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EURACOAL Workshop

Impacts of CO_2 Emissions Trading on coal-fired electricity production

Country:	Germany	U K	Czech Republic	Greece	Hungary	Poland
Rules for:						
New installations (on line <u>after</u> 01.01.05) replacing previous installations	Takeover of emissions rights of previous installation for 4 years afterwards complete allocation according to need of installation Compliance factor 1 for 14 years	No rules for new plant replacing existing installations	Operator of new installation will take over the permit. Allowances will be given to the account of operator who operates installation at that time. Allowances cannot be withdrawn later in the year. Allowances for the following year will be allocated to the new operator in the next year's allocation	There are no new lignite fired plants scheduled till the end of 2012	The operator may apply to take over for the purposes of the new installation the allowances of the installation shutting down. Takeover of emissions rights of previous installation for 4 years. Afterwards the general allocation rules set out in the NAP for 2008 – 2012 shall apply.	No other rules for "new-new"" than for "new' replacing existing installations.
New installations (on line <u>before</u> 01.01.05) replacing previous installations (early action)	Complete allocation according to need of installation Compliance factor 1 for 12 years	No rules for new plant replacing existing installations	Allowances and permit will be given to the current operator.	There are no new lignite fired plants scheduled till the end of 2012	The NAP accommodates early action by setting aside 0.6% of the total quantity to be allocated (~ 0.5 Mill. to CO_2).	No rules for new plant replacing existing installations
Additional new installations	Complete allocation according to need of installation for 14 years (max. 750g CO_2/kWh) i.e. lower allocation for lignite-fired power stations (950g CO_2/kWh)	New installations will be benchmarked against set criteria and are currently awarded allowances for Phase I only from a New Entrant Reserve. The allowance allocation for subsequent phases is still to be agreed. No benchmark data for new coal plant has been published, so new coal plant would be benchmarked against gas, (0.21 kWh to kgCO_2). However no new coal installations are planned during Phase I.	Operator has to apply for permit before start of operation of the new installation. Allowances will be allocated from the New Entrant reserve.	There are no new lignite fired plants scheduled till the end of 2012	Operator has to apply for permission before the start of the new installation. Allowances will be allocated from the new entrant reserve pool (2% of the total quantity available for allocation ~ 2.0 Mill. to CO_2). The Hungarian NAP uses benchmarking as a basis for determining the intended allocation to new entrants. The benchmarks are based on the best available technology in Hungary.	Operator obligation is preparation for application for permit. Before new installation regular start-up, Operator must to have governmental official decision concerning detailed allowances limit. It will be allocated from the New Entrant "box".

How is the security of investments for new installations guaranteed?	Establishment of Compliance factor extending beyond the whole trading period (see above)	Security of allowances is not guaranteed beyond each individual Phase.	Not through EU ETS.	There are no new lignite fired plants scheduled till the end of 2012	Not final decided yet. NAP for the 2nd ET-period will be published End of March 2006.	Security of allowances is not guaranteed beyond each individual Phase
Treatment of old installations?	For coal-fired and lignite-fired power stations older than 30 years there is a malus rule. Depending on efficiency, from a certain date onwards, there is a 15 % reduction referring to the actual emissions during the reference period. Efficiency and delays η < 31 % (lignite) 01.01.2008 - 31.12.2009 η < 32 % (lignite) after 01.01.2010 η < 36 % (hard coal) after 01.01.2008 The malus rule will not apply if a replacement installation becomes operational within 2 years.	There is no separate rule for old installations.		There are no separate rules for old installations. All installations are subjected to the 2,5% reduction requirement for the total electricity generation section	There is no separate rule for old installations. In the 1st and 2nd ET-period a grandfather-quota of 95% is planned.	There is no separate rule for old installations
On the basis of what information is the need for a certificate for individual installations established?	Emissions of the years 2001 till 2003 or optional rule on the basis of announced emissions (production potential X emission factor)	Emissions between 1998 to 2003, excluding the lowest year.	Based on requirements given by legal Act on emissions trading and decree on monitoring and reporting (based on M&R guidelines)	Emissions of years 2000 – 2003 taking under consideration different compliance factor for processes and CHP (1). The year with the lowest emissions is excluded.	Installations started operation before 1998, the average emissions between 1998 to 2003, excluding the lowest year. Installations started operations after 1998, the reference emissions from the installation shall be its average emission from the first year after completion latest to the end of 2004, excluding the lowest year. .	**Emissions between 1998 to 2001, excluding the lowest year**

How is the adjustment between the need at installation level and the national emissions reduction target achieved?	Establishment of a common Compliance Factor Many exceptions (e.g. combined heat and power, process-linked emissions, Early Action)	Government projections have been made at a sector level. In the case of the electricity sector the Government has decided it can deliver additional 'emission trading savings' beyond the business as usual projection. This has resulted in the generation sector being given an allocation, in Phase I, 21.5 % lower than its 2003 emissions.	Through the principle of NAP.	Common compliance factor (0,975). Exceptions: Processes, CHP (1).	As the results of a macro-economic model indicate, that the total national emissions will remain below the Kyoto target, the total amount of allowances to be allocated was estimated on the basis of the projected emissions established in the sectoral level forecasts. The total number of allowances equals the sum of emissions projected for the sectors. The above amount is reduced by • the quantity to be auctioned • the new entrant reserve • the early action reserve in order to obtain the amount to be allocated free of charge to existing installations.	Government proposals have been made for each industry sector and finally for each individual installation, as year by year and "yearly average" emissions limits. Power sector – no "Early Action" savings were taken for consideration during allocation process.
How high is a foreseen reserve for economic growth?	Not foreseen	Demand in the electricity sector is projected by Government to fall by 2.5 % between 2005-2010 because of the effect of its Climate Change Program.	Differs for sectors. As final NAP with allocations to installations has not been approved yet it is not possible to answer this question in more detail.	??	A yearly demand by 2.4% until 2012 is projected from the Hungarian Government.	Electricity demand from power sector is projected by Government to rise by 1.5% between 2005-2010.
How have prices for certificates evolved (currently)?	End of March 2005 – End-May 2005: 14 - 20 € /t	Currently trading at between €19.00-20.25/t	Not clear. If you mean certificates as permits (then price for permit not changed) if certific. as allowances (then price of allowances is given by the market and not MoE)?	Current prices (JUNE 2005), around 19 €/t CO_2	At the moment there is no significant ET-activity in Hungary. The definite allocation of the CO_2-Certificates is expected at the end of September 2005	Currently – there is no signal about any trading activities until now

What price trends are expected for certificates (till 2012)?	Approximately 10 – 15 €/t	A flat price around €19.50-20/tCO_2	Irrelevant question for MoE	Up to 20 €/t CO_2	Approximately 20 €/t between 2005 and 2012	No data until now
From what price level for certificates are impacts expected on coal-fired electricity production?	Depends on the difference of prices between natural gas and coal. At current price levels long-term impacts (decisions to build replacement installations) will be noticeable at 20 – 35 €/t. For the operation of existing installations the threshold is even higher.	Depends on the difference of prices between natural gas and coal. An allowance price of €20/tCO_2 gives gas an advantage of around 0.64p/kWh (€0.93/kWh) over coal.	Irrelevant question for MoE	25-30 €/t CO_2	Depends on the difference of prices between natural gas and coal. An allowance price over 25 €/t CO_2 is prevailing the long-term break-even.	No data until now
Are impacts on electricity prices expected?	The futures quotations for base load electricity on the EEX mid April 2005 were 37 €/MWh for 2006 and 2007. The average quotation for 2004 amounted to 29 €/MWh.	Forward electricity prices have risen to take into account the price of carbon, although there is also an element of higher fuels prices. The average baseload price in 2004 was €31.00/MWh. The forward price for 2006 is €62.25/MWh and €59.75 for 2007.	Irrelevant question for MoE	Carbon price has not yet been included in electricity prices. No indications yet about electricity prices.	The electricity market price is determined by the cost of producing the last unit needed to cover demand. In Hungary the generator of that last unit of energy is – similar to the other EU countries - a fossil fuel plant. One of those is obligated to pay the additional CO_2 costs of emitting CO_2. If so, the wholesale price of electricity should rise by this additional cost above the level that would prevail without CO_2 regulation.	**Forward electricity prices not yet have risen - to take into account the price of carbon, although there is also an element of higher fuels prices**
Required from NAP II	The aim should be to **maintain** the following principles (Illustration 3): - Need-oriented and free of charge allocation (grandfathering) - Security for investments for new installations by	Security for investments for new installations by means of allocation rules that cover several trading periods Harmonised treatment of all installations taking part in the EUETS The UK has indicated	not decided yet	- Free of charge allocation (grandfathering) - Harmonised treatment of all installations taking part in EUETS	• Security for long term investments • Sufficient cover of CO_2-demands of new entries • Long-term free of charge allocation for the domestic Lignite industry • Sufficient transition	The aim should be to **maintain** the following principles : - Need-oriented and free of charge allocation (grandfathering) for existing installations; - Security for investments for new

	means of allocation rules that cover several trading periods - Harmonised treatment of all installations taking part in ET - Transition regulations for replacement installations Following **amendments** should be suggested when discussing NAP II: - Introduction of a benchmark for new installations depending on the state of the technology available for each fuel (lignite 950 g/kWh) - Scrapping the malus rule (or adjusting to approval and construction delays) - adaptation of the treatment of replacement installations on line before 01.01.05 (12 years) to replacement installations on line after 01.01.05 (4 + 14 years) - drop the optional rule for existing installations -	that they will not use grandfathering in their allocation mythology for Phase II. Therefore if benchmarking is used it must use fuel specific emission factors and technology specific efficiencies. Load factors of coal plant, which have opted out of the Large Combustion Plants Directive, (LCPD), should be adjusted to reflect the 20,000 hours operational limit.			regulations for replacement installations	installations – allocation promises long term before expecting regular operation start-up; - Rules that cover several trading periods; - Harmonised treatment of all installations taking part in ET; - Transition regulations for replacement installations; Following amendments should be suggested when discussing NAP II: - Introduction of a benchmark for new installations depending on the state of the technology available for each fuel (lignite average on 1050-1150 g/kWh); - No agreement for “european common benchmark” without taking for consideration “state of the art” and “distance to that” between existing installations based on different fuels and its quality.

Any other comments		The UK have indicated in Phase III they will press for the auction of all allowances and the scrapping of the grandfather allocation methodology.			Still Hungary do not adopt the final allocation of CO_2 allowances on sector level for the first ET period. The final allocation is expected until the end of September 2005.	The Polish Minstry of Environment has indicated that they are going not use grandfathering in Phase II. Benchmarking (BM) vs. Grandfathering (GF) is being discussed while collecting data for NAP. Most of industries chose GF and not BM.