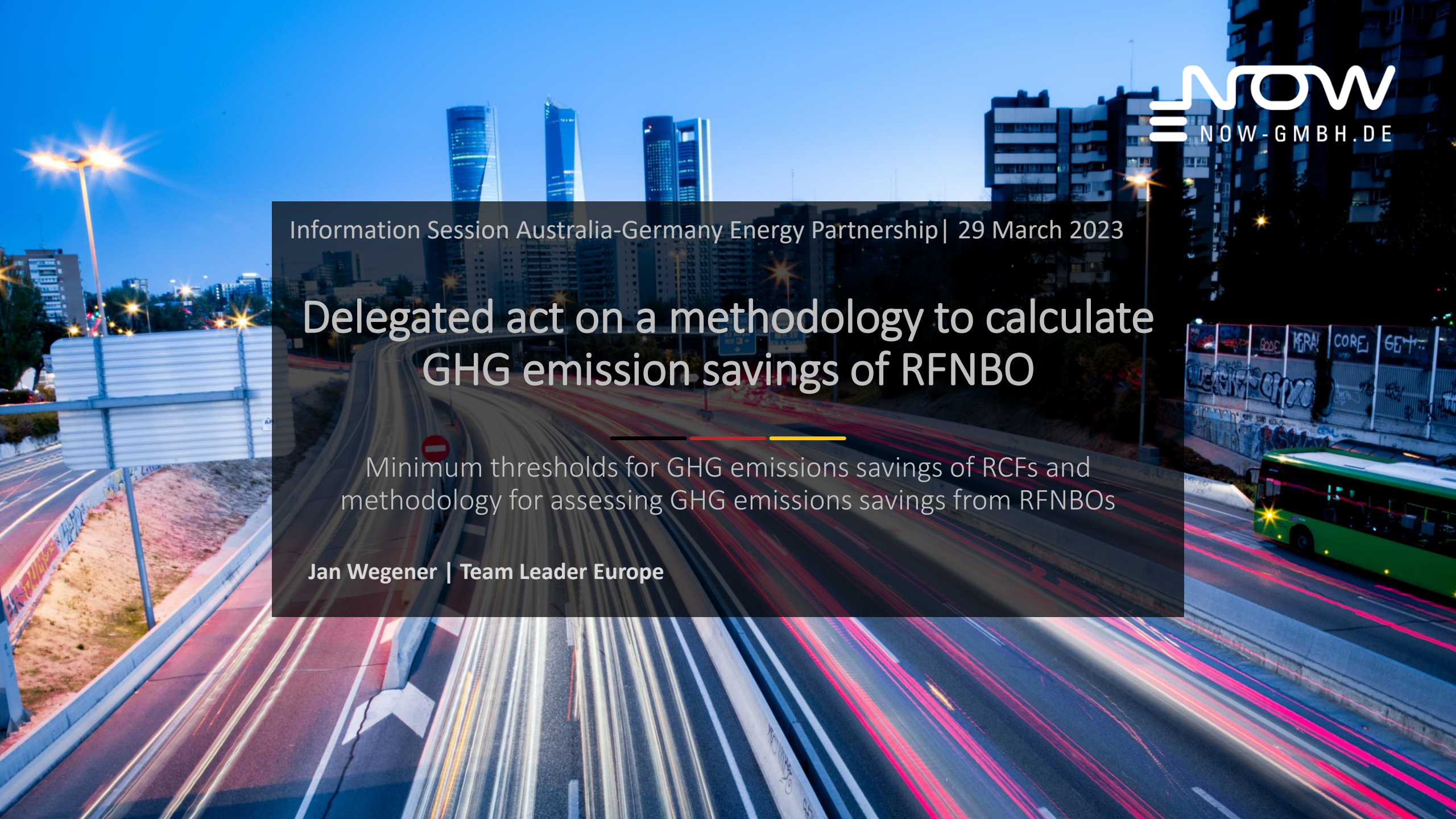


Information Session Australia-Germany Energy Partnership| 29 March 2023

Delegated act on a methodology to calculate GHG emission savings of RFNBO

Minimum thresholds for GHG emissions savings of RCFs and methodology for assessing GHG emissions savings from RFNBOs

Jan Wegener | Team Leader Europe

RED II – 30 Nov '16:

Publication „winter package"
(Clean energy for all Europeans)

RED II – 14 Jun '18:

Political agreement *by Council and EP*

RED II – 13 Nov '18:

Adoption by EP

RED II – 21 Dec '18:

Official publication RED II

RED II 4 Dec '18:

Adoption by Council

21 Dec 20:
German transposition of RED II in *37. BImSchV*

RED III – 14 Jul '21:

Publication *Fit for 55* package

RED II – 21 May '22:

1st leak on DA 28

RED III – 18 May '22:

REPowerEU Plan

RED II – 31 Dec '21:

Deadline Publication DA 28

RED II – 25 Nov '22:

2nd Leak on DA 28

RED II – 17 Jun '22:

End of public consultation on DA 27

RED III – 7 Feb '23:

Boycott of trilogue by EP

RED II – 10 Feb '22:

Adoption DA 27 and DA 28

RED II– 16 Mar '23:

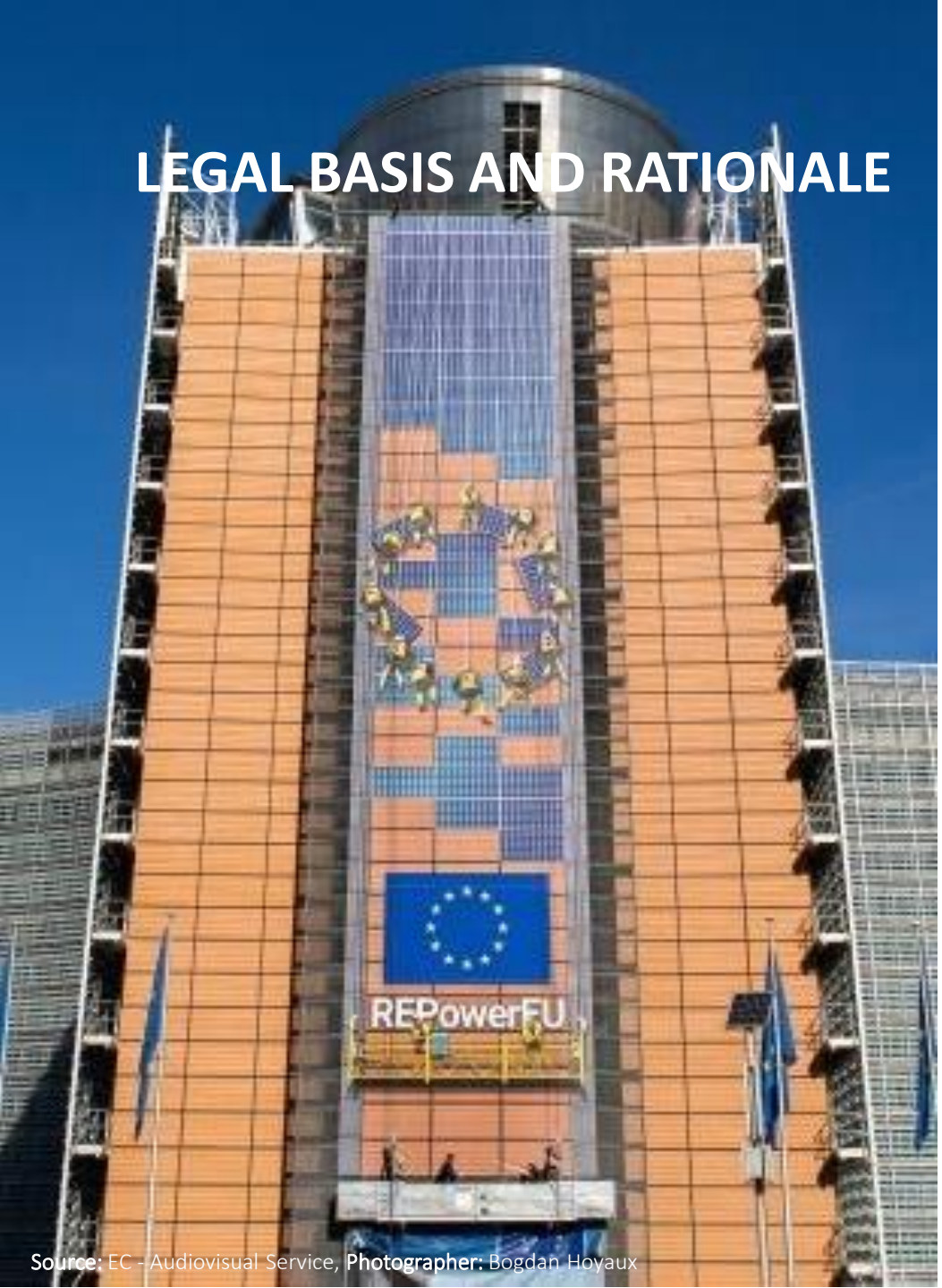
Motion to reject DA 27

2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023

DELEGATED ACTS

- **Designed and adopted by the European Commission** based on articles 290 and 291 of the Treaty on the Functioning of the European Union:
  - „supplement or amend certain **non-essential elements** of the legislative act“
  - No vote of the co-legislators (European Parliament and Council) necessary
  - Empowerment of Commission can be withdrawn at any time by Council or Parliament with **qualified majority**
- Supported by an expert committee (comitology): **Expert Group on Renewable Fuels**
- **Entry into force** after two months, which can be prolonged by another two months by the co-legislators
  → Extension of 2 months by EP: publication at the earliest on 10 June 23
  → Motion to reject DA 27 issued on 16 March 2023

LEGAL BASIS AND RATIONALE



Source: EC - Audiovisual Service, Photographer: Bogdan Hoyaux

- RED II established threshold for GHG savings from RFNBOs (incl. H2) : at least 70 % from 1 January 2021
- Fossil fuel comparator: 94 gCO_2eq/MJ
- HOWEVER:
  - No minimum threshold for recycled carbon fuels (RCFs)
  - No details on how to assess GHG savings from RFNBOs
- AIM: forego double-crediting of fuels

RFNBOS AND RCFS IN RED II

According to Art. 2 (1) RED II

RFNBOs ‘renewable liquid and gaseous transport fuels of non-biological origin’ =

liquid or gaseous fuels which are used in the transport sector other than biofuels or biogas, the **energy content** of which is derived from renewable sources **other than biomass**

RCFs ‘recycled carbon fuels’

liquid and gaseous fuels that are produced from liquid or solid waste streams of non-renewable origin which are **not suitable for material recovery** in accordance with Article 4 of Directive 2008/98/EC, or from waste processing gas and exhaust gas of non-renewable origin which are produced as an **unavoidable and unintentional consequence** of the production process in industrial installations

GHG EMISSIONS OF RFNBOS AND RCFS

Calculation of GHG emissions from production and use

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

Σ E = total emissions from the use of the fuel (gCO_2eq / MJ fuel)

e_i = e i elastic + e i rigid - e ex-use: emissions from supply of inputs (gCO_2eq / MJ fuel)

e i elastic = emissions from elastic inputs (gCO_2eq / MJ fuel)

e i rigid = emissions from rigid inputs (gCO_2eq / MJ fuel)

e ex-use = emissions from inputs' existing use or fate (gCO_2eq / MJ fuel)

e_p = emissions from processing (gCO_2eq / MJ fuel)

e_{td} = emissions from transport and distribution (gCO_2eq / MJ fuel)

e_u = emissions from combusting the fuel in its end-use (gCO_2eq / MJ fuel)

e_{ccs} = emission savings from carbon capture and geological storage (gCO_2eq / MJ fuel)

INPUTS

Calculation of GHG emissions from production and use

e_i

e i elastic = emissions from elastic inputs (gCO_2eq / MJ fuel)

> “elastic inputs are those whose supply can be increased to meet extra demand”, e.g. petroleum products from refineries, whose ratio can be adapted

e i rigid = emissions from rigid inputs (gCO_2eq / MJ fuel)

> „those whose supply cannot be expanded to meet extra demand.”, e.g. inputs for the production of RCFs and those that are diverted from their original use like electricity or heat generation

GHG EMISSIONS FROM ELASTIC INPUTS

Data sources

The GHG intensities of inputs other than electricity are shown in the table below:

	Total emissions gCO2eq/MJ	Upstream emissions gCO2eq/MJ	Combustion emissions gCO2eq/MJ
Natural gas	66.0	9.7	56.2
Diesel	95.1	21.9	73.2
Gasoline	93.3	19.9	73.4
Heavy fuel oil	94.2	13.6	80.6
Methanol	97.1	28.2	68.9
Hard coal	112.3	16.2	96.1
Lignite	116.7	1.7	115.0

Other sources if not included in the table: JEC-WTW report, the ECOINVENT database, official sources such as the IPCC, IEA or government, other reviewed sources such as the E3 and GEMIS database

CO_2 SOURCES

Until 2036*:

- Captured fuels from the combustion of fuels for electricity generation

Until 2040*:

- Captured fuels from energy activities (coke ovens, mineral oil refineries), production and processing of ferrous metals (steel works), mineral industry (cement, ceramic and glass manufacture) and other activities (timber and paper production)

*If the fuels have been taken into account upstream in an effective carbon pricing system

- Direct air capture
- Capture from the combustion of sustainable biofuels (cf. RED II, annexes V & VI) where no emission credits were claimed before
- Capture from the combustion of RFNBOs or RCFs
- Capture of CO2 from a geological source that would have occurred naturally

ELECTRICITY USE

- Electricity produced according to Art. 27 (3), RED II shall be attributed with GHG value of 0 gCO_2eq/MJ

Electricity taken from the grid (not fully renewable):

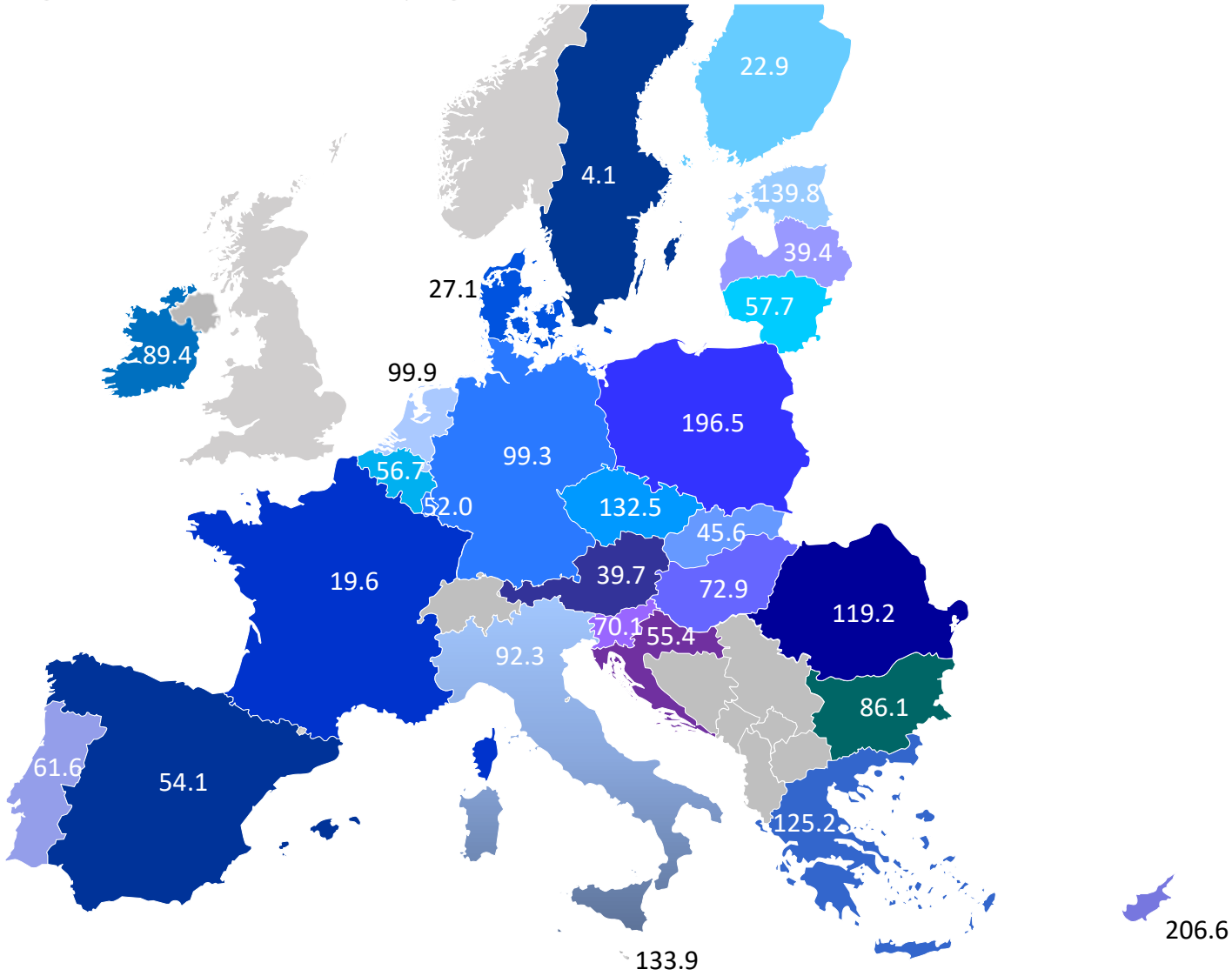
a) GHG emissions per **bidding zone** (part C of the Annex)

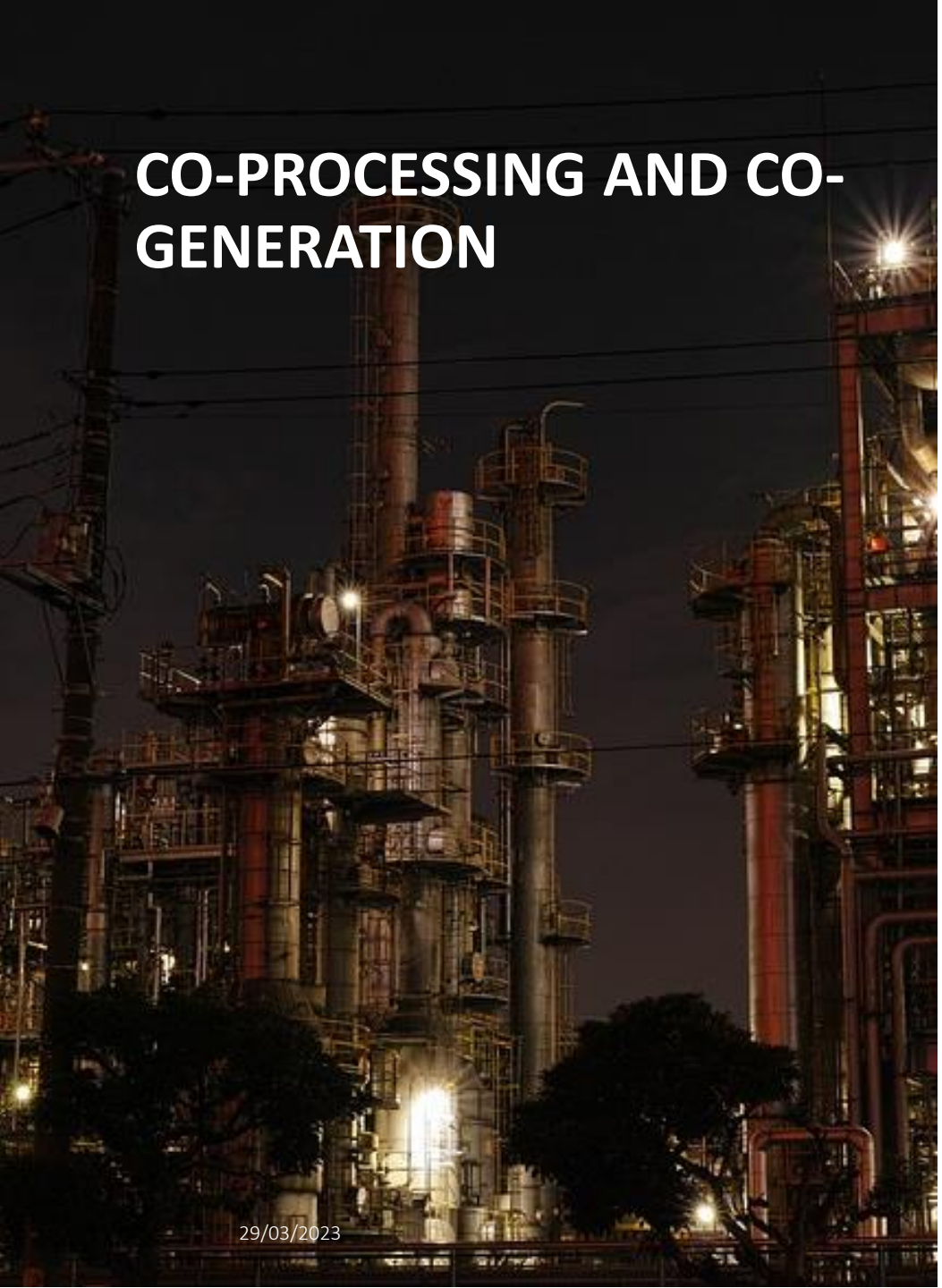
b) Attribution depending on full load hours of the installation producing the fuel: if number of full load hours ≤ number of hours in which the **marginal price of electricity** was **set by installations producing renewable electricity or nuclear power plants** in the preceding calendar year: grid electricity attributed with a greenhouse gas emissions value of 0 g CO2eq/MJ

c) GHG **value** of the **marginal unit generating electricity** at the time of RFNBO production in the bidding zone IF information is made publicly available by the TSO

EMISSION INTENSITY OF ELECTRICITY IN THE EU IN 2020

Emission intensity of generated electricity (g CO2eq/MJ)





CO-PROCESSING AND CO-GENERATION

Where RFNBOs and RCFs are only partially replacing a conventional input in a process:

- Distinction between conventional input and RFNBO/RCF input in the calculation of the GHG emissions intensity on a **proportional basis** of the energetic value of inputs
- Analogous approach with biomass

Challenge: proportional allocation of low GHG inputs reduces the amount of GHG reduction per product and hinders certification as <70% GHG intensity

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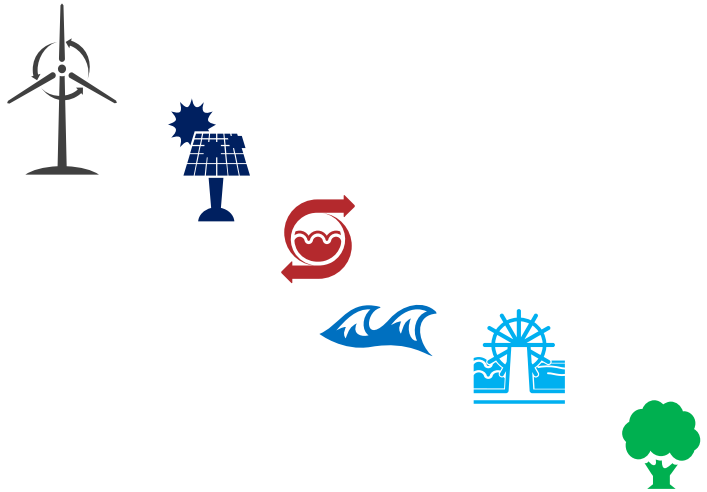
NOW
NOW-GMBH.DE

RENEWABLE ENERGIES, RFNBOS AND TRANSPORT IN RED II

According to Art. 2 (1) RED II

RE = Energy from renewable non-fossil sources,

- Wind
- Solar (solar thermal and solar photovoltaic)
- Geothermal energy
- Ambient energy
- Tide, wave and other ocean energy
- Hydropower,
- Biomass, landfill gas, sewage treatment plant gas, and biogas



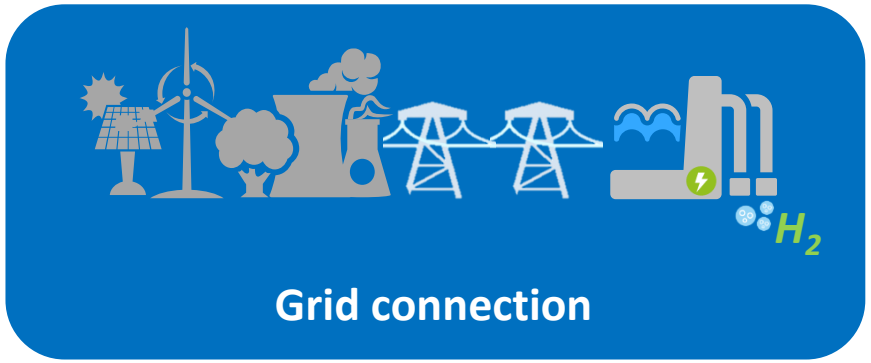
Art. 25 – Mainstreaming renewable energy in the transport sector

obligation on fuel suppliers to ensure share of RE in transport is at least 14 % by 2030

ACCOUNTING FOR RENEWABLE HYDROGEN

Extant possibilities according to art. 27 (3), RED II

- **Partly counting renewable H2:**
  in case of a grid connection accounting using the **average share of electricity from renewable sources** in the country of production, as measured **two years before** the year in question



- **Fully counting renewable H2:**
  - Direct connection between RE and electrolyser (no grid connection), if RE installation in operation **after or at the same time** as electrolyser
  - Connected to the grid but no electricity used from the grid and evidence of renewable electricity claimed only once

German energy mix in 2021