁶ Some or all of these costs (or costs of allowances acquired through auctions, in particular in Phase III) may be shifted to consumers, leading to significant increase of electricity prices and overall inflation.

in Hungary to 42 percent in Latvia. The 10 percent biofuels target will require significant progress, as currently they account for less than 0.6 percent of overall fuel consumption (2005 data).

Table 5. EU10 individual 2020 targets for Non-ETS Sectors and renewable energy and actual 2005 data for EU10 (in percent)

	2020 target for non EU ETS	Renewables 2020 target	Biofuels 2020 target	Share in 2005 of		Share in 2005 of electricity from	
				renewables	biofuels	coal	nuclear
1	2	3	4	5	6	7	8
Bulgaria	20	16	10	9.4	0	40.6	42
Czech Rep.	9	13	10	6.1	0	59.2	29.9
Estonia	11	25	10	18	0	91.2	0
Hungary	10	13	10	4.3	0.1	19.6	38.7
Latvia	17	42	10	34.9	0.3	0	0
Lithuania	15	23	10	15	0.2	0	69.9
Poland	14	15	10	7.2	0.5	91.4	0
Romania	19	24	10	17.8	0	36.9	9.3
Slovakia	13	14	10	6.7	0.6	17.6	56.4
Slovenia	4	25	10	16	0	34.9	38.9
EU27	-10	20	10	8.7	...	28.6	29.5

Source: World Bank staff based on Eurostat data and EC documents.

Note: Targets are set as compared to 2005; targets for renewables refer to the share in the final energy demand, for biofuels to the overall fuel consumption.

The first tensions between EC proposals and national commitments of some EU10 countries emerged in the context of allocation caps for EU ETS sectors in the II Phase (2008-2012) of the EU ETS implementation, as specified in the National Allocations Plans (NAPs). The period is consistent with the Kyoto protocol reporting period. The NAPs were submitted to the EC in late 2006 and then the EC provided its assessments and communicated decisions in 2006-2007. After the first assessment round, Latvia, Lithuania and Slovakia submitted amended proposals, which were only partially accepted in the EC's second decisions. Table 6, column 3, shows the final decisions by the EC from 2007. In general, the EC requested reducing the allocations proposed in the NAPs by one-quarter. The EC decisions are binding for the EU Member States, but the *Acquis Communautaire* foresees some "revoking procedures". Poland has filed to sue the EC in the European Court of Justice, but a verdict has not yet been taken.

Table 6. Annual allocations of emissions allowances for 2008-2012 (in million tonnes of CO2 equivalent)

	ETS sectors emissions, 2005	NAP proposal of annual CO2 emissions, 2008-2012	EC assessment, 2007	Difference	EC decision as compared to the NAP <i>(in percent)</i>
	1	2	3	4=Col3 - Col2	5
Bulgaria	40.6	67.6	42.3	-25.4	-37.5
Czech Rep.	82.5	101.9	86.8	-15.1	-14.8
Estonia	12.6	24.4	12.7	-11.7	-47.8
Hungary	26.0	30.7	26.9	-3.8	-12.4
Latvia	2.9	6.3	3.4	-2.8	-45.2
Lithuania	6.6	11.0	8.9	-2.2	-19.7
Poland	203.1	284.6	208.5	-76.1	-26.7
Romania	70.8	95.7	75.9	-19.8	-20.6
Slovakia	25.2	34.9	32.6	-2.3	-6.5
Slovenia	n.a.	8.3	8.3	0.0	0.0

Source: NAPs and the EC's assessments and decisions.

The EU proposals discussed briefly in this note go beyond the Kyoto Protocol (Table 7). The EC proposal has significant and differentiated implications for all EU Member States, including the EU10. The EC proposal demonstrated its commitment to participate actively in the climate change agenda. It is an important step in negotiations on the "post-Kyoto" international agreement, which is to be adopted during the COP15 in Copenhagen in late 2009.

Table 7. Main Differences between the Kyoto Protocol and the EU Package

	Kyoto Protocol	EU Package "3x20 by 2020"
Commitment Period	2008-2012 average	2005-2020, II Phase of EU ETS implementation is consistent with the Kyoto period
Base Year for abatement commitments	1990, with some exceptions	1990 at political level, and 2005 for specific commitments on ETS volume, share of RES, emission changes of non-ETS sectors, and biofuels
Sector Specification of Emission Allowances	No, only overall country-wide targets	Yes, major breakdown into ETS (in particular, energy) and non-ETS sectors. Reallocation between the two sector groups or backloading reductions into later years is not permitted
Gas coverage	Carbon dioxide (CO ₂), Methane (CH ₄), Nitrous oxide (N ₂ O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulphur hexafluoride (SF ₆)	Several GHGs

Annex: Table A1. EU ETS Phasing-in Process

	I Phase 2005-2007 CO ₂ only	II Phase 2008-2012 CO ₂ , N ₂ O, PFC	III Phase 2013-2020 CO ₂ , N ₂ O, PFC
Years covered	2005-2007	2008-2012	2013-2020
GHGs coverage	CO ₂ only	CO ₂ , N ₂ O, PFC	CO ₂ , N ₂ O, PFC
Sectors covered	Power stations and other combustion installations, oil refineries, coke ovens, iron and steel, cement, glass, lime, bricks, ceramics, and pulp, paper and board. Sectors not covered in I Phase: petrochemicals, ammonia, aviation (2011 or 2012), aluminum, nitrous oxide (N ₂ O) from acid production, perfluorocarbon (PFC) from the aluminum sector.	Power stations and other combustion installations, oil refineries, coke ovens, iron and steel, cement, glass, lime, bricks, ceramics, and pulp, paper and board. Sectors not covered in I Phase: petrochemicals, ammonia, aviation (2011 or 2012), aluminum, nitrous oxide (N ₂ O) from acid production, perfluorocarbon (PFC) from the aluminum sector.	Power stations and other combustion installations, oil refineries, coke ovens, iron and steel, cement, glass, lime, bricks, ceramics, and pulp, paper and board. Sectors not covered in I Phase: petrochemicals, ammonia, aviation (2011 or 2012), aluminum, nitrous oxide (N ₂ O) from acid production, perfluorocarbon (PFC) from the aluminum sector.
Emission Caps for ETS sectors	National target levels	National target levels	EU-wide, at 9 percent below 2005 level in 2013, declining linearly to 21 percent below 2005 levels in 2020
Auctions	Allowances allocated for free, a maximum of 5 percent of allowances on auctions	Allowances allocated for free, a maximum of 10 percent of allowances on auctions	100 percent of allowances in the power sector in 2013. 80 percent of allowances will be allocated for free in other ETS sectors in 2013 and declining to 0 percent (full auctioning) in 2020.
Allocation of Allowances	By country, as specified in National Allocation Plans (NAPs), and approved by the European Commission	By country, as specified in National Allocation Plans (NAPs), and approved by the European Commission	EU-wide. 90 percent of allowances to be auctioned with revenues distributed in proportion to 2005 emissions of the Member States, and 10 percent redistributed to MS with lower GDP per capita
Use of credits	Yes	Yes	Credits from the CDM and JI only from projects approved before 2012 and only through 2014. Additional use of credits if a new international agreement is reached
ETS reserve			5 percent of allowances for new market entrants, except in the electricity sector

Annex: Table A2. Breakdown into sectors, relevant in the context of the EU Energy and Climate Change Package

	ETS sectors (by installation)		Non-ETS sectors
Share in EU27 CO₂ emissions in 2005	40%		60%
Sectors / branches in the economy	Power Power stations and other combustion installations	Non-power Oil refineries, coke ovens, iron and steel, cement, glass, lime, bricks, ceramics, and pulp, paper and board, petrochemicals, ammonia, aviation (probably from 2011 or 2012), aluminum, acid production, aluminum sector.	transport, construction, services, smaller industrial energy installations, agriculture, and waste