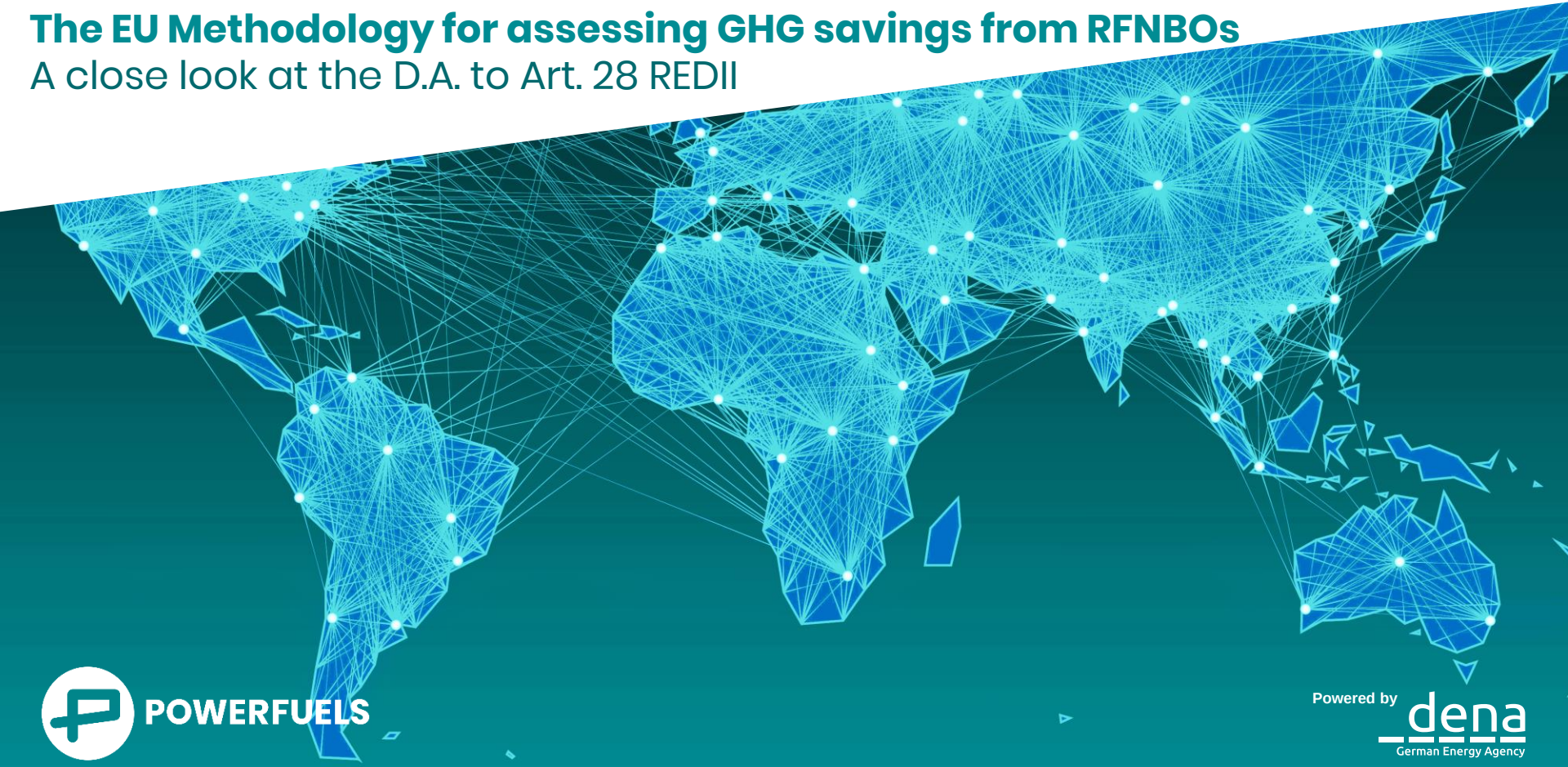
GLOBAL ALLIANCE POWERFUELS BRIEF

The EU Methodology for assessing GHG savings from RFNBOs

A close look at the D.A. to Art. 28 REDII



POWERFUELS

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AGENDA

1 **Introduction to the Global Alliance Powerfuels**

2 **The proposed Delegated Act to Art. 28**

Friederike Altgelt
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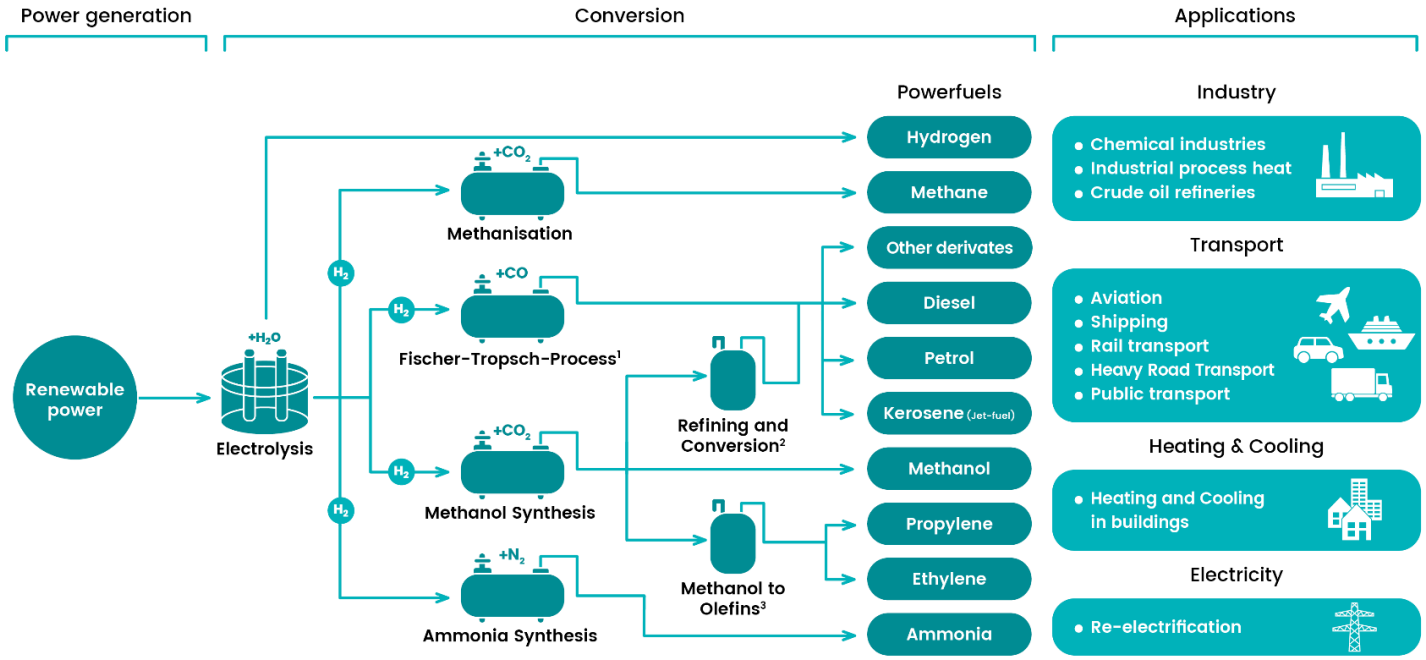
3 **Presentation of Alliance's analysis and policy recommendations**

Pascal Hader
Senior Expert,
Global Alliance Powerfuels

4 **Q & A and Discussion**

Powerfuels are the missing link to the global energy transition in many sectors



1 Includes: Fischer-Tropsch synthesis, hydrocracking, isomerization and distillation.

2 Includes: DME/OME synthesis, olefin synthesis, oligomerisation and hydrotrating.

3 Methanol-to-olefins process.

We strive to ramp up the global deployment of powerfuels with a unique combination of activities as a...

Network

- Raising awareness for the necessity of powerfuels
- Sharing knowledge as network and information hub
- Facilitating dialogue and exchange among partners and members united by a common mission

Think Tank

- Providing strategic guidance for decision-makers
- Supporting the strategic development of the EU regulatory framework
- Developing market and sustainability guidelines

Matchmaker

- Sparking new exchange between stakeholders
- Keeping an overview of market development
- Identifying business opportunities and strategies to mitigate project risks

Our corporate members and international partners are united by the goal of developing a global powerfuels market

Our members

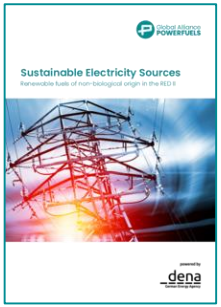
SCHAEFFLER
sasol
Deutsche Post DHL Group
ENERTRAG
ExxonMobil
Port of Rotterdam
Lufthansa
MEW
en2x
Mitsubishi International GmbH
sunfire

Our partners

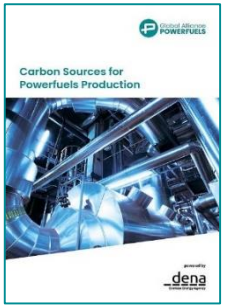
CEF.NRW
CO2 VALUE EUROPE
DECHEMA
DTU
UCLouvain
Dii
LUT University
CSIR
energy saxony
icnmpc
SKOLKOVO
Sunrise
GREEN HYDROGEN COALITION
ENFRWC
Empa
HYDROGEN VALLEY
ludwig bölkow systemtechnik
HOUSE OF ENERGY
IRESEN

Sustainability requirements and classification of powerfuels are a focus topic of the Alliance

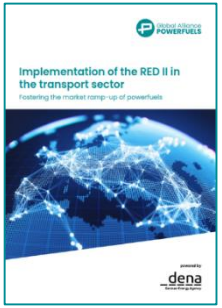
Discussion papers and reports



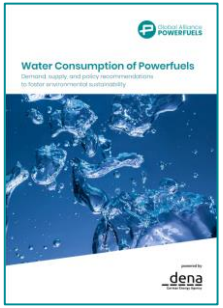
Sustainable Electricity Sources



Carbon Sources for Powerfuels Production



Implementation of the REDII in the transport sector



Water Consumption of Powerfuels

Position papers and statements

Statement on the European Commission's proposed revision of the EU Gas Directive and the Gas Regulation

Position Paper on the European Commission's proposed Revision of the Guidelines on State Aid for Climate, Environmental Protection and Energy

Position Paper on the European Commission's proposed Revision of the revised Renewable Energy Directive (REDII)

Position paper on the Delegated Act of Article 27 REDII

Implications of the "Fit for 55" package for the market development of powerfuels

Contribution to the European Commission's consultation on the review and possible revision of the Renewable Energy Directive

The proposed D.A. to Art. 28

Delegated Act to Art. 28 REDII – Legal background and scope

Recast of the Renewable Energy Directive (REDII):

Art. 28 (5): "By **31 December 2021**, the Commission shall adopt delegated acts [...] specifying the **methodology for assessing greenhouse gas emissions savings from <u>renewable liquid and gaseous transport fuels of non-biological origin</u>** and from recycled carbon fuels, which shall ensure that **credit for avoided emissions is not given for CO2 the capture of which has already received an emission credit under other provisions** of law"

Proposal for revision of REDII (REDIII):

Newly inserted Art. 29a: "The Commission is empowered to adopt delegated acts [...] specifying the **methodology for assessing greenhouse gas emissions savings from <u>renewable fuels of non-biological origin</u>** and from recycled carbon fuels. The methodology shall ensure that **credit for avoided emissions is not given for CO2 the capture of which has already received an emission credit under other provisions** of law"

→ *Scope extended beyond transport*

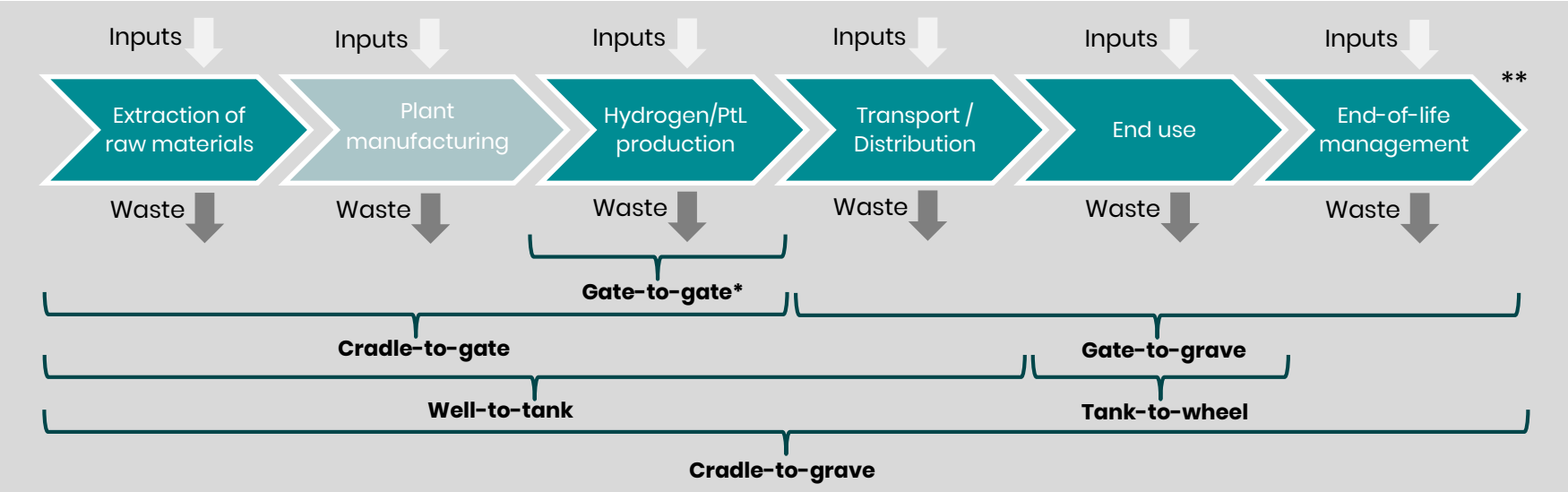
Cross-references and interlinkages with the D.A. exist across EU legislation

(Proposed) legislation	Covered H2-based energy carriers	Covered end-use sectors	Required emission savings	Methodology to assess GHG savings	Timeline for adoption
REDII	RFNBOs	Transport (extension in proposed revision of REDII)	70% relative to fossil fuel comparator (not defined in REDII)	To be specified in D.A. to Art. 28 REDII	- D.A.: Originally until end of 2021; draft published on 20/05/22 - Revision of REDII: to be transposed into national law until end of 2023
EU Taxonomy	RFNBOs, low-carbon hydrogen, low-carbon H2-based fuels	all	Specified in Climate D.A.: - Hydrogen: 73.4 % (max. 3 tCO2eq / tH2) - H2-based fuels: 70% - fossil fuel comparator: 94g CO2e/MJ	Calculation is to be based on methodology specifified in D.A. to Art. 28 REDII or ISO standards 4067:2018 or 14064-1:2018	- Taxonomy Regulation: entered into force on 12/7/20 - Climate D.A.: entered into force on 1/1/22
Revised Gas Markets Directive	Low-carbon hydrogen, low-carbon H2-based fuels	all	70% relative to fossil fuel comparator (not defined in Directive)	In D.A. to Art. 8 of proposed Gas Markets and Hydrogen Directive	- D.A.: to be adopted until end of 2024 - Directive: to be transposed into national law until end of 2023

Life-cycle analysis requires specifying system boundaries

Total emissions from the use of powerfuels

= emissions from inputs + emissions from processing + emissions from transport/distribution + emissions from combusting the fuel in its end-use - emission savings from carbon capture and geological storage



*applicable to single value-added processes, e.g. electrolysis alone
**Non-exhaustive, schematic representation of LCA system boundaries

D.A. to Art. 28 defines fossil fuel comparator as well as formula for assessing GHG emissions savings from RFNBOs

- **Greenhouse gas emission savings** from RFNBOs are to be calculated by comparing their lifecycle emissions to a fossil fuel comparator (E_F):

$$\text{Savings} = (E_F - E) / E_F$$

  - E_F is set at **94 gCO2eq/MJ** for all powerfuels, including **hydrogen**

- **Total GHG emissions** from the production and use of RFNBOs are calculated as the sum of emissions from supply of input, processing, transport and distribution, and end use, minus emission savings from carbon capture and geological storage

$$E = e_i + e_p + e_{td} + e_u - e_{ccs}$$

  - All emissions associated with inputs like **electricity**, **heat** and consumable materials used in the **capture process of CO2** are to be be **included**
  - Emissions from the **manufacture** of **machinery** and **equipment** and emissions from compressing and distribution of hydrogen for its direct use in vehicles are **<u>not</u> taken into account**

Suggested methodology for assessing GHG emissions saving: implications for powerfuels production

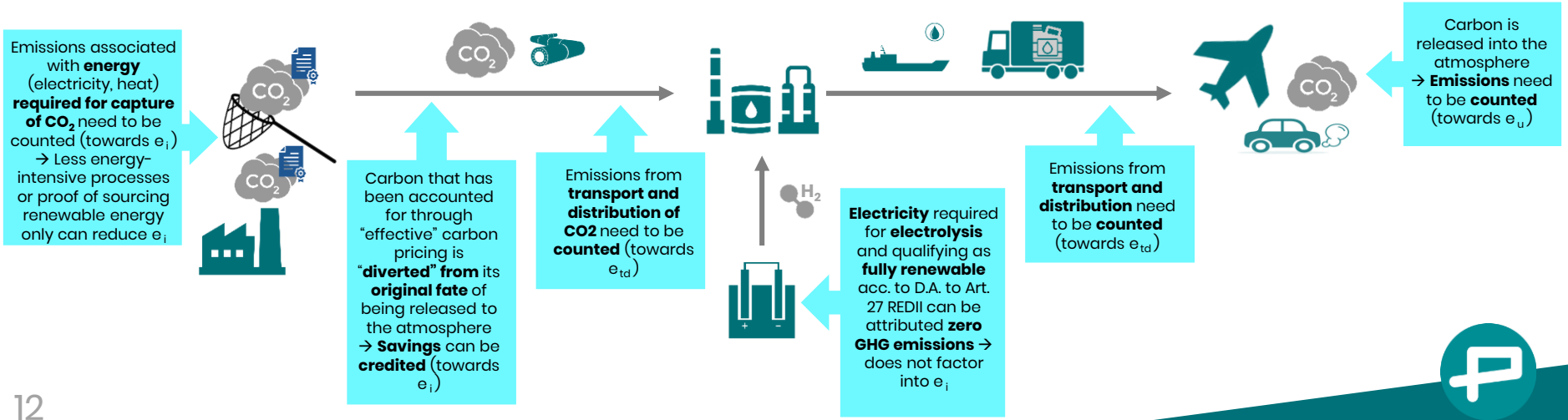
- ***Example***: Production of synthetic kerosene from green hydrogen + industrial carbon (from plant covered by EU ETS)

Required emission savings = 70%

→ $(E_F - E) / E_F \geq 0.7$

→ $(94\ gCO2eq/MJ - E) / 94\ gCO2eq/MJ \geq 0.7$

→ **$E \leq 28.2\ gCO2eq/MJ$**



Alliance's analysis and policy recommendations

Provisions for accounting for specificities of powerfuels production in proposed methodology

Electricity used for hydrogen production

- **Option 1:** Electricity used fully renewable according to D.A. to Art. 27 REDII → can be attributed GHG emissions of zero
- **Option 2**: Number of full-load hours does not exceed number of hours in which the marginal price of electricity was set by RE installations or nuclear power plants in the preceding year → can be attributed GHG emissions of zero
- **Option 3**: Grid electricity was used and neither 1) nor 2) apply → to be attributed country-specific GHG emissions value according to part C of the Annex

Co-processing and co-generation

- **Case 1:** The output of a process does not fully qualify as RFNBO (e.g. co-processing of renewable hydrogen and fossil inputs in refineries) → share in the total output is to be determined by dividing the relevant renewable energy input into the process by the total relevant energy inputs
- **Case 2:** a process yields multiple co-products (e.g. jet fuel and petrol) → GHG emissions are to be allocated to these co-products based on rules following physical causality and energy content

CO2 used as a feedstock for production of carbon-based powerfuels

- **Option 1** (*until 2035*): CO2 from a fossil point source accounted for via "effective" carbon pricing
- **Option 2:** CO2 from a biogenic point source that meets sustainability criteria of REDII
- **Option 3:** CO2 from ambient air
- **Option 4:** CO2 from a geological source where CO2 was previously released naturally

Assessment of D.A. to Art. 28 REDII

General support of:

- **Proposed calculation of greenhouse gas emission savings** from RFNBOs in reference to fossil fuel that they replace
- **Proposed calculation of total GHG emissions** following a **cradle-to-grave** approach
  - Emissions associated with energy requirements of the **capture process of CO_2** can be significant and should be included
  - Emissions from the **manufacture of machinery and equipment** are likely to be rather insignificant when assessed over the entire lifetime operation of the plant; therefore **acceptable to be dismissed**

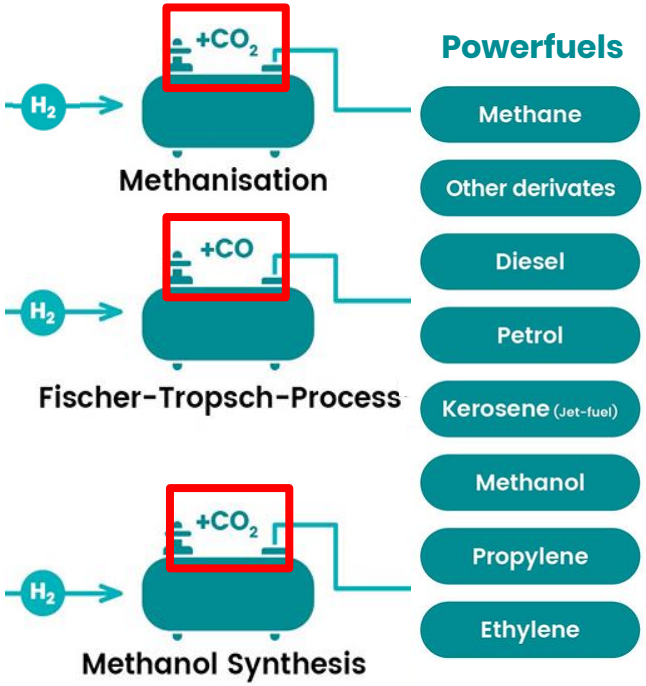
Further discussion and clarification needed

- Fossil fuel comparator of **94 gCO_2eq/MJ** for **hydrogen** (equivalent to ~11.3 $kgCO_2eq/kg$ H2) appears to be rather low in view of life-cycle emissions of "grey" hydrogen of ~ 13-15 $kgCO_2eq/kg$ H2

  → suggestion to change it to **104 gCO_2eq/MJ**
- **Criteria** for **attributing electricity GHG emissions of zero** not fully aligned with D.A. to Art. 27 REDII → clarification of what classifies as "renewable" and can be credited towards RE targets needed
- Rules on how to **quantify renewable fuel content** when processes do **not produce discrete volumes** that are **renewable or fossil** are not clear → should allow for the volume of the finished product(s) to be administratively quantified into notional non-renewable and renewable portions with different respective GHG intensities

Specification of the role of different carbon sources for RFNBO production

CO_2 as a feedstock for powerfuels production



Powerfuels

- Methane
- Other derivates
- Diesel
- Petrol
- Kerosene (Jet-fuel)
- Methanol
- Propylene
- Ethylene

Requirement: CO_2 for powerfuels production should not cause additional net emissions

Task: Make technologies market ready to supply sustainable CO_2 for powerfuels

Challenge: provide regulatory certainty on criteria to assess eligibility of potential carbon sources for powerfuels producution

Classification of potential carbon sources

CO2 from the atmosphere

Ambient air
0,042%

Stationary Fossil Point Sources

Power Generation (Fossil)

Coal
12-15%

Natural gas
3-10%

Fuel oil
3-13%

Industrial Point Sources

Chemical industry

Ethylene
10-12%

Ammonia
Up to 100%

Refineries
3-13%

Other industrial processes

Cement
14-33 %

Steel & Iron
15%

Other industries

Stationary Biogenic Sources

Combustion-based

Heat and Power Station
10-17 %

Bio-technological

Biogas upgrading
30 - 50 %

Fermentation
>99 %

CO2 content in vol%

Low carbon content

Very high carbon content

Adapted from:
Rodin et al., 'Assessing the Potential of Carbon Dioxide Valorisation in Europe with Focus on Biogenic CO2', *Journal of CO2 Utilization* 41 (2020);
Naims, 'Economics of carbon dioxide capture and utilizazion – a supply and demand perspective', Environmental Science and Pollution Research 23 (2016);
Eriksson, 'Biogenic carbon dioxide as feedstock for production of chemicals and fuels', LTH Lunds University, 2017
BMBF, ‚Zukünftige Nutzung von CO2 als Rohstoff', 2020

The role of stationary fossil point sources

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Draft D.A. to Art. 28 REDII proposed to phase out use of CO2 from all stationary fossil point sources until 2035

Provisions in Delegated Act to Art. 28 REDII

Fossil point sources are only admissible **until 2035**, and only if they are accounted for in an **"effective " carbon pricing** mechanism

Fuels deliberately burnt for the specific purpose of producing CO2 are **excluded**

Remaining questions

All fossil point sources (energy generation plants and industrial point sources) are **treated equally** and classified as "unsustainable" – justified for unavoidable industrial process emissions?

In case **no 'effective' carbon pricing** is in place: Possibility of introducing **"CBAM-like" mechanism** for carbon-based RFNBOs to account for emissions from industrial carbon sources?

Proposed differentiation between “sustainable“ and “unsustainable“ carbon only becomes relevant in the long-term

Proposed D.A. classifies all fossil carbon sources as admissible in the short to mid-term, and inadmissible after 2035

- Recital (7): The **origin of carbon** used for the production of RFNBOs [...] **is not relevant** for determining emission savings of such fuels **in the short to medium term**, as plenty of carbon sources are available and can be captured without hindering the progress of decarbonisation.
- In the **long-term,** the use of these RFNBOs [...] produced **using non-sustainable carbon** is **not compatible with climate neutrality** as the use of carbon from non-sustainable processes entails a continued use of non-sustainable fuels and the related emissions. Capturing of emissions from non-sustainable sources should therefore only be considered as avoiding emissions **until 2035.**

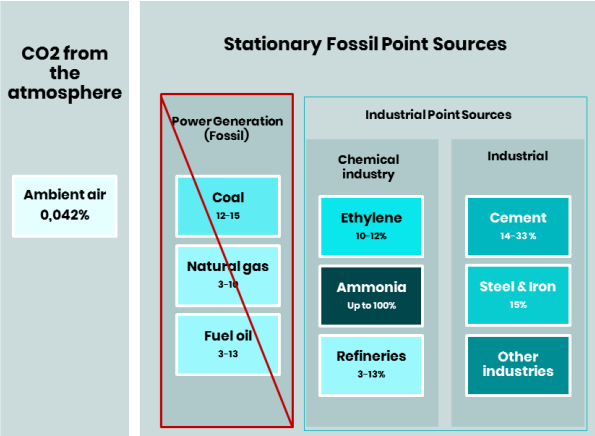
Admitting use of CO2 from stationary fossil point sources for RFNBO production should be subject to three conditions

- Capturing CO2 from fossil point sources (*unsustainable carbon sources*) **contributes to the market ramp-up of CCU** and **powerfuels technologies**, which require sufficient supply of carbon
- **Stationary fossil point sources** can provide the CO2 needed for the production of carbon-based powerfuels under **three conditions**:

1. *All emissions are **accounted** for and **double-counting** is avoided*
2. ***No lock-in effect** is created, slowing the transformation to climate neutrality*
3. ***Sustainable carbon** is not sufficiently available*

Risk of lock-in effects: more imminent for fossil energy generation plants than for industrial point sources

- For **power generation,** there are readily available alternatives to fossil-based power plants for an accelerated decarbonisation
  - Carbon capture from these plants poses the risk of slowing down this transformation
- For **industrial point sources**, the picture is more complex
  - Emissions from some industrial sources are difficult to avoid completely even in the mid- to long-term
  - Carbon capture could support the transformation of the industrial sector and the ramp-up of powerfuels production



Suggestion

- **Exclude the use of carbon from fossil power plants in D.A. to Art. 28**
- **Make sure industrial point sources fulfil above-mentioned criteria**

Classification of fossil point sources in proposed D.A. is based on coverage of EU ETS – not on (un)avoidability

Commission's D.A. treats all fossil carbon sources as equally "unsustainable"

- Recital (11) : Emissions from existing use or fate include all **emissions in the existing use or fate** of the input that are **avoided when the input is used for fuel production**. This includes CO2 that was captured and incorporated into the fuel provided that at least one of the following conditions is fulfilled:
  - (a) The CO2 has been **captured from an activity listed under Annex I of Directive 2003/87/EC** and has been **taken into account upstream** in an **effective carbon pricing** and is incorporated in the chemical composition of the fuel **before 2036**, or;
  - (b)The CO2 has been captured from the air, or;
  - (c) The captured CO2 stems from the production or the combustion of biofuels, bioliquids or biomass fuels complying with the sustainability and greenhouse gas saving criteria and the CO2 capture did not receive credits for emission savings from CO2 capture and replacement, set out in Annex V and VI of Directive (EU) 2018/2001, or;
  - (d) The captured CO2 stems from a geological source of CO2 and the CO2 was previously released naturally;

Definition of (un)avoidable industrial emissions should be based on feasibility to produce products without causing them

(Some) industrial point sources will remain relevant for powerfuels production in the foreseeable future

To determine whether they should admissible in the mid- to long-term, differentiation between two categories of industrial CO2 is needed:

Carbon emissions that stem from use of fossil fuels for generating energy, e.g. high process heat for steel production

Avoidable by switching fuels or generating heat via electricity

vs.

Carbon emissions that predominantly stem from inherent carbon released in the industrial process, e.g in cement production

Unavoidable if product / raw material in question is to be continued to be produced

Suggestion for a definition of unavoidable industrial emissions:

→ ***Unavoidable CO_2 emissions*** *refer to those carbon dioxide emissions that occur in the* ***production process of goods or raw materials****, and* ***do not stem*** *from the* ***energy consumption*** *of an industrial process or the* ***combustion*** *of fossil fuels. The production of a given quantity of these products or raw materials would thus not be feasible without causing these emissions.*

→ *Some of the emissions occurring in the production process of the products or raw materials referred to above might be minimized by efficiency gains, switch of raw materials, and technological progress. To ensure that these reduction potentials are seized, only process emissions that do not exceed benchmark emissions set by the 20 % best performing companies in a given year by more than 10 % can be counted as unavoidable at that time.*

D.A. to Art. 28 should include considerations of avoidability

- CCU at industrial point sources **contributes to the market ramp-up** of CCU technologies and powerfuels
- (Certain) avoidable industrial emissions should be eligible as a possible carbon source in a **transitional period.**
- Clear and binding **phase-out plan** for using avoidable industrial emissions must be in place
  - → From **2030** onwards, using CO2 from avoidable fossil carbon sources for powerfuels production should no longer be possible if the fuel is to be classified as renewable‘
- **Unavoidable industrial point sources** remain possible carbon sources as long as their emissions are accounted for at the point of capture (e.g. within carbon market)

Suggestion

- **D.A. to Art. 28 needs to include a reference to the distinction between avoidable und unavoidable industrial emission**
- **Strengthening of phase-out plan for avoidable industrial emissions and more flexibility for unavoidable emissions**

Direct Air Capture is one of several possible carbon sources

Commission's D.A. mentions Direct Air Capture as one possible carbon source

- Recital (11) : Emissions from existing use or fate include all emissions in the existing use or fate of the input that are avoided when the input is used for fuel production. This includes CO2 that was captured and incorporated into the fuel provided that at least one of the following conditions is fulfilled:
  - (a) The CO2 has been captured from an activity listed under Annex I of Directive 2003/87/EC and has been taken into account upstream in an effective carbon pricing and is incorporated in the chemical composition of the fuel before 2036, or;
  - **(b) The CO2 has been captured from the air, or;**
  - (c) The captured CO2 stems from the production or the combustion of biofuels, bioliquids or biomass fuels complying with the sustainability and greenhouse gas saving criteria and the CO2 capture did not receive credits for emission savings from CO2 capture and replacement, set out in Annex V and VI of Directive (EU) 2018/2001, or;
  - (d) The captured CO2 stems from a geological source of CO2 and the CO2 was previously released naturally;

CO_2 from Direct Air Capture will become the dominant carbon source, but faces enormous challenges

Delegated Act:

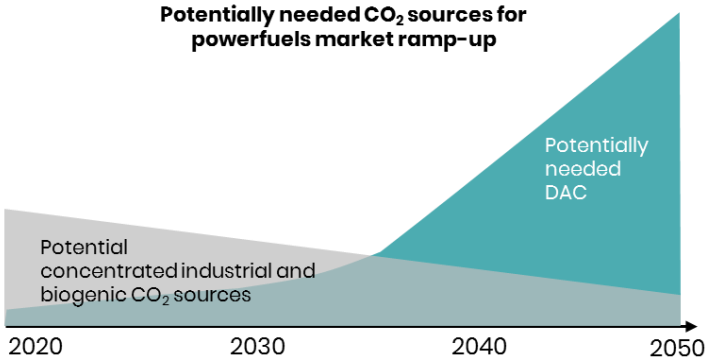
- Direct Air Capture as one possible carbon source
- From 2036 only sustainable carbon eligible

→ *No further provisions concerning DAC in D.A. to Art. 28*

Challenge:

- demand for CO2 from DAC will increase drastically over time.
- DAC is very cost-intensive, has high energy demand and needs innovation and scaling quickly
- RFNBOs as one possible market for DAC

→ **D.A. does not set sufficient incentives for DAC**



Several additional aspects should be incorporated in D.A. to Art 28 concerning DAC

High Energy demand

- Direct Air Capture with high thermal and electric energy demand
- Necessary GHG emissions savings require renewable energies

Electricity Supply

- Renewable electricity is required
- Attribution of zero emissions for RE with guarantees of origin instead of strict criteria of D.A. to Art. 27

Double-Counting

- Negative emissions by Direct Air Capture cannot be credited when using carbon in RFNBO
- Criteria also apply for imports

Incentives and Funding

- Incentivising of DAC in D.A. to Art. 28
- Supply and demand side instruments as wells as a favourable market design

Suggestion

- **D.A. to Art. 28 should not remain agnostic regarding different carbon sources, but favour sustainable carbon from the beginning. Ramp-Up of DAC requires additional efforts and D.A. can provide incentives**
- **Support for DAC and sustainable carbon requires supply and demand side instruments, which can be incorporated in D.A. to Art. 28 or other EU regulation (with a reference in D.A. to Art. 28)**
- **High energy demand by Direct Air Capture should not be met by fossil energies. However, strict RE criteria like in D.A. to Art. 27 will hinder the development of DAC.**

Ramp-up of Direct Air Capture (DAC) technologies needs supply and demand-side instruments

Favorable market conditions

+ increasingly stringent EU ETS and carbon price
+ Phase-out of free allocation of emission allowances

Supply Side instruments

+ CCfD-like support mechanisms
+ Drive down costs by scaling up CCUS/NET technologies
  - Technology-specific remuneration
  - Development of CO_2 infrastructure (distribution, storage etc.)

Push

Development of 'sustainable' carbon sources

Pull

Demand Side instruments

+ Quota for DAC increasing over time
+ timeline for phase-out of (avoidable) industrial point sources

Biogenic carbon sources must comply with sustainability criteria

Commission's D.A. considers sustainable biogenic carbon an eligible carbon source

- Recital (11) : Emissions from existing use or fate include all emissions in the existing use or fate of the input that are avoided when the input is used for fuel production. This includes CO2 that was captured and incorporated into the fuel provided that at least one of the following conditions is fulfilled:
  - (a) The CO2 has been captured from an activity listed under Annex I of Directive 2003/87/EC and has been taken into account upstream in an effective carbon pricing and is incorporated in the chemical composition of the fuel before 2036, or;
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  - (d) The captured CO2 stems from a geological source of CO2 and the CO2 was previously released naturally;
- Annex C: In addition, **all the upstream emissions** from the **cultivation, harvesting, collection, processing and transport** of biomass shall be considered. **Peat** and the components of waste materials that are from fossil origins shall be **treated as a fossil fuel**.

Strict criteria for biogenic carbon sources should apply – the potential is limited

- Biogenic carbon emissions can count as climate neutral if only those emissions are released that had been absorbed before
- However, due to different land management practices, transport, emissions from processing, etc. the production of biomethane or other products comes along with a GHG footprint
- Biogenic carbon can count as a **sustainable carbon source** as long as other adverse effects are avoided or minimized, such as

Additional land-use or conversion of natural areas into cropland for biomass

Loss of **biodiversity**

Additional GHG emission connected with **land management**

High GHG emissions from **processing and transport**

- **Sustainability criteria** already exist for the primary use of biomass (e.g. in RED II)
- Potential of biogenic carbon is limited to the availability of sustainably harvested biomass and the amount of organic waste

The use of biogenic carbon creates the need for further deliberations, also in D.A. to Art. 28

Delegated Act:

- Reference to sustainability criteria
- Inclusion of all upstream emissions
- Peat considered as fossil fuel

Questions:

- Dealing with imported RFNBOs
- Further incentives for sustainable biomass
- Expanded use of biomass for RFNBO production and thus competition for land

Challenge and considerations:

- Strict sustainability criteria reducing potential for RFNBO production outside the EU **vs**. high standards for RFNBOs that need to be guaranteed
- Focusing on sustainable carbon with low GHG impact and high environmental integrity could create additional incentives for agriculture and biomass producers to implement low-carbon management practices

Suggestion

- **Reiterate strict sustainability criteria, reference other existing sustainability criteria like in the LULUCF regulation and maintain standard also for imported RFNBOs through rigid certification**
- **Make sure production of biogenic carbon does not constitute the defining business case (<10% of the economic value)**
- **Favour sustainable biogenic carbon with a low GHG impact**

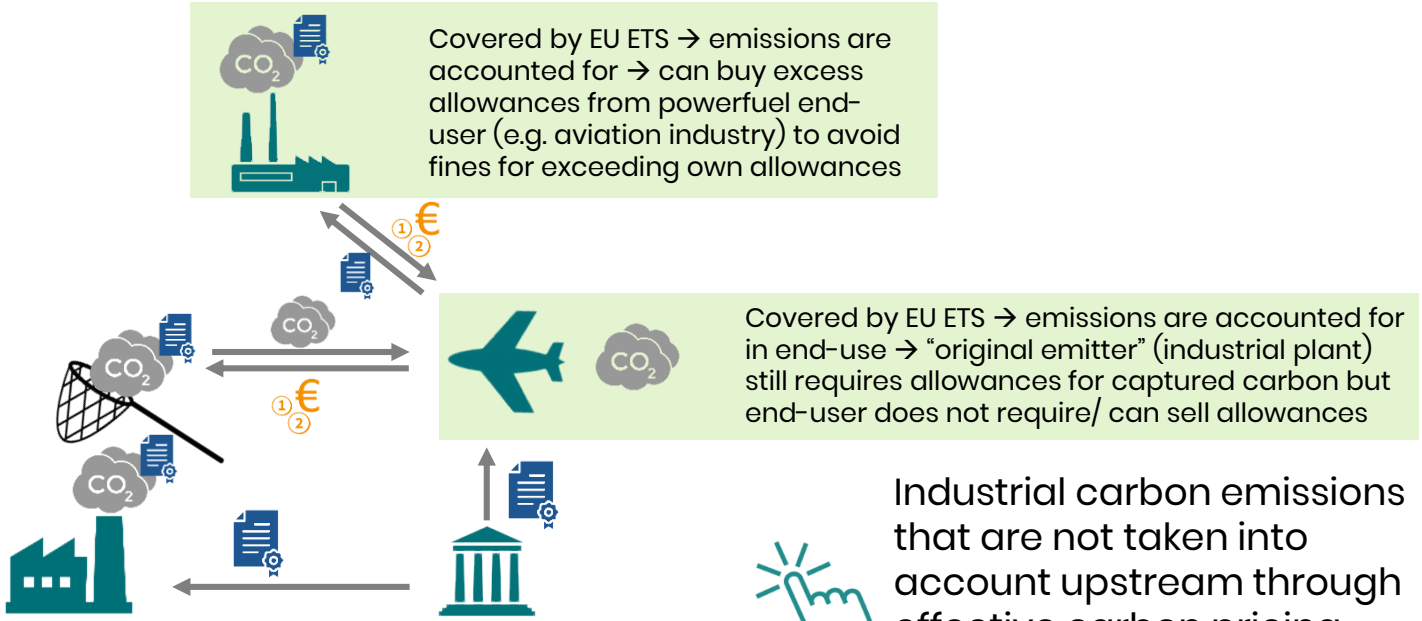
Accounting CO_2 used as feedstock for RFNBOs, and incentivising sustainable carbon sources

Accounting of emissions at end-use stage: Proposal of the EU Commission for revision of ETS Directive

Commission's proposal for revision of ETS Directive on emissions accounting for CO_2 used as a feedstock for the production of carbon-based powerfuels

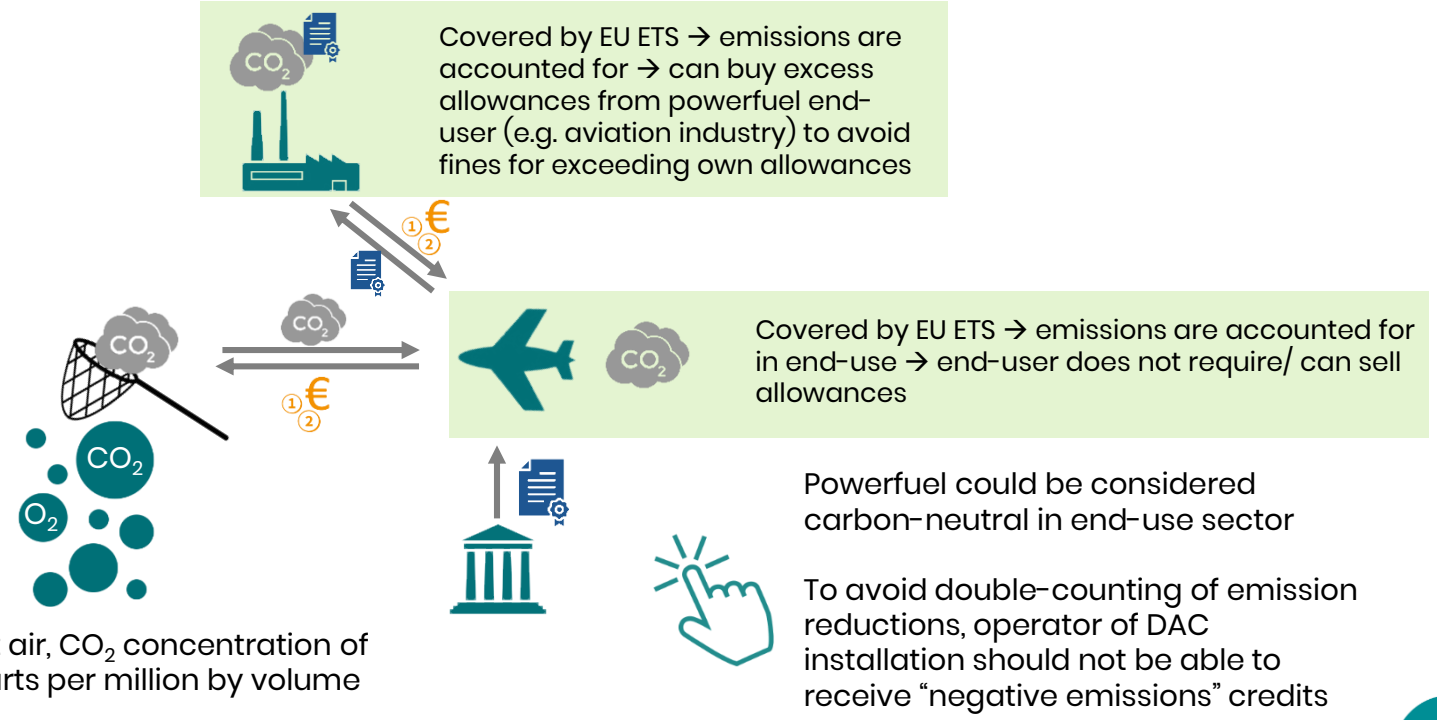
- Recital (13): GHG that are not directly released should be **considered emissions under ETS** and **surrender allowances**, if not permanently stored or bound in products
- Recital (40) "Where RFNBOs are produced **from captured carbon dioxide** under an **activity covered by the ETS**, the emissions should be accounted under that activity".
- To avoid double-counting or evasion, Art. 1 (16) empowers the EC to adopt **implementing acts** on how to account for the eventual CO2 release

Suggested emissions accounting mechanism: Carbon captured from industrial point sources in ETS and used in an ETS sector

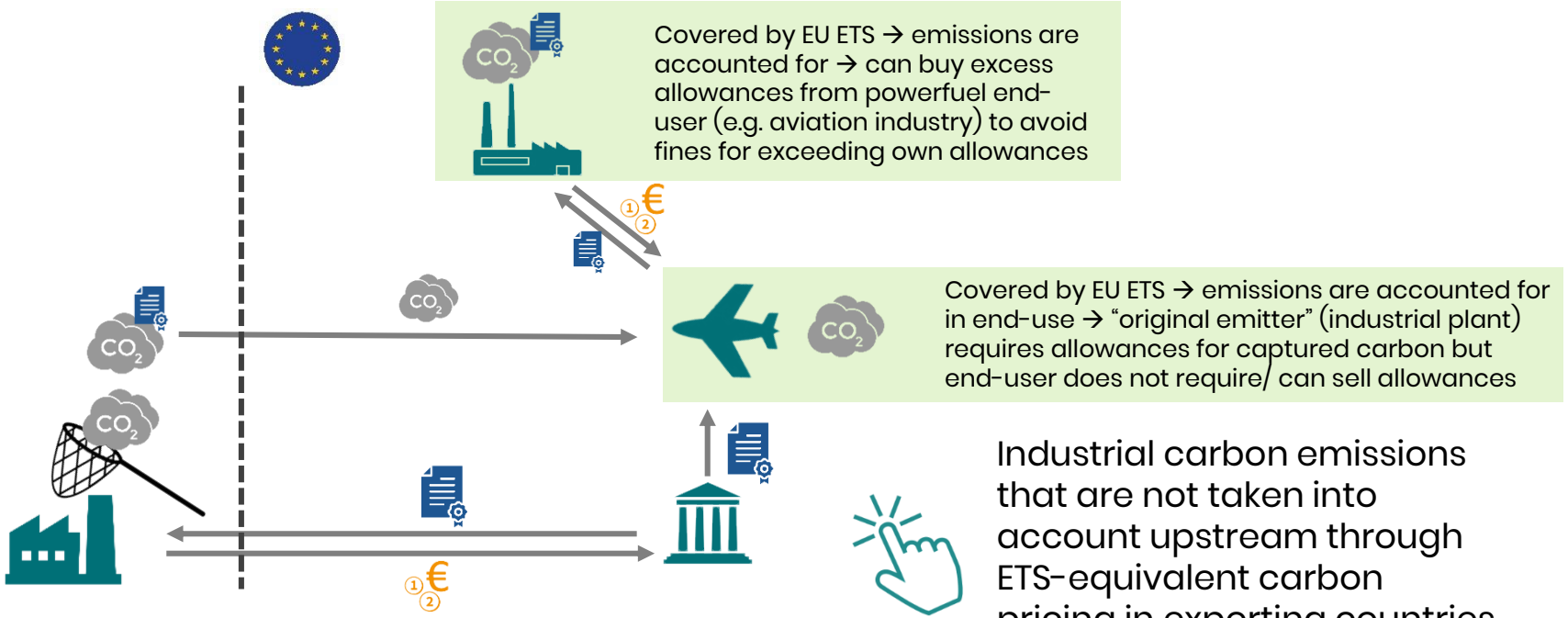


Industrial carbon emissions that are not taken into account upstream through effective carbon pricing cannot be considered as being avoided

Suggested emissions accounting mechanism: Carbon captured from ambient air using DAC, and used in an ETS sector



Suggested emissions accounting mechanism: Carbon captured from industrial point sources outside ETS and used in an ETS sector



Industrial carbon emissions that are not taken into account upstream through ETS-equivalent carbon pricing in exporting countries could be accounted for via CBAM-aligned mechanism

Imports of carbon-based powerfuels – harmonise requirements and ensure effective accounting of emissions

Imports of RFNBOs

- Analogous criteria for sourcing electricity (renewability, additionality etc.) need to apply for producers exporting powerfuels to the EU under recognition of local conditions
- Clear, transparent and mandatory certification schemes for RFNBOs
- Which carbon sources should be eligible?
  - Same criteria as for EU apply; phase-out of avoidable fossil point sources would also apply to imports
  - For industrial carbon sources from countries without ETS-like carbon pricing systems in place, adjustments will need to be made at the border (CBAM?)

Recommendations (1/2)

1 Differentiating between different possible carbon sources

I Exclude non-sustainable carbon from fossil energy generation plants

- Avoid fossil lock-in effects
- Exclude use of carbon from fossil energy generation

II Distinguish between different industrial point sources

- Differentiate between avoidable and unavoidable industrial CO2 sources
- Phase-out avoidable carbon sources by 2030

III Define unavoidable industrial carbon sources

- Develop a clear and concise definition of unavoidable industrial emissions (e.g. in revision of RED II).
- Based on this definition, exclude unavoidable industrial emissions from category of "unstainable carbon"

2 Incentivising sustainable carbon

IV Add provisions on the electricity supply of CCU / DAC installations

- make sure high energy demand by DAC is not met by fossil energies
- Promotion and support of DAC can contribute to the expansion of RE.
- No strict Art. 27 criteria for RE supply

V Integrate specific support for DAC

- actively support circular carbon sources with a reference to it in D.A. to Art. 28
- include provisions favouring sustainable carbon over unsustainable carbon from the beginning via supply and demand side instruments.
- clear trajectory for phase-out of unsustainable carbon combined with gradually increasing quota for use of DAC

VI Promote sustainable biogenic carbon

- Focus on sustainably harvested biomass
- Avoid negative effects of biomass production; make sure, biogenic carbon is not the defining business case
- Reference/reiterate strict sustainability criteria, complementing those where necessary (e.g. LULUCF regulation)

Recommendations (2/2)

3 Avoiding double-counting and setting standards for import

VII Avoid double-counting

- Require to surrender allowances for (avoided) emissions at the point of capture
- Stringently account for emissions from land use for biogenic carbon in the LULUCF sector

VIII Ensure adequate accounting of emissions for imports

- Ensure that emissions allowances are surrendered for emissions not permanently stored
- Make sure no negative emissions credits for DAC in other countries are issued when used to produce RFNBOs

IV Develop robust certification

- Develop clear, transparent and mandatory certification scheme
- Allow imports without limitations only RFNBOs with certified sustainable carbon sources
- Extend sustainability criteria for biogenic carbon also outside the EU (criteria for import)

4 Reviewing attribution of GHG emissions to electricity and renewable share of outputs

X Align criteria for sourcing electricity with D.A. to Art. 27 REDII

- Regarding attribution of GHG emissions to electricity a an input for electrolysis, clarify what classifies as "renewable" and can be credited towards RE targets needed

XI Review fossil fuel comparators to represent actual GHG intensity

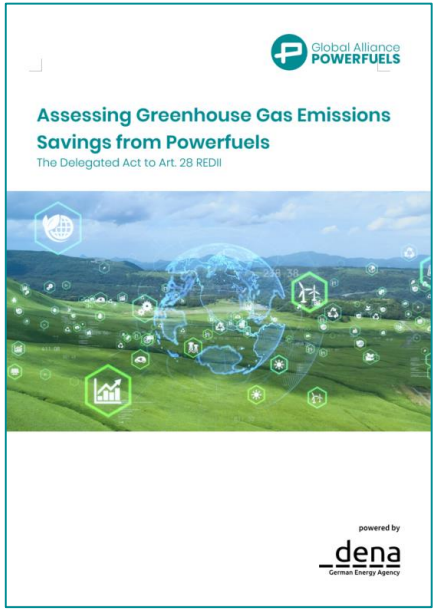
- Change fossil fuel comparator for hydrogen to 104 gCO2eq/MJ (requiring max. life-cycle emission o green H2 of ~3.4 kg CO2eq/kg H2)

XII Clarify rules on how to quantify renewable share of outputs from co-processing

- Surrender allowances for (avoided) emissions at the point of capture

Global Alliance Powerfuels will publish a discussion paper of on the topic following today's webinar

- Will be published on our website (www.powerfuels.org) in the upcoming days
- A copy will be sent to all attendees
- Webinar aims to give an impetus to the discussion on the "overlooked" delegated act to Art. 28 REDII – please reach out for comments or questions (powerfuels@dena.de)!



Q & A and Discussion

Thank you for your attention

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