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Contribution to the EU Consultation on a Green Paper on a 2030 framework for climate and energy policies, particularly on topics 4.2 and 4.3

ThyssenKrupp AG is a leading diversified industrial technology company which is particularly affected in its steel subsidiary most substantially by any future design of climate policies.

The EU Commission started a consultation process on the future design of climate policy in Europe with its Green Paper on a 2030 framework for climate and energy policies. We would like to contribute by presenting our views on future target settings and instrumentation of climate policies.

Our experiences with the EU climate and energy policies have shown, that target collisions and inefficiencies caused by unaligned instruments must be avoided.

In the following submission we will therefore comment in particular on issues raised in 4.2 and 4.3 of the green paper. Regarding other issues and topics we would like to refer to the relevant contributions of business federations, in particular from the German BDI The Voice of German Industry, VIK Verband der Industriellen Energie- und Kraftwirtschaft e.V. and EUROFER The European Steel Federation.

I Executive Summary

Future discussions on climate policy must not continue to concentrate exclusively on either emission trading or renewable energy. In contrary it is essential – especially regarding long-term perspectives – to organize and orchestrate the alignment of climate policies in the areas

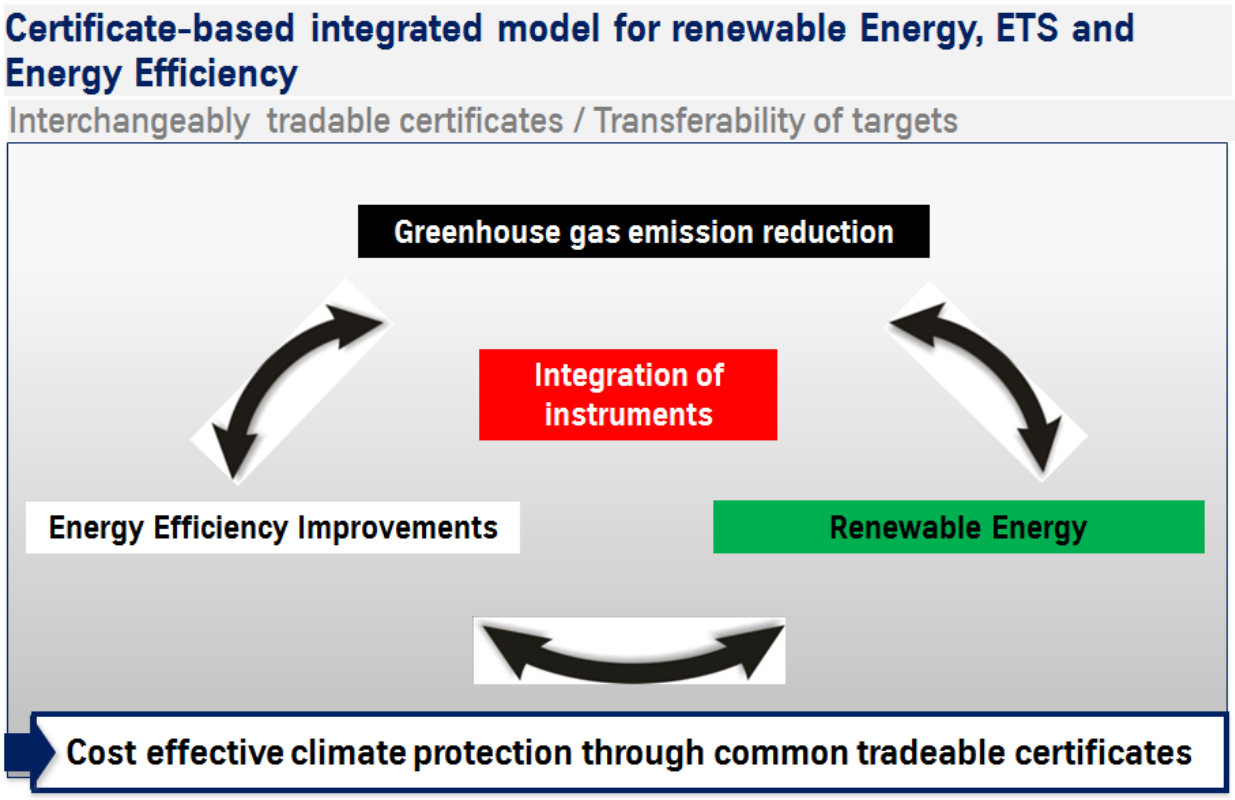
- Reduction of greenhouse gas emissions (emission trading)
- Expansion of renewable energy
- Increasing energy efficiency

An aligned coherent set of instruments opens opportunities to identify the overall most cost effective climate protection measure within this total spectrum and to implement it. Here a low certificate price is not sign of a malfunctioning system, but to the contrary a proof of achieving our climate goals in a cost effective manner at low costs to society.

An aligned coherent set of instruments enables the transformation of the three goals (reduction of greenhouse gas emissions, expansion of renewable energy, and increasing energy efficiency) into each other.

An aligned coherent set of instruments must be on a European level. On the one hand the emission trading scheme is already on such European level and on the other hand only a European solution can achieve the much needed level playing field within the European market for electricity.

A longterm orientation and alignment of instruments offers certainty of planning parameters for companies, which is indispensable to take required actions.



Certificate-based instruments offer huge advantages. Equally, if designed properly, they are able to pave a longterm cost effective path not only to a national but especially to a European and even global climate protection regime.

The reorganization of emission trading for the fourth trading period (starting 2021) offers a unique opportunity for avoiding negative interactions of an isolated implementation of the aforementioned climate protection measures. Further it increases cost effectiveness, harmonises and integrates national approaches in the member states. This ensures acceptance of climate policy in the EU and globally.

II Detailed contributions

1 Concentration on the essential and compatibility of the different climate protection instruments needed

Currently most diverse regulations cover climate protection on European and/or national level.

This coexistence has led to undesired interactions. The support for renewable energies in Germany for example has contributed to a large extent to a decline in the demand for tradable emission reduction certificates in the EU ETS. The demand for certificates by electricity producers declined proportionally to the replacement of conventionally produced electricity covered in the EU ETS by electricity produced from renewable sources. The negative economic development and the introduction of an unconnected energy efficiency regulation increased this effect. Falling prices for CO_2 certificates were the result. Apart from enormous costs for supporting renewable energies in Germany nothing was achieved but a subsidy for CO_2 prices in the EU ETS. Additionally the most expensive climate protection technologies (photovoltaic power generation in Germany) was installed, instead of much more cost effective alternatives in other areas. This resulted in serious questioning of efficiency and effectiveness of such uncorrelated and unaligned instruments.

The following discussion assumes that ETS remains the backbone of climate policy because it ensures an absolute cap on emissions. The integration capability of other measures must be judged against this. An essential aspect must be to support and expand industry in Europe and to maintain its global competiveness. The ETS is seen as a distribution tool for a predefined amount of certificates ("cap") and hence ensures meeting of the climate protection goals. It should not be overburdened with other goals such as R&D or investment stimulation by floor or target prices.

2 Ensuring global competitiveness in the EU ETS

2.1 Maintaining free allocation on the basis of attainable benchmarks

In the absence of a global climate protection agreement with comparable burden on individual companies competing with each other there continues to be a local competitive disadvantage in the EU which needs to be compensated.

The existing system of free allocation of certificates must hence be maintained as a measure to compensate competitive disadvantages. But the setting of benchmarks must consider technological

and economic feasibility of CO_2 reduction in the integrated production chain. Especially in the area of steel production it is true that emission reductions in one process step must be paid for by emission increases in other steps. This requires a holistic approach. The total burden on companies by direct and indirect CO_2 costs against global competition is decisive to avoid carbon leakage and maintain and expand Europe as a location for industrial production.

Assessing carbon leakage of industries must consider not only past or present competitive positioning, but must consider reduction potentials in the future. Different production costs, transport costs and transportability as well as other barriers to market entry must be considered more than in the current assessment based on historic observations.

The existing production chains in the EU require looking at essential inputs, too. For example industrial gases, which in themselves are not internationally traded commodities but are a substantial cost factor in the steel production. Steel production in turn is indisputably in intense global competition.

It must be assessed whether the cross sectional correction factor in Art 10a (5) EU ETS directive renders the approach of compensation for emission trading related additional burden meaningless. This is to be expected with increasing percentages of free allowances not issued to industry. This effect will be different by industry depending on the unevenly distributed reduction potentials. Especially in the area of process emissions (particularly steel and cement) one cannot expect breakthrough technologies to be available in the next decades, as for example shown in the Low Carbon Steel Road Map from EUROFER. Therefore suitable industry specific measures must be introduced.

2.2 Compensation of indirect effects

In addition to direct costs companies in the EU are increasingly burdened by passed-on certificate costs in inputs. This has been addressed for electricity in the third trading period and should be extended to all products which are highly electricity intense, but are themselves not eligible for compensation, such as industrial gases.

2.3 Use of certificates from other sources (CERs, etc.)

The use of certificates from other sources (CERs, etc.) in the third trading period is quite restrictive. From our view it should be considered to expand the possible use of such certificates (CERs, etc.). From a climate protection point the geographical location of an emission reduction is meaningless; it needs not to be within the EU. From a competitive point it is beneficial to allow companies in the EU access to the cost effective reduction potentials. This would result in a positive price dampening effect in the EU ETS. Against the background of a global climate protection agreement in 2020 there

will be a different competition situation, because third countries will have to decide whether to use such reduction potentials to fulfill their own goals or to trade them globally.

A continuing restriction of the use of CERs etc after 2020 is a competitive disadvantage for companies in the EU. EU companies are forced to use higher-cost CO_2 certificates than necessary for a most cost efficient approach.

2.4 Discussion of alternative approaches to maintain a level playing field

We consider theoretical alternatives such as border tax adjustments as not suitable. Securing competitiveness cannot be achieved owing to the administrative burden and the lack of granularity of the measure.

3 Support of renewable energies

3.1 European legal approach

Particularly owing to the already Europe-wide established ETS an alignment of the different climate policies is best done on EU level. This would also open opportunities to direct renewable energy technologies towards locations where they have highest efficiency regarding climatic aspects (e. g. solar in the south). Equally it should be important that the dependencies on weather (sun/wind) would be reduced because of the different climate zones in the EU. This however requires an adequate infrastructure, which equally must be coordinated on EU level.

In addition a harmonised European approach would least distort the European market for energy. This is because the current national support systems, predominantly determined by regulation, result in restrictions of markets, uneven distribution of economic burden and suboptimal solutions. A European approach to expand renewable energy would also stop the currently observed subsidy race between member states to promote renewable energies.

3.2 Key criteria for a fundamental reform of the support for renewable energy

In addition to the aforementioned integration in the overall climate policy, key and indispensable criteria are highest cost efficiency in reaching the climate goals and maintaining the global competitiveness of EU industry. It should not be forgotten that further aspects are suggested, but with respect to the economic situation in the EU they are of lesser importance.

Current German renewable energy law (EEG) and similar laws in other countries are seen very critical with respect to cost effectiveness. It offers large incentives to erect and operate renewable energy installations irrespective of location, infrastructure and connection, local demand or economic considerations. The feed-in tariffs are ensured for 20 years, albeit with a digressive factor. This results in windfall profits for the operators. The sale of such produced electricity is equally ensured because the network operators are obliged to preferentially take such electricity even at negative market prices without any consideration for a longterm stability of supply. In addition such renewable energy has considerable impact on required network capacity, transport capacity and volatility, as well as problems with still needed cost-intensive reserve capacity to ensure a permanent electricity supply.

There are increasingly studies which show that this is a subsidy situation which is inefficient and in no means favors the most cost effective solutions.[1] [FN] Therefore a number of suggestions exist for a paradigm change which allows room for the important issue of cost effectiveness. The following approach falls into this category.

3.2.1 Sensible integration of renewable energy in the electricity market

Renewable energies solar and wind are disadvantaged because they are not constantly available. Therefore the question must be addressed how an electricity market should look like which ensures the security of supply even at weather-related production shortages. Possible are capacity markets of several kinds.[2]

Own capacity mechanisms would be too costly for electricity users. Therefore it is obvious to make such measures superfluous if possible. This can be achieved by bundling volatile electricity production to marketable electricity products. In such approach distributors and traders should be incentivized by a “system stabilization premium” to “upgrade” volatile renewable energy electricity. The traders/responsible network operators have the choice between a variety of capacity providers, such as power plant operators, operators of storages or customers with variable industrial demand.

[1] see Expertenkommission Forschung und Innovation, Gutachten 2013 zur Forschung, Innovation und technologischer Leistungsfähigkeit Deutschlands, pages 54 and 55

[2] This could constitute a strategic reserve It will be sourced centrally as back-up capacitythrough auctioning and is financed by revenues from that auction. It will only be used if there is a shortage of electricity and if this results in exceeding an ex ante defined (high) trigger price. An alternative would be in security of supply contracts which constitute a market for security of supply. There a secured production will be provided in an auction and paid for. The price setting is independent of the spot market. See Gutachten des Energiewirtschaftlichen Instituts der Universität Köln (EWI), „Untersuchungen zu einem zukunftsfähigen Strommarktdesign“, Endbericht einer Untersuchung für das Bundeswirtschaftsministerium, March 2012, pages 4 ff.

It can be expected that hereby market-driven contractual and technical solutions arise which render electricity from renewable sources into marketable products.

If the operator of renewable energy installations has to market their production in the future, they would align more with demand. Only with a real demand this supply would generate an adequate profit from electricity. Certainly operators could contract third parties so that this self-marketing does not overburden the operator.

3.2.2 Temporally limited additional support and neutrality towards technologies

Currently not all renewable energy technologies are developed as far that they could survive on the market alone with the obtained profit. But there exist considerable differences. The generating costs of geothermal, offshore wind or small photovoltaic are relatively far away from the generating costs of conventional power plants, but on-shore wind, bio gas or large photovoltaic installations are nearly able to survive without subsidies.[3] Regarding the high costs of some renewable energy it seems prudent to add a second source of financing next to the profits from self-marketing until market viability is reached. This however counters temporarily the goal of cost effectiveness.

Such temporary limited additional financing poses the question whether each form of renewable energy should receive an individual support tailored for that technology or whether the same support should be available for all (technology differentiation versus technology neutrality). Further it must be decided how the structure of support is designed (additional market premiums or certificates for renewable energy).

The current German system (similarly in other countries with comparable systems) only knows technology differentiation. This results in lack of competition between renewable energies and separate development paths for each irrespective of progress in competitiveness. Therefore renewable energies are in a protected zone which tends to hinder reaching full competitiveness and prohibits innovative leaps more than it fosters them.

The German expert commission R&D (Expertenkommission Forschung und Innovation – FEI) evaluates the framework conditions for innovative technologies in Germany mandated by the German government. It has for these reasons given low marks for the current EEG with its technology differentiation. Static efficiency is only obtained if the expansion of renewable energies is driven by the compensation of marginal costs of production, so that the next unit of renewable electricity is delivered by the cheapest option. In reality however the feed-in tariff depends on the

[3] see Fraunhofer ISE: „Stromgestehungskosten Erneuerbarer Energien“, May 2012, pages 3 f.; and: DLR, Fraunhofer IWES: „Langfristszenarien und Strategien für den Ausbau der erneuerbaren Energien in Deutschland...“, March 2012, pages 211 ff.

technology, therefore no compensation of marginal costs occurs. For example photovoltaic is subsidized much higher than wind power, which results in too much photovoltaic capacity without any relation to the market demand. The renewable energy target therefore is not met with the least cost technology mix.[4]

The German monopoly commission[5] equally suggests in its proposal for a quota system that in the medium to long run competitive structures should be implemented. The EU Commission itself emphasizes technology neutrality with respect to the new orientation of the subsidy guidelines.[6]

3.2.3. Market premium vs. quota model

Currently, the main differences of opinion in the economic literature concern the question, if the additional support should be carried out through a market premium or a renewable energy quota model.[7]

A market premium is determined by the state. In a quota model, in contrast, the market determines the price. This can be ensured due to an obligation for the energy supply companies to provide evidence that a certain quantity of the sold electricity is based on renewables. This evidence can be provided by construction of renewable energy installations or by purchasing so-called "green certificates", which operators of renewable energy installations receive for a certain quantity of electricity. These certificates could be sold on a green power market. Another possible scenario would be to implement a quota obligation for certain end users to facilitate indispensable compensation to maintain competitiveness.

The following aspects have been central in discussions on the quota model:

[4] So verbatim: Expertenkommission Forschung und Innovation: „Gutachten 2013 zur Forschung, Innovation und technologischer Leistungsfähigkeit Deutschlands", pages 54 and 55

[5] see for example Pressemitteilung der Monopolkommission zum Sondergutachten „Energie 2011: Wettbewerbsentwicklung mit Licht und Schatten" vom 13. September 2011, p. 4; see further Ziffer 553 des Sondergutachtens

[6] Consultation paper directorate general competition „Enviromental and energy aid guidlines- Commission Issues Paper", RdNr. 22

[7] see for example Haucap/Kühling: „Marktintegration der Stromerzeugung aus erneuerbaren Energien", wirtschafts- und rechtswissenschaftliches Gutachten im Auftrag des Sächsischen Staatsministeriums für Wirtschaft, Arbeit und Verkehr, November 2012

- Principle Issue: prices determined by the state vs. prices determined by the market

EFI highlights that a market premium model has nearly no influence on market price based adjustment of supply because the supply of electricity from renewable sources is nearly inelastic. The lack of demand orientation not only increases the cost of system integration but also endangers security of supply. More autarky in the basic supply through renewable energies requires that electricity can be delivered based on demand.[8] This is one of the reasons why this body, which advises the German government, favours a quota model.

In addition it is important, that the competitive pressure caused by the green electricity market stimulates innovation in a particular way. A state determined market premium however runs always the danger to just maintain the achieved technological level if a surplus subsidy is ensured for years. The constant exposure to competition and competitors in the quota model increases therefore also the dynamic efficiency and leads to more fundamental innovations as in the case of state-set prices. This is another EFI conclusion.[9]

- Alignment of the separate climate policies

A certificate based instrument appears to be superior as an additional renewable energy support scheme. Certificates ("black" for ETS, "green" for renewables and "white" for energy efficiency) can be interchangeable amongst each other which increases the flexibility of those required to surrender certificates. In addition it is ensured that irrespective of industry or sector always the most economic alternatives are implemented first. Against this background a quota solution is generally better suited for longterm ideas to integrate the different climate policy instruments, because tradable and interchangeable certificates are the base.

As already done in American states with different certificate systems, one could consider to introduce multipliers which take into account the different abatement costs and introduce different valuing for the certificates. Such an "exchange rate" would avoid a stall in the renewable energy expansion (resulting from inherently high CO_2 abatement costs) which is not wanted for political reasons. However, it would collide with the goal of cost effectiveness.

8 Expertenkommission Forschung und Innovation, as cited, page 56

9 As above

A multiplier taking into account the specific CO_2 emissions is also an option. In regions with low CO_2-intensity (such as Scandinavia) electricity production from renewable energies (or energy efficiency improvements) are less effective for climate protection than in areas with high CO_2 intensity (such as Poland). Such regional differences could be captured in a multiplier which is not politically determined but derived from the current production mix und developed by market forces.

If the goal is a global climate protection regime, such a longterm orientated, integrative competition-orientated and certificate-based climate policy in the EU could offer connection points for other certificate systems. It is possible that third countries only connect partially, for example only with their "green" certificates, and participate in the market.

4 Energy efficiency improvements

The third path towards climate protection is the improvement of energy efficiency. The EU has passed the Energy Efficiency Directive which the member states are now transferring into national law. The directive aims to realize energy savings across the entire economy mostly through energy efficiency improvements.

However, for the industry and in particular for the energy intensive industry, the picture looks different. Due to high cost pressure, economically responsible measures have already been implemented and further potential is far lower than in other sectors.

The national legislator further has to take into account that nearly half of all industrial plants have been subject to emissions trading and therefore must not be subject to further regulations.

Further regulation would lead to a contra productive double regulation. The key characteristic of emissions trading is a target for reducing emissions and the freedom of the plant operator to determine the most cost efficient way himself. This freedom would be restricted.

Independently, a European energy efficiency improvement system with a preset quantity could be thinkable; prove for fulfillment of this target can provided by technical measures or certificates.

That would mean that for certain, for example a to be determined technical standard, respective so-called “white” certificates would be issued. These certificates could be traded on specific certificates market. This system would optimally ensure cost efficiency of the measures to be realized. In an active market those measures would be achieved that accomplish maximal climate protection in relation to the money spent.

Essential would be the integration of the buildings sector in the system since the energy rehabilitation of buildings bears significant potentials.

It is clear that such white certificates need to be connected to black and green certificates and also allows for “inner permeability” of these certificates.

Generally, the aforementioned details referring to the harmonization of the climate protection instruments emissions trading and renewable energies development account at this point in the same way (see above under “Alignment of the separate climate policies”).

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