Research Question:

To what extent does the EU Emissions Trade System have an effective steering function to reduce greenhouse gas emissions in Germany's energy sector?

Subject: Economics

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Introduction

“The truth is that climate change is presenting the greatest challenge humanity has ever faced,” said Al Gore, former vice president of the US (Gore). The greenhouse gas CO_2 has caused an increase in temperature, seen as 9 out of the 10 warmest years on record have occurred since 2005 (Dahlman et al.). Not only Greta Thunberg, the climate activist from Sweden, is raising awareness for this threat to humanity but also the youth of the world, the politicians, scientists, and economists urge the world leaders to cut CO_2 emissions substantially. The WHO estimates the welfare loss only in the global health sector to be around 2 to 4 Billion USD per year by 2030 (“Climate Change”). The overconsumption of demerit goods including airplanes, fossil fuel-powered cars, etc. has led to a drastic increase in CO2 emissions over the years.

Worldwide the EU is ranked as one of the top three CO2 emitters, with Germany carrying the largest emissions share (Jamet et al.). To combat this threat of rising negative externalities in the form of carbon dioxide emissions the EU has decided that a new market system is necessary. Therefore the first emissions trading system was launched: EU Emissions Trade System (ETS) in 2005 by the European Union to cover 45% of the EU’s greenhouse gas emissions to reach the EU’s climate targets and reduce welfare loss. The EU ETS is the world’s biggest trading scheme to internalize externalities and to offer allowances for Co2 emissions to the industrial and energy sector throughout the EU (EU Emissions). In Germany, the largest greenhouse gas emitter is the energy sector estimated at 36% in 2017 (Welke et al.). This sector has been heavily influenced by the EU ETS and changes in the industries have been made to meet regulations. A specific example may be seen

with the largest energy producer in Germany: “RWE” supplying up to 30 million people with electricity and energy ("RWE ").

So far the EU ETS has set the framework for the German energy sector to reduce emissions and invest in low carbon technologies. This trading system will be analyzed using the Pigouvian tax model to internalize externalities and to reduce greenhouse gases by 2017 using the EU ETS market scheme. It will be evaluated if the EU ETS has provided the economic incentive to reduce greenhouse gases by implementing relevant costs for Co2 emissions and therefore being a steering function. The Pigouvian tax model which is part of microeconomics, aids to combat market failure, and is aimed to give external costs a price and therefore create an output level at marginal social benefit. The effects of this trading system will be evaluated through the German energy sector with the example of RWE, one of the main suppliers in the German energy market. Reasons for investigating this topic may be seen as the EU ETS has been questioned multiple times for its effectiveness and merit towards society. Therefore this essay aims to answer the following question: To what extent does the EU Emissions Trade System have a steering function to reduce greenhouse gas emissions in Germany’s energy sector?

Methodology

This analysis will aim to answer the research question through external empirical data from a variety of government and non-governmental sources which will be distinguished between trustworthy and less trustworthy. To increase validity, a method known as triangulation will be used where a combination of primary and secondary research will be implemented.

When analysing the EU ETS secondary sources were used such as the public websites of the EU, the EU ETS or the german government to receive to an extent objective information, acknowledging different viewpoints and biases. Concluding that this academic paper will use the approach of hedging, rather than giving strong worded opinions.

The selection of sources was weighed by the level of trustworthiness. Official documents created by experts within the field, were trusted, as they are based on factual information, however possible biased representation of information may be seen as limitations. Publication of organizations, companies and associations were seen as guidance for the overall understanding of the topic; however, it was recognized that personal viewpoints are portrayed, therefore not an objective source.

Primary research was found from an interview with the CEO of RWE Power AG providing first hand information. As the CEO, of one of the major stakeholder within the german energy sector has his own agenda the source will be developed as subjective however to an extent reliable, where evaluations of the EU ETS may be implemented. Limitations of this source were seen through covid, as the interview was conducted in survey form, instead of in-person. Before analyzing primary and secondary information it is necessary to get an understanding of the issue concerning externalities derived from the combustion of fossil fuels.

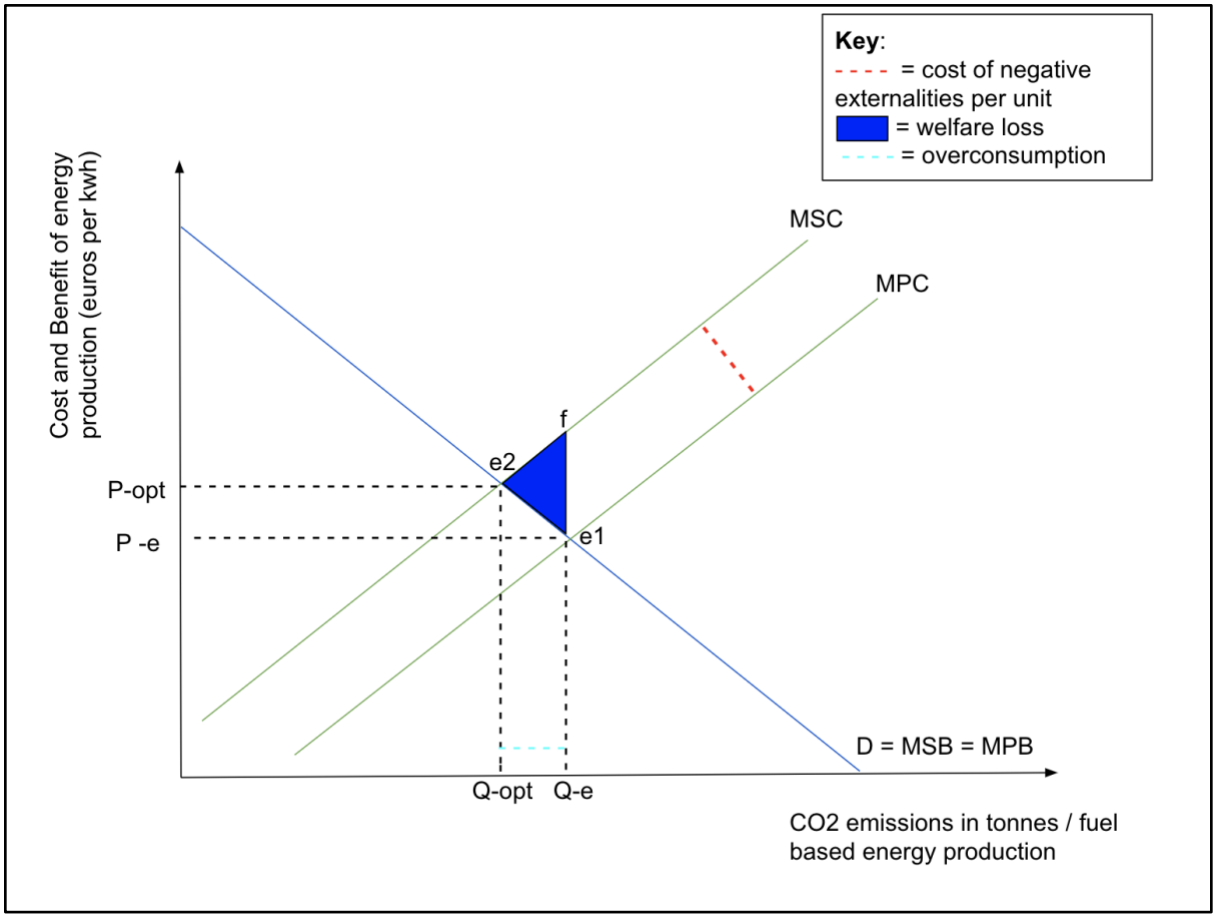
Background

Externalities

The combustion of greenhouse gas emissions, one of which is fossil fuels results in a CO2 exposure seen as an externality which is a consequence of an industrial or commercial activity that affects the third party (Kenton). Economics differentiates between positive and negative externalities.

Focus will be laid on negative externalities, which is when the consumption of demerit goods leads to negative side effects for society. Examples of demerit goods include electricity and fossil fuels creating external costs through overconsumption. The production of electric power using fossil fuels creates negative externalities that require government intervention. These regulations recognize the uncovered costs in the economic transaction and give them a price (Environmental Economics). Therefore the government intervenes by putting a tax or a fine on the specific good to increase price and reduce demand, seen in Diagram 1.

Fig. 1. Illustrates negative externalities of production in Germany's electricity market.



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In Diagram 1, the negative externalities of production that arises for the German energy sector, e.x. coal, solar, or wind may be visualized. The difference between MSC (Marginal Social Cost) and MPC (Marginal PrivateCost), marked as overconsumption, is the representation of the external cost, showing the overallocation of resources in relation to the social optimum. The market's equilibrium may be seen at Q-e and P-e where MPC=MSB, however the social optimum is at MSC=MSB.

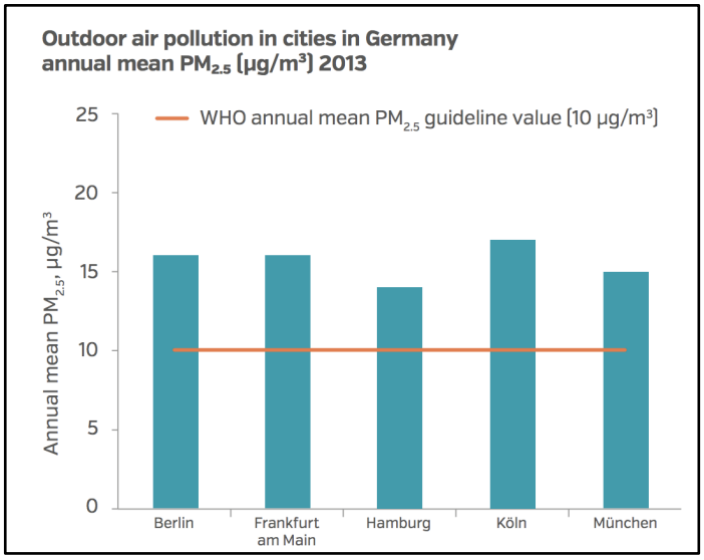
This economic transaction creates market failure in the free market which is visualized by the triangle e2,f, and e1. Representing the welfare loss in the form of a loss of society surplus leaving uncovered costs for the third party.

Welfare loss association with Co2

Referring to emissions emitted by the energy sector, uncovered costs include all health problems associated with the lack of sufficient air quality resulting in external costs. Not only health issues are a consequence of emissions, the greenhouse gas CO2 adds the risk of climate change leading to rising sea levels in the long run. According to the WHO, if measures were taken to decrease CO2 emissions the number of annually affected people by vast flooding in Germany could be reduced from 112,400 to 300 between the years 2070 and 2100. Further side effects of emissions include a lack of food production, infectious disease outbreaks, and an ecosystem disruption. Many of the most virulent infections are very sensitive to temperature and humidity, allowing temperature change to provide improved circumstances for viruses to spread (Climate and Health).

Worldwide negative externalities for CO2 emissions are referred to by the welfare loss created for the world as a whole, where Germany has a percentage of 1.9% (906,8 Mio t CO2) of all of the greenhouse gas emissions in 2015 (Beck et al.). As seen in Figure 2, the most populated cities in Germany have all exceeded the WHO guideline for emissions, resulting in a decreased level of air quality.

Fig. 2. Outdoor air pollution in cities in Germany annual mean



(Climate and Health)

In the long run, this excess of CO2 emissions may result in severe consequences for health such as lung cancer or cardiovascular diseases. In theory, the reduction of emissions could prevent up to 3,300 premature deaths attributed to outdoor air pollution per year in Germany and therefore reduce the negative externality created (Climate and Health).

To conclude, negative externalities are a type of market failure where the free market fails to allocate resources effectively. This doesn't maximize society's well being and government intervention in the form of a tax or a fine are necessary. Especially the greenhouse gas emission heavy areas such as the energy sector in Germany, which has the biggest share of 37.8% CO2 emissions (Beck et al.) in 2016, faces the highest tax to combat the market failure created. Therefore the internalization of negative externalities is necessary to combat the loss of society's surplus.

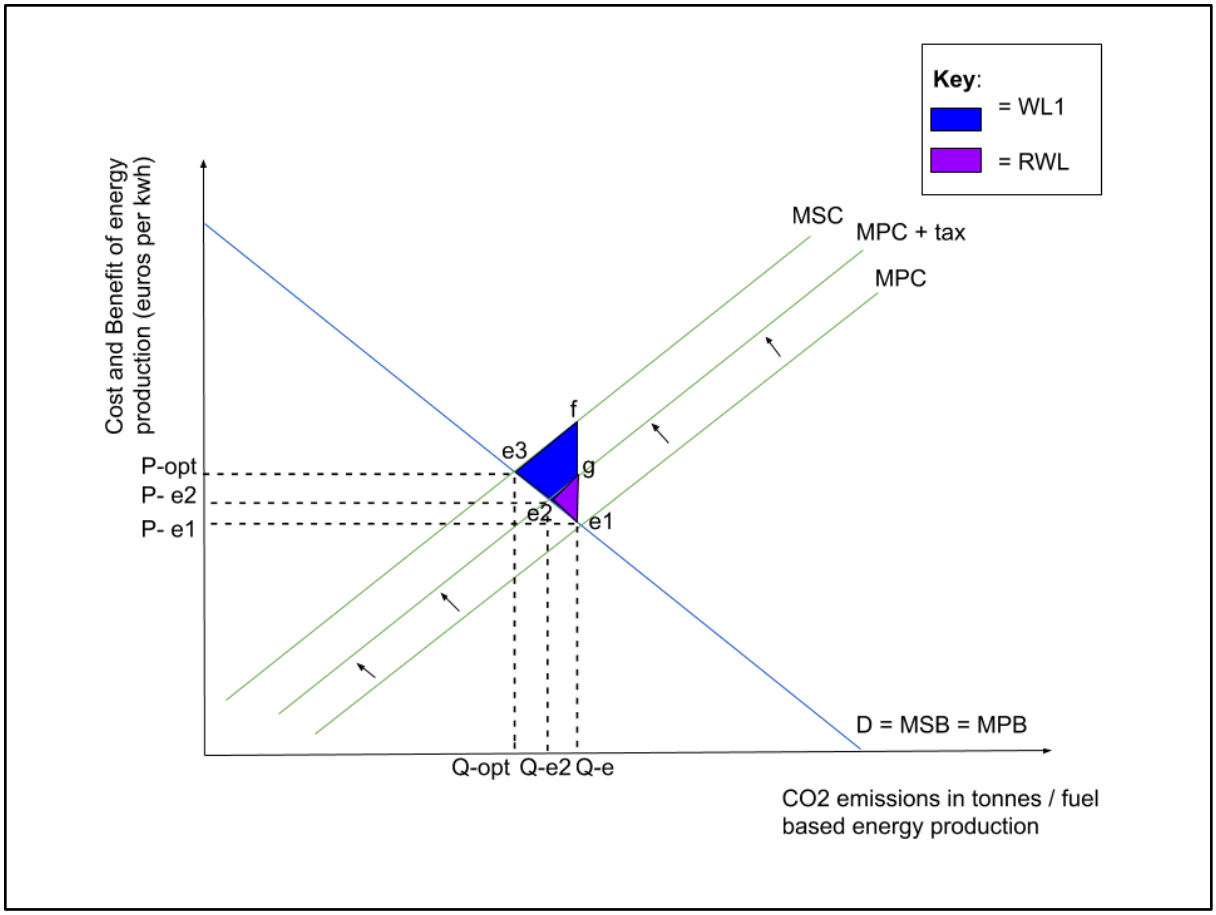
Solution Theory

Pigouvian Tax model

The Pigouvian Tax Model, created by the English economist Arthur Cecil Pigou, who was a contributor to the early externality theory, is implemented in the EU ETS to reduce CO2 emissions and is therefore helpful to understand the effects and deficits of the market scheme.

To internalize externalities and reduce market failure, this tax is implemented on private individuals or businesses for engaging in activities that create negative externalities for society. Seen in Figure 3, this model provides a steering function that is monitored by the government to change the behavior of the stakeholders in the market.

Fig 3. Illustrates reduced welfare loss using the Pigovian Tax Model for the German Energy Sector



With reference to Figure 3, the Pigouvian tax ensures that the market equilibrium, at point P-e and Q-e will not be reached. At this point producers are not taking all costs of production into consideration, including external damage that is being created in the transaction. This tax therefore reaches a point closer to social optimum at point P-e2 and Q-e2, at Marginal Private Cost + Tax. The welfare loss triangle RWL (e2, e1 and g) will therefore be eliminated, remaining only with WL1 (g, e2, e3 and f) and leaving society better off.

To determine the value of the Pigouvian tax for a firm there are two possibilities. The tax could be fully avoided by shutting down an industry or investing in a new technology with zero emissions. The second possibility would be for firms to pay for the welfare loss that is created. In a real life context discussions are

necessary that lead to a compromise of different possibilities to maximise social surplus.

Evaluation of model

When evaluating this taxation benefits and disadvantages to all stakeholders in the economic transaction may be seen.

Firstly it is very difficult to determine the size of the tax so it fulfills the objective of an effective steering function. Adding to this the government is not able to make judgements about what is the most efficient value of output and specific price; therefore, if this value is over or underestimated it may harm society rather than benefit. Leaving a knowledge gap about correct judgements that create the social optimum in the real world. Furthermore this tax is usually regressive, suggesting that the burden on the population with lower incomes is greater compared to those with a higher income. In general all consumers in the market face opportunity cost which gives them less financial flexibility to buy a house or a car for example.

On the other hand this tax will also have positive effects for the society as a whole. It will discourage the behaviour that leads to the welfare loss and the income generated from the tax may be used otherwise to improve standards of living for example. Adding to this, the market-based tax is tailored towards dealing with emissions by giving them a price and therefore leaving producers with the incentive to switch to more renewable production methods that emit less greenhouse gases to make their business more profitable (Amadeo).

An alternative model could be the Coase Theorem which is a negotiation approach to create a settlement between two parties: the polluter and the disadvantaged party (Kindness). The Coase Theorem, is beneficial for two negotiation partners however doesn't work for multiple sufferers. Therefore the EU ETS is based on the theoretical model of the Pigouvian Tax, as it gives a price for pollution allowances.

Real Market

Europe emission trading system (EU ETS)

The Kyoto Protocol "committing industrialized countries to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets" ("What is the Kyoto Protocol?") was agreed upon in 1997. To meet this target an instrument to monitor emissions was necessary (EU Emissions). It gave the EU the incentive to create the first emission trading system. It is now the world's biggest scheme for trading greenhouse gas emission allowances. After being launched in 2005 it now covers 50% of the total EU carbon emissions including up to 11 thousand power stations and industrial plants in over 31 countries. Additionally to the EU it also includes Iceland, Liechtenstein and Norway and its focus lays on heavy-energy installations and on airlines operating between countries. It ensures that the EU is able to meet its targets under the Kyoto protocol and that high emission sectors don't exceed their allowance. The EU has agreed on the "20-20-20 Targets": for a reduction of greenhouse gas emissions by 20% below 1990 levels, 20% of

energy consumption to be from renewable energy sources and a 20% reduction of primary energy use (EU Emissions).

In theory the EU ETS sets a market cap for the total greenhouse gas emissions that are permitted for the corresponding year. This cap is then divided by the different sectors and countries in the market. Each year the cap of allowances for greenhouse gases emissions decrease which leads to a fall in CO2 emissions in the long run. The average allowance price was set at 5.80 Euro per tonne in 2017, increased to a 15.50 Euro per tonne in 2018 and is now at an all time high of 25 Euros per tonne in 2020.

The 3rd Phase is the current status of the EU ETS scheme, here instead of having national caps a single EU-wide cap is applied, more sectors are included, auctioning is the main method for allocating allowances and 300 million of allowances are set aside to fund new innovative energy technologies. There are four main stages for this scheme and currently the system is at the end of the 3rd Stage.

This carbon price allows the formation of a competitive market for emission where resources are allocated effectively. Therefore this carbon price will help to incentivize companies to reduce carbon emissions and to look for alternative energy sources. The dependency on fossil fuels will decrease and the investment in renewable energy will result in more affordable alternatives. To promote renewable energy the EU ETS has introduced the NER300 fund which supports the innovative technologies in a wide range of areas and is financed by selling 300 million allowances (EU Emissions). On the other hand power stations will lose their

profitability in consequence of the allowances therefore leaving renewable energy sources as the more profitable business alternative. Finally the EU will be able to meet its climate goals while providing a decarbonised economy with long term sustainable solutions.

The EU ETS has proven to be effective. In 2018 total emissions have decreased by 29% since the introduction of the trading scheme in 2005 (Total Greenhouse Gas Emission). This market system is able to effectively give externalities a price, internalise them and decrease the welfare loss created by greenhouse gas emissions. This leaves society better off with an improved air quality and more affordable alternatives.

Evaluation of EU ETS for German energy sector

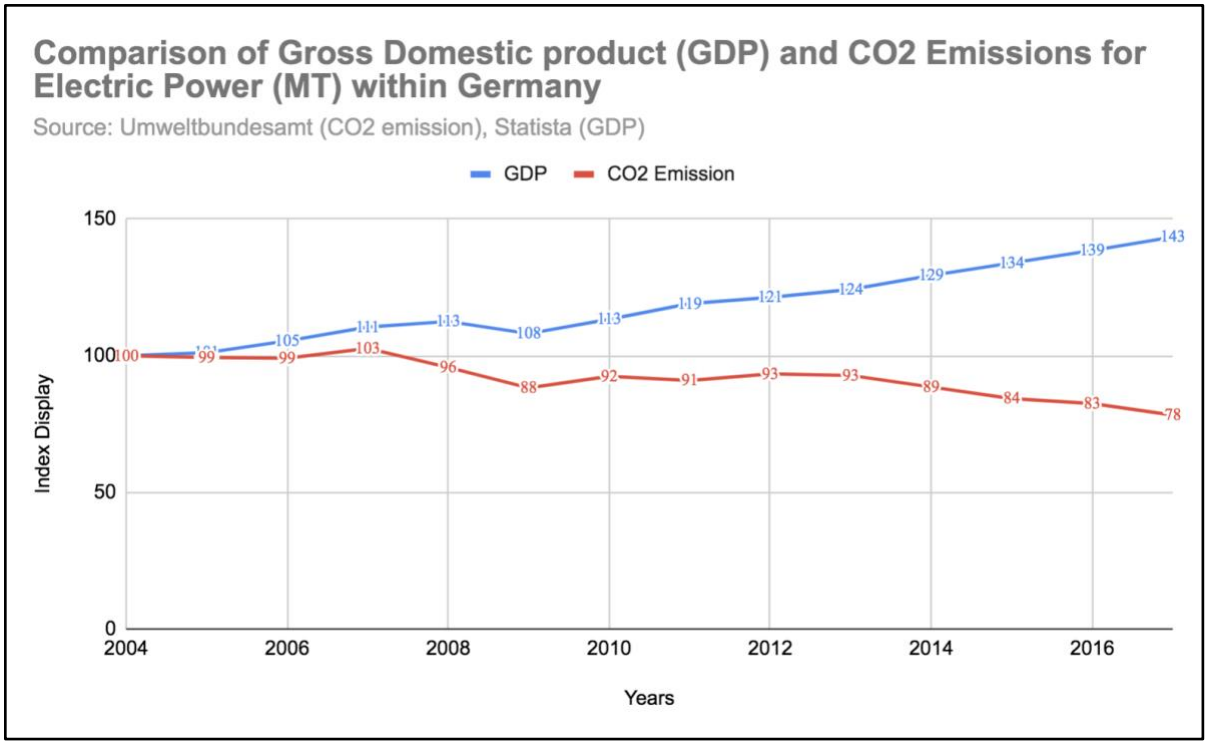
A focus for the analysis was laid on the German energy sector as it provides a competitive electricity industry. This is due to its central location in Europe where it is part of the physical power exchange linking all of Europe together. The ability for consumers to choose between different providers leads to an efficient allocation of resources. Therefore the electricity industry is under considerable price pressure as it is an elastic market. Production costs are therefore essential leaving the costs generated from the EU ETS to create substantial economic effects.

Germany, being part of the European Union, is obligated to follow the EU climate policies and half of the greenhouse gas emissions in Germany are linked to the EU ETS system and the other half is under the Effort Sharing Decision (ESD). In Germany four fifths of the greenhouse gas emissions are caused by the combustion

of lignite and hard coal as it is the major polluter, where Lignin accounts for 22.5% of german electricity generation ("Coal"). In 2015 a total of 196 international parties came together to decide on the Paris agreement which limits temperature increase to under 2 degrees celsius.("zNationally Determined Contributions) The EU and Germany ratified this agreement on the 5th of October in 2016.("BMWi - Abkommen Von Paris").In relation to this the German government proposed a goal of zero emissions for 2030 (Welke et al.).

Since the introduction of the EU ETS in 2005 the GDP and the CO2 emissions in Germany have continuously moved in separate directions. The cumulative growth of GDP from 2004 to 2017 was 43% while the CO2 emissions for electric power production within Germany declined by 22%. The Co2 Emissions have fallen in an absolute sense even though GDP has risen, this may be visualized in figure 4.

Fig 4.

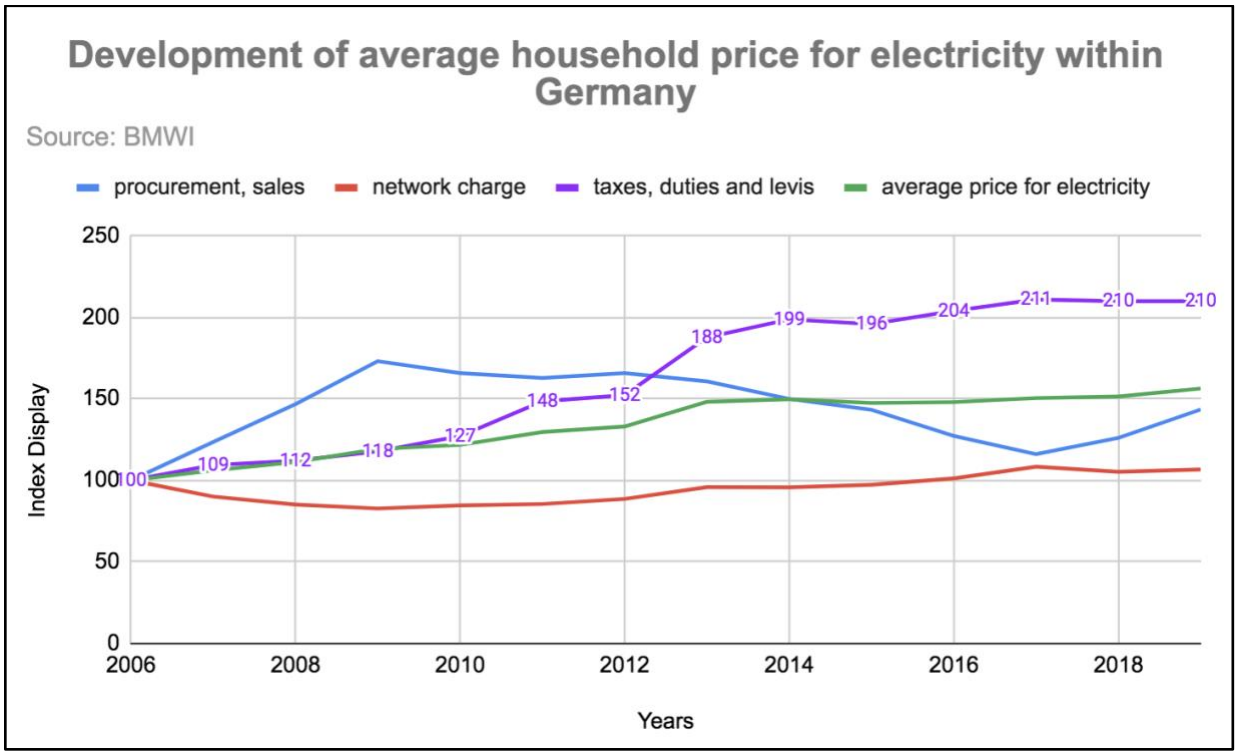


With reference to figure 4, the increasing portion of renewable energies as well as the reduction in the use of hard coal and lignite for power generation, plus the increased usage of natural gas with reduced CO2 emissions have led to this substantial decrease. This development is partially devoted to the implementation of the EU ETS where the German power suppliers have taken initiatives to reduce the cost pressure from the allowances as the renewable energy production has doubled between 2004 and 2017 ("Renewable Energy Sources in Figures."). Additionally, decisions made by the German federal government to reduce emissions for the future also have given an incentive for producers to alter production methods. This is a positive effect for society as a whole as emissions decrease and external costs are reduced.

As already mentioned in the discussion of the Pigouvian tax model, the negative effect of the certificates is the increase in costs for electricity for private

households. The price of electricity in Germany is the second highest in Europe and this derives mainly from the tax burden for electric power which may be seen in figure 5 (Amelang).

Fig 5.



(created by author with data from "BMWi - Durchschnittlicher Strompreis".)

In Germany the price for electricity grew cumulative from 2006 until 2019 by 56% and the tax, duties and levies on electricity have risen cumulative by 110%, seen in Fig 5. This drastic increase shows how government interventions have been increasing within the electricity market. The split of the electricity price in Germany further shows this volume as well as the intention of this state intervention. In 2014 52% of the price for electricity consisted of taxes, duties and levies, including the EU ETS allowances, while in 2006 this share was only at 39%. This underlies that the tax share of the electricity price has increased over the years and therefore leaves the consumer with covering the burden of the externalities. In 2014 the EEG

(Erneuerbare-Energie Gesetz) levy was introduced, a tax of 21% on the share of the electricity price which is financed by the consumer to cover the costs for the expansion of renewables in the electricity sector (Bundesregierung). This creates a welfare loss for all consumers and raises the question of when the deadweight loss derived from additional tax on electricity exceeds the loss created by CO2 emissions.

Application for major German Energy Sector: RWE

In an interview conducted with the CEO of RWE Power AG; Frank Weigand, it was acknowledged that the EU ETS is a “milestone in internalizing the external effects of climate change”, (Frank Weigand), acknowledging that the EU ETS contains an effective steering function to reduce the greenhouse gas emissions within Germany. In the daily business the power plants that emit CO2 will only operate if the production costs plus the CO2 costs are covered by the market price. The EU ETS has been able to steer RWE Power to focus on reducing CO2 emissions either by replacing existing power plants with more efficient fuel based power stations or moving to renewable alternatives: “Highly efficient lignite, hard coal and gas fired power plants were built around 2010.”(Frank Weigand).

The EU ETS has not only changed the short-term but has been a clear guidance for the RWE group, to move to sustainable energy sources for its business today and in the long-term: “Inside the RWE group we decided to change the way we produce electricity from fossil fuels to renewable energy. This is reflected in the transaction with E.ON that was finished by 01. July 2020. We are the global No. 2 in offshore wind.” (Frank Weigand).

RWE acknowledges the system however has suggestions for further improvements to reach the CO2 targets: by reducing the cap of allowances and expanding the model into non ETS sectors like transport, agriculture and heating, for 2021 in Germany.

Conclusion

To conclude, according to the preliminary evidence found throughout the essay the EU ETS has shown to be an effective steering function, that has successfully reduced emissions by 22% while the GDP continued to rise by 45% from 2004 until 2017. However this decrease in emissions for electric power production cannot be solely attributed to the EU ETS as there have been considerable political flanked measures like the implementation of the EEG levis in 2016 and others, which have supported the switch to renewable energys.

The interview with Frank Weigand, CEO of RWE power has shown that one of the major power producers in Germany acknowledges that the EU ETS is a very successful market system to reduce emissions within the German power sector. This steering function has therefore substantially influenced the operational business as well as the long term investment strategies of the company, therefore foreshadowing greater decreases in Co2 emissions within Germany.

From an economic standpoint the EU ETS has effectively reduced the welfare loss derived from CO2 emissions by internalising the negative externalities created. The Pigouvian tax model was the theoretical framework and the EU ETS has adapted it by setting a price through auctioning and trading. This gives the externalities a market price in dependency of the demand. The welfare loss of CO2

emissions is reduced because suppliers are trying to avoid the additional cost burden by emitting less greenhouse gases. The negative effect for the consumer is higher prices for electricity creating a welfare loss. This increase in prices, therefore, leaves the question to what extent the consumer will be able to fund the transition to renewable energies within the power sector in Germany and to what extent government interventions in the form of subsidies will be necessary.

Additionally for the future it may be questioned whether the EU ETS will be able to achieve the Paris Agreement objectives or if other measures need to be implemented additionally, like expanding the EU ETS into non-EU ETS sectors like transport, heating and agriculture. To increase the efficiency of the EU ETS it may also be necessary to increase CO2 certificate prices.

Already in 2020 the price for certificates have increased from 5 to 25 Euros per tonne and therefore the expectation is that further increases in the price for electricity may be expected. This price development may further strengthen the EU ETS of being a main steering factor to move to renewable energy sources within the German power sector.

Appendix

Appendix A

Source: Interview with Frank Weigand, CEO of RWE.

Via Gmail Format, due to COVID 19 outbreak.

EU-ETS: Implications on RWE

Remark: Inside the RWE Group, the subsidiary RWE Power AG currently is responsible for conventional power generation (lignite) and nuclear power plants. In addition, RWE Power operates the lignite open cast mines and the refining factories in the Rhenish lignite area. Back in 2005, when the EU-ETS was started, RWE Power AG was responsible for the whole electricity generation of the group. To provide a full picture including strategic decisions, the answers do not only focus on the current set up of RWE Power, but on the power generation inside the RWE group.

How has the EU ETS affected RWE Power AG in your economic transactions and the energy sector as a whole within Germany?

The EU-ETS was introduced in 2005 and is a milestone in internalizing the external effects of climate change. From this point in time, the emission of CO_2 got a price. Therefore the EU-ETS increased the (opportunity) costs of producing electricity in accordance to the so called emission factor of the fuel used – i.e. the amount of CO_2 emitted per produced kWh of electricity. In our decisions we take into account the current and the expected price for CO_2 in many ways, the two main ones are:

- **Short term decisions on producing and selling power from our existing power plants:** Whenever the power price in the market is higher than our variable costs (fuel and CO_2) we operate our plants and sell the power produced to the market.
- **Long term decisions on investing or divesting:** In course of decisions on investments in new power plants, companies or just smaller measures such as overhauls, our expectations on the future development regarding the carbon price play a big role. Between 2000 and 2010 many decisions were taken to replace old lignite and coal fired power plants by new stations. Highly efficient lignite, hard coal and gas fired power plants have been built around 2010.

How efficient has the EU ETS been to reduce emissions?

The EU-ETS is extremely efficient and effective because it ensures the accomplishment of the Carbon reduction targets set by the EU at lowest costs. Therefore it is the efficient instrument to reduce carbon emissions. The amount of carbon to be emitted is capped by a yearly decreasing volume of certificates (European Union Allowances; EUAs) that get into the market via free allocation (mainly industry) and auctions (mainly energy sector). Companies can trade the allowances and use them in later years, so that there is a liquid market with a price reflecting the scarcity. In the recent years the market was oversupplied e.g. due to international credits usable to replace EUAs and the global economic crisis. However, the system worked and still was efficient. In order to keep prices stable at higher levels, the EU-ETS was reformed and a market stability reserve including a mechanism to cancel the big surplus was introduced.

What new opportunities have you encountered by looking at more sustainable alternatives to counter the high taxes?

I would like to highlight one thing beforehand: The EU-ETS-price is not a tax system. There is a basic design question for instruments to reduce carbon emissions. The EU-ETS is a mechanism to restrict the emissions in the sectors covered, the price for the allowances is the result of auctions and trading. The achievement of the reduction target inside the EU-

ETS is ensured. This is the main difference to a tax approach, where the price is set and the quantity is the result.

Inside the RWE group we decided to change the way we produce electricity from fossil fuels to renewable energy. This is reflected in the transaction with E.ON that was finished by 01. July 2020. We are the global No. 2 in offshore wind and we intend to invest 5 bn Euros until 2022 in increasing our renewables capacity from today 9 GW to 13 GW. 1 bn Euros will be spent for projects in Germany.

In addition we support other sectors to become climate neutral by engaging in production, transport and usage of green hydrogen. This can help the industry and parts of the transport sector to reduce emissions in areas, where direct electrification is not possible.

Trading emission permits to enable a competitive market is a very vital component of the EU ETS. Has this type of trading benefited you in any kind of way and have you used it?

First of all, a liquid market helps us to reduce market risks. To ease our earnings we sell our expected power production at the future markets. At the same time we buy the fuel and the carbon emissions needed to produce the power sold. RWE Supply and Trading supports the Risk Management by carrying out the required market transactions. Furthermore RWEST can also participate in the pure trading business as other players in the market do as well.

To what extent do you believe that your business has adapted new strategies to combat the fine?

We are convinced that we are very well positioned to manage our transition towards a carbon neutral future from 2040 onwards. The coal exits in the countries where we are or - regarding UK were - operating hard coal or lignite fired power plants have been decided upon. In the United Kingdom, our last hard coal fired power plant was already decommissioned in spring 2020. In the Netherlands power production from coal will no longer be allowed from 2030 onwards, therefore we are in the process of modifying our hard coal fired plants to sustainable biomass. In Germany the coal exit will be completed in 2038 latest. The power production from coal and lignite is no longer part of our core activities. Focus of our activities is the power production from renewable energies such as wind on- and offshore, solar, biomass or hydro. In this area we are already one of the major global players and we have the clear intention to grow further. Our core activities furthermore include operating gas fired power plants. At latest from 2040 onwards these plants will be run with carbon neutral gas. And we are engaged in the whole value chain for green hydrogen. This includes the production of renewable energy, operating electrolyzes to produce hydrogen, transport, trading and usage of hydrogen in our power plants. Last but not least, RWE supply & trading is part of our core activities. RWEST carries out trading business and covers the demand of our power plants, provides commodities to industrial customers and operates gas storages.

We actively support the energy transition, because we are convinced that the EU should be climate neutral in 2050. Therefore we share the targets of the EU Green Deal.

In theory could the EU ETS risk your business model in the long run?

RWE undergoes a major transition towards carbon neutrality. Currently RWE still has portfolios that can be affected by the EU-ETS price, but the share of our renewables business within the group increases. In addition, the price risk coming from movements of

the EU-ETS price can be mitigated by hedging activities carried out by RWEST. This means buying EUAs already today for expected future emissions.

When looking at the long term how do you imagine this business to continue? Also considering that Germany is planning on leaving the coal industry completely by 2038?

See above

Do you believe that more actions must be taken to reach the goals of the European Union or that the EU ETS trading scheme is sufficient?

Currently there is an ongoing discussion around the EU Green Deal, proposed by the EU commission end of 2019. Main elements of the Green Deal are the intended climate neutrality in 2050 and a reduction of the greenhouse gas emissions of 50% to 55% in 2030 compared to 1990. To achieve these targets, all sectors have to contribute. Today there is a split between the sectors that are already included in the EU-ETS and the Non-ETS-sectors. Basically the energy sector, parts of the industry sector and aviation is included in the EU-ETS. Transport, heating and agriculture are excluded. In the Non-ETS-sectors, the targets have to be achieved mainly by national measures.

With implementing the EU Green Deal, the EU-ETS has to be adjusted accordingly. The amount of certificates coming into the market every year decreases with the linear reduction factor. This factor will likely be increased to match the goals of the EU. The Reform of the EU-ETS will start mid of 2021. Overall, the EU-ETS, is sufficient as the instrument to achieve the carbon targets.

Any other thoughts you want to share about the topic.

Climate Protection is a global task. RWE supports the Paris Agreement aiming to reduce the global increase in temperature compared to the pre-industrial period to well below 2°C or even to 1.5°C. The agreement has been signed of by the conference of the parties (COP) in Paris 2015. The signatories have to hand in their pledges, but currently these pledges are not sufficient to meet the Paris targets. To reduce the global warming, it is essential that all countries increase their ambition levels and implement effective instruments to reach the national targets. One of the successful instruments that already proofed to be effective is an emission trading scheme.

In the midterm, the EU-ETS can cover other sectors as well. The first step is already been taken: Germany will implement a carbon price in the Non-ETS-sectors from 2021 onwards. From 2026 there will be a national emission trading scheme in Germany.

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