CLIMATE CHANGE

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Influence of market structures and market regulation on the carbon market: Insights from selected emissions trading systems

Final report

German Environment Agency

Umwelt Bundesamt

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Influence of market structures and market regulation on the carbon market: Insights from selected emissions trading systems

Final report

by

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On behalf of the German Environment Agency

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Abstract: Influence of market structures and market regulation on the carbon market: Insights from selected emissions trading systems

This report provides an overview of the main outputs of the research project *Influence of market structures and market regulation on the carbon market* (2018-2021). The aim of the project, commissioned by the German Environment Agency, was to gain a better understanding of the impact of market structures and regulations on the carbon market, as well as the interactions between carbon and electricity markets. The project was divided into three stages. First, the project team identified and analysed the main interdependencies between ETSs and electricity sectors with a view to distilling the requisite conditions for cost-effective mitigation driven by the carbon price. Second, the project team applied the analytical framework of step 1 to a sample of seven diverse ETS jurisdictions spanning several continents, industrialised and emerging economies, mature and new ETSs, and differing electricity sectors in terms of market design, fuel mix, and sectoral policies. Namely, California (US), Mexico, Germany, Poland, Korea, Hubei (China), and Shenzhen (China). Third, the project findings were utilised to inform decision-makers and experts about pathways for effective carbon pricing to spur electricity sector decarbonisation. To this end, the project team organised six international virtual events over the course of the project. The results underline the high mitigation potential of ETSs when designed to deliver cost-reflective carbon prices. While this also applies to regulated sectors, interactions with electricity sector regulations and policies must be anticipated to safeguard the effectiveness of the instrument.

Zusammenfassung: Der Einfluss von Marktstrukturen und Marktregulierung auf den Kohlenstoffmarkt: Einsichten aus ausgewählten Emissionshandelssystemen

Dieser Bericht gibt einen Überblick über die wichtigsten Ergebnisse des Forschungsprojekts Einfluss von Marktstrukturen und Marktregulierung auf den Kohlenstoffmarkt (2018-2021). Ziel des vom Umweltbundesamt in Auftrag gegebenen Projekts war es, ein besseres Verständnis der Auswirkungen von Marktstrukturen und -regulierungen auf den Kohlenstoffmarkt sowie der Wechselwirkungen zwischen Kohlenstoff- und Strommärkten zu gewinnen. Das Projekt gliederte sich in drei Phasen. Zunächst identifizierte und analysierte das Projektteam die wichtigsten Interdependenzen zwischen den Emissionshandelssystemen und den Stromsektoren, um die erforderlichen Bedingungen für eine kosteneffiziente, durch den Kohlenstoffpreis getriebene Emissionsminderung herauszuarbeiten. Zweitens wendete das Projektteam den analytischen Rahmen von Schritt 1 auf eine Stichprobe von sieben verschiedenen Emissionshandelssystemen an, die mehrere Kontinente, Industrie- und Schwellenländer, ausgereifte und neue ETS sowie unterschiedliche Stromsektoren in Bezug auf Marktdesign, Brennstoffmix und sektorale Politik umfassen. Es handelt sich um Kalifornien (USA), Mexiko, Deutschland, Polen, Korea, Hubei (China) und Shenzhen (China). Drittens wurden die Projektergebnisse genutzt, um Entscheidungsträger und Experten über Wege für eine wirksame Kohlenstoffbepreisung zu informieren, um die Dekarbonisierung des Stromsektors voranzutreiben. Zu diesem Zweck organisierte das Projektteam im Laufe des Projekts sechs internationale virtuelle Veranstaltungen. Die Ergebnisse unterstreichen das hohe Minderungspotenzial von Emissionshandelssystemen, wenn sie so gestaltet sind, dass sie kostenorientierte Kohlenstoffpreise liefern. Dies gilt zwar auch für regulierte Sektoren, doch müssen Wechselwirkungen mit Vorschriften und politischen Maßnahmen im Stromsektor antizipiert werden, um die Wirksamkeit des Instruments zu gewährleisten.

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CaT	California Cap-and-Trade Program
CO_2	Carbon dioxide
ETS	Emissions Trading System (or Scheme)
EU-ETS	EU Emissions Trading System
GHG	Greenhouse gas
ICAP	International Carbon Action Partnership
IEA	International Energy Agency
KAS	Konrad Adenauer Stiftung
K-ETS	Korea Emissions Trading System
NDC	Nationally Determined Contributions (Paris Agreement)
N_2O	Nitrous oxide (laughing gas)
PJ	Petajoule (energy measuring unit)
PtG	Power-to-Gas (any power-based gaseous fuels)
PtL	Power-to-Liquid (any power-based liquid fuels)
TWh	Terawatt hours (measuring units for energy)
UNFCCC	United Nations Framework Convention on Climate Change
ZHAW	Zurich University of Applied Sciences

1 Introduction to the project

Emissions trading systems (ETS) are effective instruments to reduce GHG emissions cost effectively. Their potential to unlock least cost abatement decisions is particularly great in the electricity sector where clear emissions boundaries of electricity generation, the presence of market ready abatement technologies, and lower (albeit not absent) leakage risks render the carbon price signal an effective mitigation driver. International experiences, such as from the United Kingdom and the European Union, underscore the importance of carbon pricing in facilitating electricity sector transitions. The replication of successful carbon pricing, however, is not a foregone conclusion.

Foremost, carbon prices must be credible and integrated into the electricity system's value chain. This warrants a close look at the quality of the price signal required to drive abatement, the prevailing electricity market structures in which the carbon price operates, and the market regulations with which it interacts. Such analysis is pertinent but not limited to emerging economies, where most current emissions from fossil fuel combustion originate, carbon pricing uptake has accelerated, and electricity sectors often more widely deviate from textbook approaches compatible with effective carbon pricing. At the same time, existing electricity market regulations and complementary policies can affect the strength of the carbon price signal also in jurisdictions where ETSs are seen to have delivered the necessary incentives to shift away from carbon-intensive technologies. Structured analysis of the market environment within which the ETS operates can therefore yield important insights for improvements in policy design and regulatory alignment aimed at least-cost emissions mitigation.

The electricity sector continues to be the single largest source of global anthropogenic CO_2 emissions as the timeframe to avoid extreme climate change impacts closes. Making a success out of carbon pricing, then, to significant extent hinges on its ability to rapidly reduce emissions from the sector across the array of jurisdictions turning to the instrument to deliver such outcomes.

Against this background, the project *Influence of market structures and market regulation on the carbon market,* commissioned by the German Environment Agency, set out to advance three interrelated objectives: 1) identifying and analysing the main interdependencies between ETS and electricity sectors with a view to distilling the requisite conditions for cost-effective mitigation driven by the carbon price; 2) enriching the understanding of these interactions in practice by applying the analytical framework to a sample of seven diverse ETS jurisdictions spanning continents, industrialised and emerging economies, mature and new ETSs, and differing electricity sectors in terms of market design, fuel mix, and sectoral policies;[1] and 3) utilising the project findings to inform decision-makers and experts about pathways for effective carbon pricing to spur electricity sector decarbonisation. The project encompassed three work packages (WP1, WP2, WP3) which in consecutive order covered the objectives above.

Public policy consultancy adelphi[2] led the research consortium further comprising the Zurich University of Applied Sciences (ZHAW),[3] Oeko-Institut,[4] and legal experts.[5] The consortium published a total of seven research reports under the project; a conceptual report (WP1), five case studies (WP2), and a synthesis report (WP3). Moreover, six virtual events were organised

[1] California, Mexico, Germany, Poland, Korea, Hubei (China), Shenzhen (China).
[2] Ernst Kuneman, Stephanie La Hoz Theuer, William Acworth, Christopher Kardish, Tobias Bernstein, Carolina Inclan.
[3] Prof. Dr. Regina Betz, Dr. Jan Abrell, Dr. Tobias Müller, Dr. Mirjam Kosch, Julia Baer.
[4] Dr. Johanna Cludius, Sean Healy, Jakob Graichen.
[5] Dr. Anatole Boute, Dr. Hao Zhang.

over the duration of the project, three of which took place in a closed-door setting.[6] The project outputs are summarised in Table 1 and Table 2 below.

Table 1. Project publications

Output	Type	Access	WP	Date
Influence of market structures and market regulation on the carbon market	Interim report	Link	WP1	12-2019
The European Emissions Trading System and the German and Polish electricity market	Case study report	Link	WP2	12-2020
The Californian Emissions Trading System and the electricity market	Case study report	Link	WP2	12-2020
The Korea Emissions Trading System and the electricity market	Case study report	Link	WP2	05-2021
China's Pilot Emissions Trading Systems and electricity markets (Hubei and Shenzhen)	Case study report	Link	WP2	06-2021
The Mexican Emission Trading System and the electricity market	Case study report	Link	WP2	10-2021
Emissions trading in pursuit of electricity decarbonisation – market structures and regulations matter	Synthesis report	Link	WP3	05-2021

Table 2. External engagements

Output	Type	WP	Date
EU ETS and the Electricity Sector: Fuel switching in Germany and Poland	Closed-door workshop	WP3	23.06.2020
IEA-ICAP-KAS Carbon Pricing Dialogue —The influence of market structures and market regulation on electricity sector abatement under the Korea ETS	Closed-door workshop session	WP3	03.12.2020
I4C 2021 – Decarbonising electricity through emissions trading [in Europe]: Does market structure matter?	Conference workshop	WP3	25.05.2021
adelphi – Decarbonising electricity through emissions trading in the Americas: Does market structure matter?	Webinar	WP3	02.06.2021
adelphi – Decarbonising electricity through emissions trading in China: Lessons for the national ETS	Webinar	WP3	10.06.2021
Germany – Korea dialogue on emissions trading 2021	Closed-door dialogue	WP3	07.10.2021

[6] All workshops were held in a virtual format due to travel restrictions following the onset of the COVID-19 pandemic, which coincided with the greater part of the project.

2 Project findings

2.1 Analysis of the impact of market structures and market regulation on emissions trading (WP1)

In WP1, the project team developed the framework by which to assess interactions between the carbon market and the electricity sector based on an extensive review of the existing academic and grey literature in both fields. The framework was published as an interim report constituting the first output of the project. It informed and set the scope of the subsequent analytical work under WP2 and WP3.

BOX 1. Interim report (Acworth et al. 2019)

The report consists of three consecutive components. First, it analyses the impact of carbon market design elements (grouped under supply, demand, and transactions and market oversight) on the quality of the allowance price signal defined along four criteria: volatility; reflection of marginal abatement cost; predictability; and environmental effectiveness. Second, it identifies interactions of the carbon price with electricity market regulations across the spectrum of deregulated and regulated systems to assess the opportunities for emissions abatement along three channels: electricity production, electricity consumption, and (dis)investment. In this respect, key regulatory design elements are electricity dispatch rules, price regulations (wholesale and retail), investment regulations, and additional regulations or policies. Third, the framework identifies relevant aspects of the electricity market structure that may affect abatement incentives for production, consumption, and investment. These include the composition of the electricity mix, the age of fossil generation assets, asset ownership, and market concentration (usually tied to the degree of sector unbundling).

The work on the conceptual framework commenced after the project kick-off meeting in October 2018 and continued into the next year. The German Emissions Trading Authority (DEHSt) at the German Environment Agency published the final version of the report in December 2019.

2.2 Case studies —EU, California, China (Hubei/Shenzhen), Korea and Mexico— and synthesis report

The case studies of WP2 served to enrich the understanding of electricity market interactions with ETSs and provide detailed insight about the instrument's effectiveness in the respective jurisdictions. The WP1 framework informed the structure and conceptual scope of the case studies with market data, market regulations, and in-depth stakeholder interviews providing the empirical data for the analyses.

The client and project team selected the case studies based on ETS relevance, geographic scope, and added diversity to the overall sample with respect to carbon market design and electricity market regulations. This resulted in the following selection of case study jurisdictions: Germany and Poland (EU ETS); California (CaT); Korea (K-ETS), China: Hubei (pilot ETS) and Shenzhen (pilot ETS), and Mexico (pilot ETS). The project team commenced and completed each case study report in that order (Table 1).

Force majeure factors resulted in a delayed completion of the work under WP2. The global COVID-19 pandemic hit in Q1 2020, coinciding with the start of WP2, and worsened in the first

half of 2020 when most of the work under WP2 was scheduled to materialise. This required the respective organisations of the project team and the client to implement structural adjustments for a swift transition to a full remote working environment. Importantly, the COVID-19 pandemic had several direct implications for the project. First, in-person case study workshops had to be converted into virtual events (section 2.3). Second, the stakeholder interviews, initially envisaged to be conducted at location within one week, had to be (re)scheduled to a virtual format which extended the period required to obtain the interview data.

Despite the challenges to project management, the team managed to conduct interviews with key experts and stakeholders in the energy and climate space of each of the jurisdictions — building on its vast international network alongside targeted outreach efforts. The obtained interview data revealed information often not available in other primary sources and proved important to the overall quality and value of the analyses. The case studies thereby yielded instructive results eventually brought together in a synthesis report in WP3 (see Acworth et al. 2021). A high-level overview of the outcomes of the analytical work under the project is provided below.

BOX 2. Conditions for effective carbon pricing in the electricity sector

At the outset, three basic conditions must be met for an ETS to encourage mitigation efforts in the electricity sector. First, the carbon price signal delivered must be credible. In other words, ETS design elements must ensure sufficient price discovery in the market to bring about carbon prices that are predictable and reflect the abatement costs of the covered entities. Second, allowance costs must be reflected in producers' operational expenditures and be passed on along the value chain. Third, dispatch mechanisms must be in place that consider the relative carbon costs among producers, thereby impacting their load factors. At the time of analysis, these conditions were met in the liberalised systems of Germany and Poland (Abrell et al. 2020a), and California (Abrell et al. 2020b). They were partially met in Mexico (Graichen et al. 2021) and Korea (Kuneman et al. 2021), while none of these conditions were present in Hubei and Shenzhen (Zhang et al. 2021).

In the first group, uniform marginal pricing enables higher net margins for low-carbon generation technologies in addition to increased market shares. However, this is subject to their level of market integration and whether separate support mechanisms apply. In the second group, only Korea had featured carbon price levels that could spur abatement, whereas Mexico had a voluntary non-binding pilot ETS in place at the time. In these markets, hybrid electricity sector designs prevented or limited (respectively) the integration of the carbon cost component in electricity generation in these markets. Ongoing reforms in both Korea and China may improve regulatory alignment in the coming years. Going forward, these jurisdictions could set examples of effective carbon pricing in regulated electricity markets. Demand-side responses encouraged by the ETS have so far been limited across the jurisdictions owing to cost compensation (or free allocation) to industrial consumers as well as the multiple cost components in final electricity tariffs, diluting carbon price signals even where they are included.

The structure of the electricity market significantly influences the range of latent abatement opportunities available in the sector. The results indicate that this is highly relevant to the potential for fuel switching and opportunities for disinvestment —or the early decommissioning

of carbon-intensive units. Relatively diverse fuel mixes in Europe and Korea render fuel switching (coal-to-gas) a feasible short-term mitigation option. However, this low-cost opportunity is absent in systems where coal has been pushed out of the market already (California) or gas infrastructure is limited (Mexico, Hubei, Shenzhen). Furthermore, early decommissioning is more likely in Europe and to some extent Mexico than in Korea and China, where coal fleets are on average much younger.

Finally, interactions with additional energy and environmental policies shape the role of the ETS in all the jurisdictions considered. Support policies targeting specific abatement options that overlap with the ETS generally decrease its role as mitigation driver. This applies to both renewable support programmes, environmental standards, and coal phase-out policies, amongst others. Such interactions are not necessarily disadvantageous: the ensuing reduced allowance costs can increase buy-in for emissions trading. Equally, other companion policies can improve the effectiveness of the ETS. Price-based measures such as carbon fuel taxes, low-carbon financial support, and de-risking measures that address market barriers to entry facilitate the ease of transition improving the effectiveness of the carbon price in triggering abatement outcomes.

2.3 Dissemination of results

Next to the synthesis report, WP3 featured six external engagements that aimed at enlarging the reach and impact of the project results. These are summarised in Table 2; the corresponding workshop agendas are listed in the annex. The project team held all events in a virtual setting due to travel and border entry restrictions put in place to contain the global pandemic. This entailed several changes to the overall engagement strategy.

Preparations for the EU workshop in WP2 were well underway at the time governments across Europe started introducing lockdown measures. In response, the case study team converted the full day in-person workshop into a shorter, virtual format that nonetheless attracted wide interest. The session “EU ETS and the Electricity Sector: Fuel Switching in Germany and Poland” featured presentations on the main findings of the report and commentaries by influential experts as well as policymakers from Germany, Poland, and the EU more broadly.

With a view to sharing results from the other case studies, the project initially encompassed an international workshop to be held in the Americas or Asia that would bring together regional stakeholders closely involved in market-based climate policy and aspects of the energy transition. In coordination with the German Environment Agency, the project team split the envisaged workshop into two separate virtual events. Both centred around Korea in light of its well-established ETS, high potential for alignment with the electricity sector, and similar long-term decarbonisation challenges with respect to the EU.

The first event, “The influence of market structures and market regulation on electricity sector abatement under the Korea ETS”, provided a space among experts and policymakers to discuss the case study results. The team integrated the session into a closed-door workshop which was part of a broader series on carbon pricing and energy sector dialogues organised by the International Carbon Action Partnership (ICAP), the International Energy Agency (IEA), and the Konrad Adenauer Stiftung (KAS). This constellation facilitated the dissemination of project results. The second event concerned a dialogue between German and Korean government

stakeholders. Its main objective was to reinvigorate ties between public ETS experts for the furtherance of climate policy cooperation between both countries.

Following the publication of the synthesis report in May 2021, the project team organised three publicly accessible webinars to present the cross-case study results each with a different regional deep dive. The first webinar was merged with the program of the annual Innovate4Climate conference and focused mainly on ETS and electricity sector interactions in Europe. The second webinar catered to the Americas, featuring results from the Mexico and California case studies alongside broader project findings from the synthesis report. The third webinar focussed on China and included a presentation of the Hubei and Shenzhen case study followed by insights from national experts and policymakers.

3 Project relevance for successful carbon pricing

Most ETSs in force and under development cover emissions from the power sector. However, their efficacy in reducing emissions rests on specificities of electricity market design. While ETS design and electricity sector reform each feature prominently in expert debate, research, and policymaking, analyses linking the two are relatively sparse. This project has delivered a major contribution in filling that gap. It identifies important considerations for jurisdictions with advanced and effective carbon pricing, and points to opportunities for regulatory alignment in those where the main conditions for it are not yet met. For ETSs to deliver, interactions with electricity sector regulations and policies must be anticipated.

The project concludes at an inflection point for climate change mitigation efforts. Long-term ambitions are on the rise and diffusing rapidly, but short-term mitigation outcomes are sorely needed. The power sector remains the source for most of the emissions reductions to be realised in the coming years. Fortunately, countries are progressively adopting carbon pricing instruments, many of which are emerging economies crucial to keeping emissions growth in check.

As a result, ETSs, carbon taxes, and hybrid schemes alike to greater extent will apply to regulated electricity sectors or hybrid markets often found in this group. These countries may need to consider adjustments to the regulations governing the electricity sector for their carbon pricing instruments to be successful at delivering abatement outcomes. The introduction of additional market regulations aimed at integrating the carbon price into the electricity sector's value chain provides a viable route when market restructuring is not on the immediate policy horizon.

It is our hope that the results of this project may provide guidance to policymakers and experts in anticipating market interactions to inform decisions for effective carbon pricing and a cost-efficient decarbonisation of the electricity sector. The German Environment Agency's focus on this topic has been timely and instructive.

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A Appendix – workshop agendas

A.1 EU workshop

Webinar

EU ETS and the Electricity Sector:
Fuel Switching in Germany and Poland

23.06.2020, 16:30-18:00, Zoom

Time	Topic
16:30	**Welcome: Introduction to the project** • Claudia Gibis, German Emissions Trading Authority (DEHSt) • William Acworth, adelphi
16:40	**Determinants of fuel switching: EU ETS and the Polish and German electricity sector** • Jan Abrell, Zurich University of Applied Science (ZHAW)
16:55	**Emissions in the German electricity sector in 2019** • Felix Matthes, Öko-Institut
17:05	**Challenges in transforming the Polish energy sector** • Igor Tatarewicz, The Centre for Climate and Energy Analyses / The National Centre for Emissions Management (CAKE/KOBiZE)
17:15	**Panel Discussion** Participants: • Joanna Maćkowiak-Pandera, Forum Energii • Philipp Ruf, Power and Carbon Analytics, ICIS • Frank Peter, Agora Energiewende Moderation: • Regina Betz, Zurich University of Applied Science (ZHAW)
17:45	**Open Discussion**
17:55	**Closing**

This webinar is part of the project "The influence of market structure and regulation on carbon markets" (FKZ 3718 42 002 0) financed by the German Federal Environment Agency (UBA) and implemented by a consortium of adelphi, Zurich University of Applied Sciences, Öko-Institute, the Chinese University of Hong-Kong. An interim report was published here.

A.2 Korea workshop

International Carbon Action Partnership

IEA-ICAP-KAS Carbon Pricing Dialogue

3 December 2020

Leveraging carbon pricing to accelerate power sector decarbonization in East Asia

Carbon pricing is an effective tool to incentivize abatement in the power sector alongside energy policy instruments. The success of carbon pricing policies hinges on market forces delivering price signals that are reflected in day-to-day business operations. In regulated electricity sectors common to East Asian jurisdictions, modifications to classical carbon pricing approaches may be required to ensure the intended incentives are delivered. In this closed workshop day, we look at experiences to date, focusing further on the opportunities for regulatory alignment with the goal to capitalize on the sector's vast abatement potential in the region.

The event is a closed virtual workshop. Participation is by personal invitation only.
Workshop registration link: https://ieaorg.zoom.us/webinar/register/WN_eFa_irZiSvGMsKcnBzkBFQ

AGENDA – 3 December 2020

8:45 am CET	Registration and IT guidelines
9:00 am CET	**Welcoming Remarks and Introduction to the Workshop** • Tom Howes, Division Head, IEA • William Acworth, Head of Secretariat, ICAP • Christian Hübner, Director, KAS-RECAP
9:15 am CET	**Power market design and regulations: Opportunities for reaching net zero towards mid-century** **Moderator:** Tom Howes, Energy and Environment Division Head, IEA **Speaker:** Cesar Alejandro, Renewable Integration and Security Electricity Unit Head, International Energy Agency
9:30 am CET	**Session I: The influence of market structures and market regulation on electricity sector abatement under the Korea ETS** The K-ETS is an established system that has delivered a credible carbon price signal to market participants. The Korean electricity sector, accounting for the majority of allowance demand, features significant gas capacity and a growing renewable energy market. To date, however, opportunities for carbon cost pass-through have been limited. This session, part of the project "Influence of market structures and market regulation on the carbon market" commissioned by the German Federal Environment

Agency, presents the findings of a forthcoming report on the Korea ETS and electricity sector and discusses the opportunities for abatement against the backdrop of newly proposed market reforms.

Moderator: Claudia Gibis, Economist, German Emissions Authority (DEHSt)
Presentation: Anatole Boute, Professor, Chinese University of Hong Kong & Ernst Kuneman, Project Manager, adelphi
Interventions by:

- Yong-Gun Kim, Chief Research Fellow, Korea Environment Institute
- Seung Jick Yoo, Professor of Sookmyung Women's University

10:30 am CET **Break**

10:45 am CET **Session II: Aligning carbon market and electricity sector regulations: Experiences from Thailand and China**

In 2017, the People's Republic of China announced the decision to implement a national emission trading scheme (ETS), to be effective in 2020. The first phase of China's ETS will cover the power sector and is set to expand to seven other sectors, covering one-seventh of global CO_2 emissions from fossil fuel combustion. Thailand is also considering implementing a national ETS and is now testing voluntary pilots and working on various readiness programs. In this session, experts from China and Thailand will analyze and discuss the technical challenges and opportunities of implementing an ETS and the interactions between the ETS and the power sector.

Moderation: Beni Suryadi, Manager, ASEAN Centre for Energy
Presentation: Cyril Cassisa, Senior Analyst, IEA
Panelists:

- Zhang Xiliang, Director, Institute of Energy, Environment and Economy, Tsinghua University
- Wongkot Wongsapai, Professor, Chiang Mai University

11:45 am CET **Closing remarks**

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A.3 Germany – Korea Dialogue on Emissions Trading, 7th October 2021

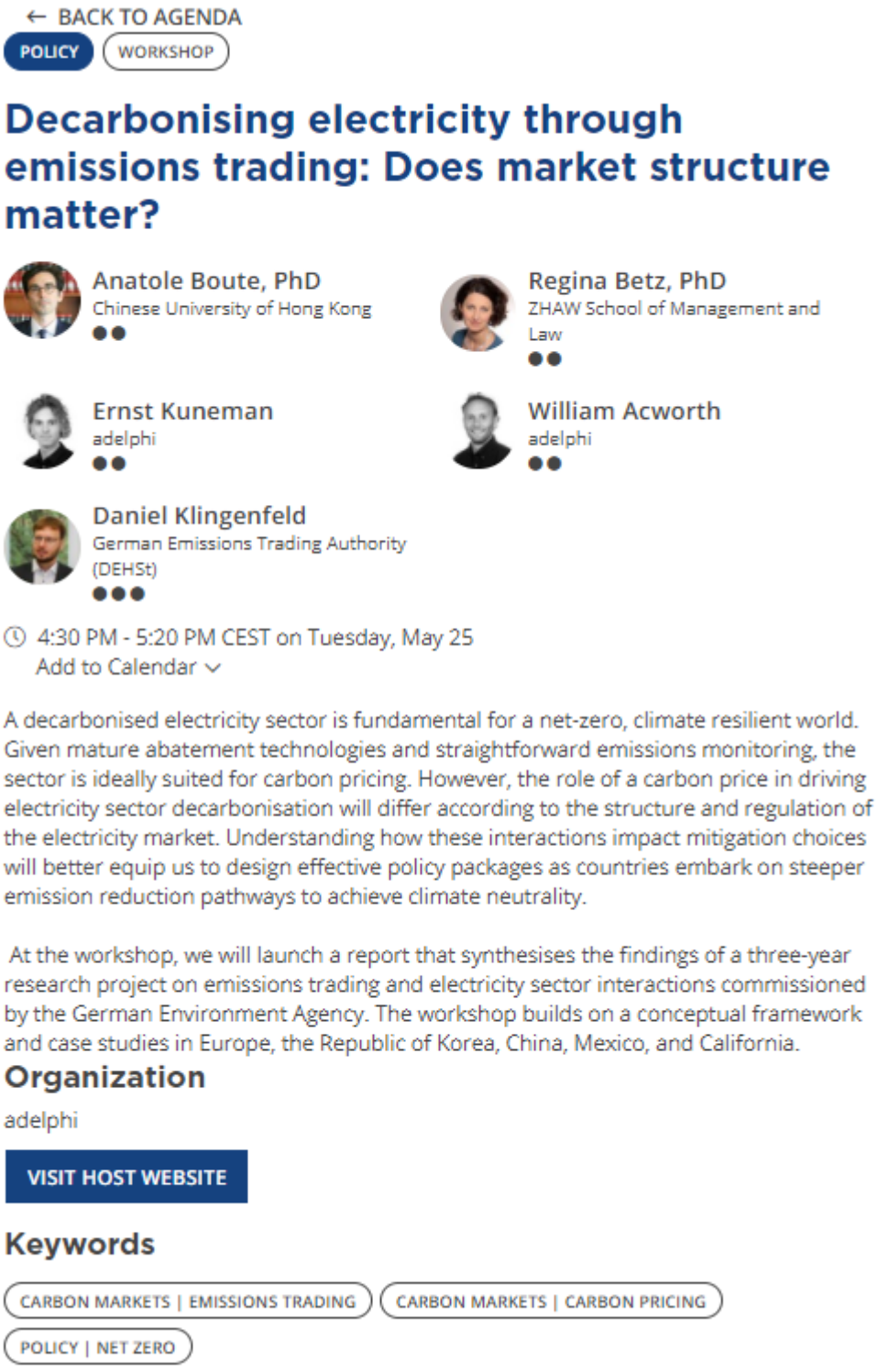
Umwelt Bundesamt | DEHSt

3 Agenda

CET / KST	**ETS POLICY UPDATES : GERMANY – KOREA**
07:50 am / 02:50 pm	Technical check for simultaneous translation
08:00 am / 03:00 pm	**Welcome remarks** • *Dr. Baran Doda*, Head of Carbon Markets and Pricing, **adelphi** • *Christoph Kühleis, DEHSt, Alexander Handke*, **German Ministry for the Environment** *(BMU)* • *Jiyoung Park, Head of ETS*, **Korean Ministry of Environment**
08:15 am / 3:15 pm	**Recent developments in climate policy and emissions trading in the EU and Korea** Moderated by: Baran Doda, adelphi Representatives from Germany and Korea will provide updates on the latest climate policy developments in their jurisdiction. The following questions are of interest: - Description of the overall climate architecture: 2030 climate target, 2050 net-zero emissions goal - How is the EU ETS / K- ETS aligned with these targets? - Recent developments in EU ETS / K-ETS • **Claudia Gibis, German Environment Agency (15min)** o *Q&A* • **Jiyoung Park, Korean Ministry of Environment (15min)** o *Roundtable discussion*
09:00 am / 4:00 pm	5-minute Break
	ETS COMPLIANCE AND OVERSIGHT
09:05 am / 04:05 pm	Representatives from Germany and Korea will provide insights on ETS implementation and governance. The following questions are of interest: Moderated by: Claudia Gibis, UBA/DEHSt - How is the ETS implemented? Who are the competent authorities and what are their tasks? - Which processes (monitoring plans, annual emissions reports, verification reports, etc.) are in place? How is the data collected?

	- What role for verifiers? How is compliance ensured (data comparison, IT-Tools)? • **Doris Tharan, DEHST (15 min)** o *Q&A* • **Gyusu Kim, Korea Environment Corporation (15 min)** o *Roundtable discussion*
09:50 am / 4:50 pm	**10-minute Break**
	DECARBONIZING INDUSTRY THROUGH THE ETS WHILE AVOIDING CARBON LEAKAGE
10:00 am / 05:00 pm	This final session will focus on the role of carbon pricing in decarbonizing industry sectors. Moderated by Ernst Kuneman, adelphi • ***Inputs presentation by Donghyeok Kwon, Eco & Partners (15-20min)*** – Low carbon support schemes, benchmarks, and leakage protection for industry 1. *What low-carbon support schemes are in place to help heavy industries decarbonize alongside the K-ETS?* 2. *How are K-ETS benchmarks evolving to provide leakage protection to energy-intensive industries?* 3. *To what extent are indirect emission costs for industry considered in leakage protection measures? What impact of rising electricity prices in the coming years, if any?* o *Q&A* • ***Input presentation by Frank Gagelmann, DEHSt (10min)*** – Funding of innovative low carbon technologies – the EU Innovation fund and national funding landscape o *Q&A* • ***Input presentation by Christopher Kardish, advisor, adelphi (10 min)*** – Free allocation policy in the EU ETS and the role of the border carbon adjustment mechanism o *Roundtable discussion*
11:00 am / 06:00 pm	Wrap-up and concluding thoughts – 15 min

A.4 Synthesis report – webinar #1



← BACK TO AGENDA

POLICY WORKSHOP

Decarbonising electricity through emissions trading: Does market structure matter?

Anatole Boute, PhD
Chinese University of Hong Kong

Regina Betz, PhD
ZHAW School of Management and Law

Ernst Kuneman
adelphi

William Acworth
adelphi

Daniel Klingenfeld
German Emissions Trading Authority (DEHSt)

4:30 PM - 5:20 PM CEST on Tuesday, May 25
Add to Calendar

A decarbonised electricity sector is fundamental for a net-zero, climate resilient world. Given mature abatement technologies and straightforward emissions monitoring, the sector is ideally suited for carbon pricing. However, the role of a carbon price in driving electricity sector decarbonisation will differ according to the structure and regulation of the electricity market. Understanding how these interactions impact mitigation choices will better equip us to design effective policy packages as countries embark on steeper emission reduction pathways to achieve climate neutrality.

At the workshop, we will launch a report that synthesises the findings of a three-year research project on emissions trading and electricity sector interactions commissioned by the German Environment Agency. The workshop builds on a conceptual framework and case studies in Europe, the Republic of Korea, China, Mexico, and California.

Organization

adelphi

VISIT HOST WEBSITE

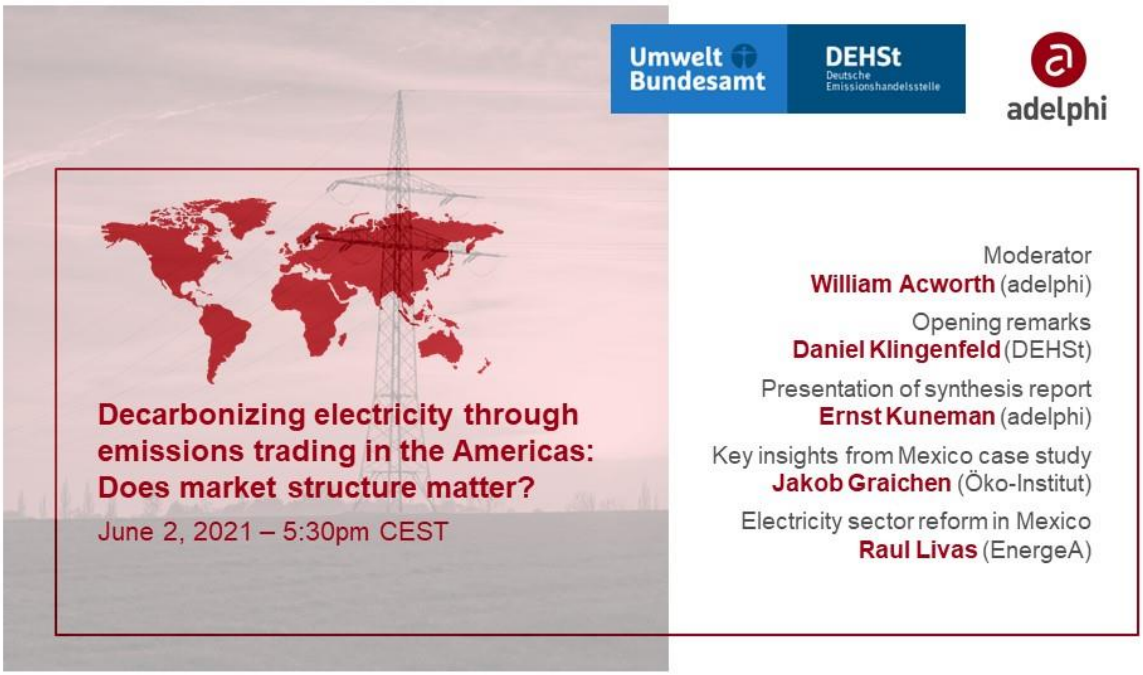
Keywords

CARBON MARKETS | EMISSIONS TRADING CARBON MARKETS | CARBON PRICING POLICY | NET ZERO

Source: Innovate4Climate 2021

A.5 Synthesis report – webinar #2

Recording: https://www.youtube.com/watch?v=2AcCx-YNzP8



A.6 Synthesis report – webinar #3

Recording: https://www.youtube.com/watch?v=oCzZmcQKoVY