



## The Alliance of Energy Intensive Industries (AEII)



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### ***Realistic evaluation of the indirect cost effects in the EU Emissions Trading Scheme for the analysis of the risk of carbon leakage and for financial compensation***

Unless the cost effects of the EU Emissions Trading Scheme on electricity prices are identified and compensated in a realistic way, provisions to effectively prevent carbon leakage will fail. Therefore, the CO<sub>2</sub> cost factor of electricity applied in the determination of the carbon leakage sectors as well as in the compensation schemes must be based on the marginal price setting mechanism that applies for the majority of power supplies. Only in particular cases, where specific ETS cost impact levels are identifiable, these must be used for compensation.

The actual EU-wide CO<sub>2</sub> cost transfer factor is approximately 0.75 tonnes of CO<sub>2</sub> per MWh. We propose its use as the default with regional and/or individual adaptation for compensation where appropriate.

The relevant CO<sub>2</sub> emission cost transfer factor of electricity, expressed in tonnes of CO<sub>2</sub> per MWh reflects the *“indirect costs from higher electricity prices resulting from the implementation of the present Directive”* (article 10a, 14) and plays an important role in determining the risk of carbon leakage due to the EU ETS.

Article 10a (15) stipulates that the relevant criteria for the impact of the EU ETS on sectors or sub-sectors are the ETS cost proportion to the Gross Value Added (GVA) and the non-EU trade intensity, and makes clear that the analysis is to be conducted at EU level. This indicates that the relevant ETS cost impact on electricity prices (and thus on GVA) will be based on a CO<sub>2</sub> emission factor for the EU.

This factor is also the basis for the possible financial compensation of higher electricity prices to sectors or sub-sectors. Such compensation *“shall be based ...”* on *“the CO<sub>2</sub> emissions of the relevant European electricity production mix”* (article 10a 6), thus reflecting the cost impact of the EU ETS in the electricity price. The term “relevant” came into the text of the EU ETS Directive rather late, as replacement for the term “average”. Therefore, “relevant” cannot be interpreted as “average” anymore.

Nevertheless, in a stakeholder meeting on 5 February 2009 the European Commission stated its intention to use 0.42 t CO<sub>2</sub>/MWh. This, however, is exactly the average European

electricity production mix and does not reflect the real transfer of cost into the electricity price. The CO<sub>2</sub>-price impact on electricity is set by the CO<sub>2</sub> content of the marginal electricity production mix. This is valid for all deliveries which are based on the wholesale market price mechanism. Electricity purchased under long term contracts, self-generation and regulated electricity prices may be subject to different rates of pass-through and should be addressed individually for the purpose of compensation.

**Therefore, only the basis of the marginal electricity production mix leads both**

- a) **to a realistic evaluation of the carbon leakage risk, taking an appropriate level of CO<sub>2</sub> cost transfer into account, as well as**
- b) **to a correct financial compensation level (where the specific CO<sub>2</sub> cost component is identifiable, it should be compensated on that basis).**

## **Evidence**

The conclusion that the “*relevant European electricity production mix*” is not the average but the marginal production mix is supported by evidence of numerous specialist sources – also of the Commission itself:

- Matthes (2005, p. 10)<sup>1</sup>: “*Although the main share of the allowances was allocated free of charge [in phase 1 of EU ETS] to the installations, the price of electricity will be set by the marginal power generation unit including almost the full costs of carbon in a liberalized and competitive power market.*”
- The Commission’s energy sector inquiry (p. 123) clearly explains the mechanism of price setting by the marginal power plants on the basis of Short Run Marginal Cost (“SRMC”). The report continues to explain that market power can lead to even higher electricity prices: “*Therefore, generators with market power on spot markets have ample opportunity to also exercise their influence on forward prices. For example dominant operators could withhold a part of their generation capacity. This would not only raise spot prices but also ... resulting in higher forward prices*” (p. 124 -125). In such cases the price is still set by marginal power plants, but with costs for fuel and CO<sub>2</sub> higher than necessary.
- Also IEA confirms that marginal power plants set the electricity price. The pass-through of the CO<sub>2</sub> price in electricity prices was reported to be below 100% in phase 1 (2005-2007) of the EU ETS. IEA (2007, p. 23)<sup>2</sup> mentions two possible reasons: the expectation of updating of the allocation and the treatment of new entrants. These reasons are completely eliminated with full auctioning for electricity production as from 2013 onwards.

At the ECCP meeting on 26 September 2008 the Commission stated its intention to use the average electricity mix. The criticism of industry and Member States is reported in the Commission’s minutes of the meeting (p. 2)<sup>3</sup>: “*Several Member States were sceptical about assumptions on the cost-price mechanism for electricity and the choice of fuel mix. They also underlined differences between Member States. The cost increase should not be evaluated on average fuel mix but on marginal fuel mix and if possible be country specific.*”

We therefore expected that this point had been accepted, especially based on own statements from the Commission, for example in the non-paper about Combined Heat and Power of November 2008<sup>4</sup> (p. 1): “*Industrial CHP is often fuelled by natural gas or biomass. In these cases only CO<sub>2</sub> costs related to the actual fuel occur for the operator, while the price for electricity purchased from the grid would contain the CO<sub>2</sub> costs for the marginal power plant, which is often coal based*”. It would obviously be highly inconsistent to apply such a

<sup>1</sup> “*The environmental effectiveness and economic efficiency of the European Union Emissions Trading Scheme: structural aspects of allocation*”, by Öko-Institut, dr. Felix Matthes, Verena Graichen, Julia Repenning, in cooperation with Ilex, Ilex Iberia, AVANCI and ESC, November 2005.

<sup>2</sup> IEA (2007), “*CO<sub>2</sub> allowance & electricity price interaction*” IEA, J. Renaud, February 2007.

<sup>3</sup> “*Report of the ad-hoc stakeholders meeting of the ECCP Working Group on ETS on carbon leakage*”, Brussels 26 Sept. 2008

<sup>4</sup> “*Non-paper from the Commission services on treatment of CHP in the ETS review*”, 28-11-2008.

clear point of view differently in different cases: a high factor (marginal based) when arguing in favour of CHP and a low factor (average based) for the carbon risk exposure analysis and the compensation for higher electricity prices.

## **Conclusion**

There is no doubt that generally electricity prices today are set by the marginal power plants. A realistic assessment of the risk of carbon leakage due to transfer of CO<sub>2</sub> costs into electricity prices can only be made on this basis. The same applies to the calculation of compensation for indirect effects from the EU ETS in cases where specific costs cannot be identified.

The CO<sub>2</sub> cost transfer factor must therefore be based on a realistic proportion of the CO<sub>2</sub> intensity of coal and gas power plants – the marginal plants within the EU electricity markets. An assessment of the cost transfer of the relevant European electricity production mix based on IEA (2004)<sup>5</sup> assumptions shows (in ton CO<sub>2</sub>/MWh):

- Below CO<sub>2</sub> fuel switch price (gas and coal as the marginal plants): 0.65-0.75
- Above CO<sub>2</sub> fuel switch price (coal the only marginal plant): 0.80-0.90
- Overall best assessment: **0.75 ton CO<sub>2</sub>/MWh**

Such an EU-wide factor should be applied for the EU-wide purpose to determine the sectors exposed to the risk of carbon leakage. For the financial compensation, regional and individual adaptations should be used reflecting the regional electricity price by the regional marginal power plant setting<sup>6</sup> in a still fragmented EU electricity market and the concrete contractual terms where specific conditions are identifiable.

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<sup>5</sup> IEA (2004), *Emissions trading and its possible impacts on investment decisions in the power sector*, J. Renaud.

<sup>6</sup> The "relevant European electricity production mix" of article 10a (6) does not legally exclude an adaptation of an overall European marginal production mix to the situation in certain European regions, as long as there is no single European electricity market. To underline this: in contrast, the Directive text for the correction to keep all free allowances within the overall cap prescribes explicitly the application of one single factor: "A uniform cross-sectoral correction factor ..." (article 10a (5)).