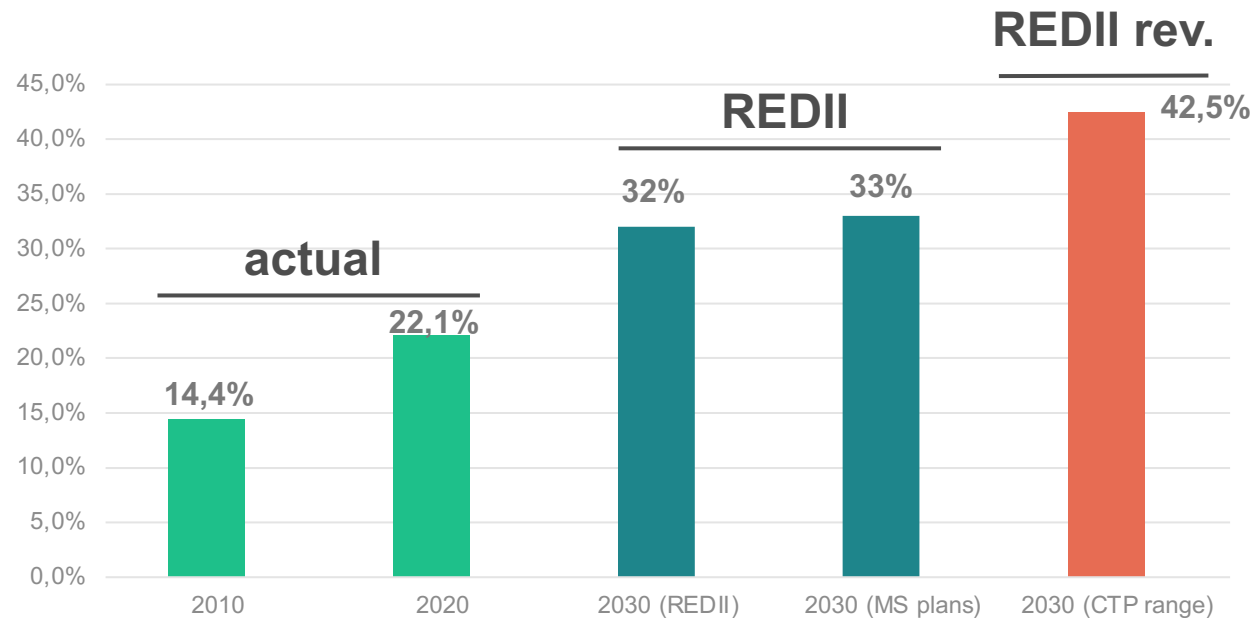
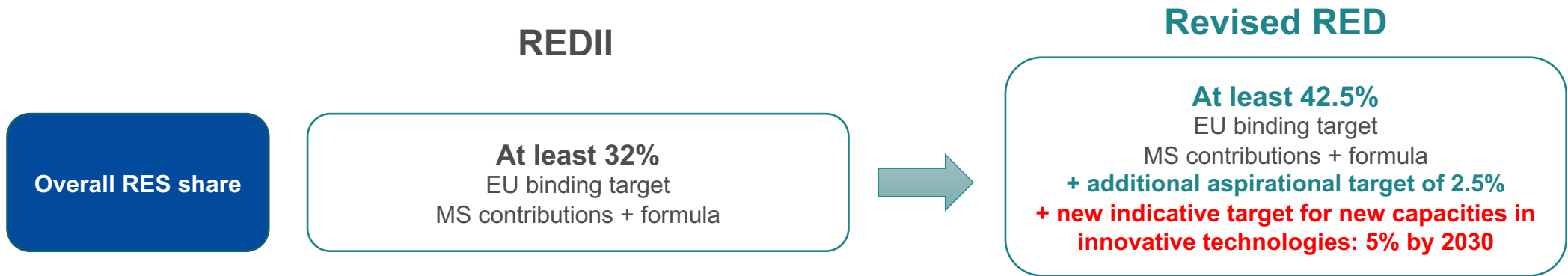




# The EU Approach for RFNBOs

January 2024

# New renewable energy EU target for 2030



Indicative trajectory between 2021 and 2030 for national contributions to the EU target:

- 18% by 2022
- 43% by 2025
- 65% by 2027

**Trajectories shall add up to the ref. points in 2022, 2025 and 2027 and to the EU 2030 binding RES target of at least 42.5%**

# RFNBO targets in industry

- 42% target for the use of RFNBOs in industry by 2030 and 60% by 2035;
- Excludes:
  - ❑ hydrogen used as intermediate products for the production of conventional transport fuels and biofuels;
  - ❑ hydrogen that is produced by decarbonizing industrial residual gases and is used to replace the specific gases from which it is produced.
  - ❑ hydrogen produced as a by-product or derived from by-products in industrial installations
  
- Takes into account use of other non-fossil energy sources to achieve decarbonisation:
  - ❑ RFNBO target can be reduced by 20% if use of fossil hydrogen is no more than 23% in 2030 and 20% in 2035 and MS is on track towards its's national contribution for general RES target.

# Transport targets

## REDII

At least **14% renewables** in transport (road and rail)

+

At least **3.5% advanced biofuels**

+

Incentives for advanced biofuels (double counting) + use of fuels in maritime and aviation (1.2x multiplier)



## Revised RED

At least **29% renewables** in transport (all transport modes)

or

**14.5% reduction of emission intensity** of fuels

+

At least **5.5% advanced biofuels and RFNBOs** (combined target of which at least 1%-point RFNBOs)

+

Incentives for advanced biofuels and RFNBOs (double counting)

+

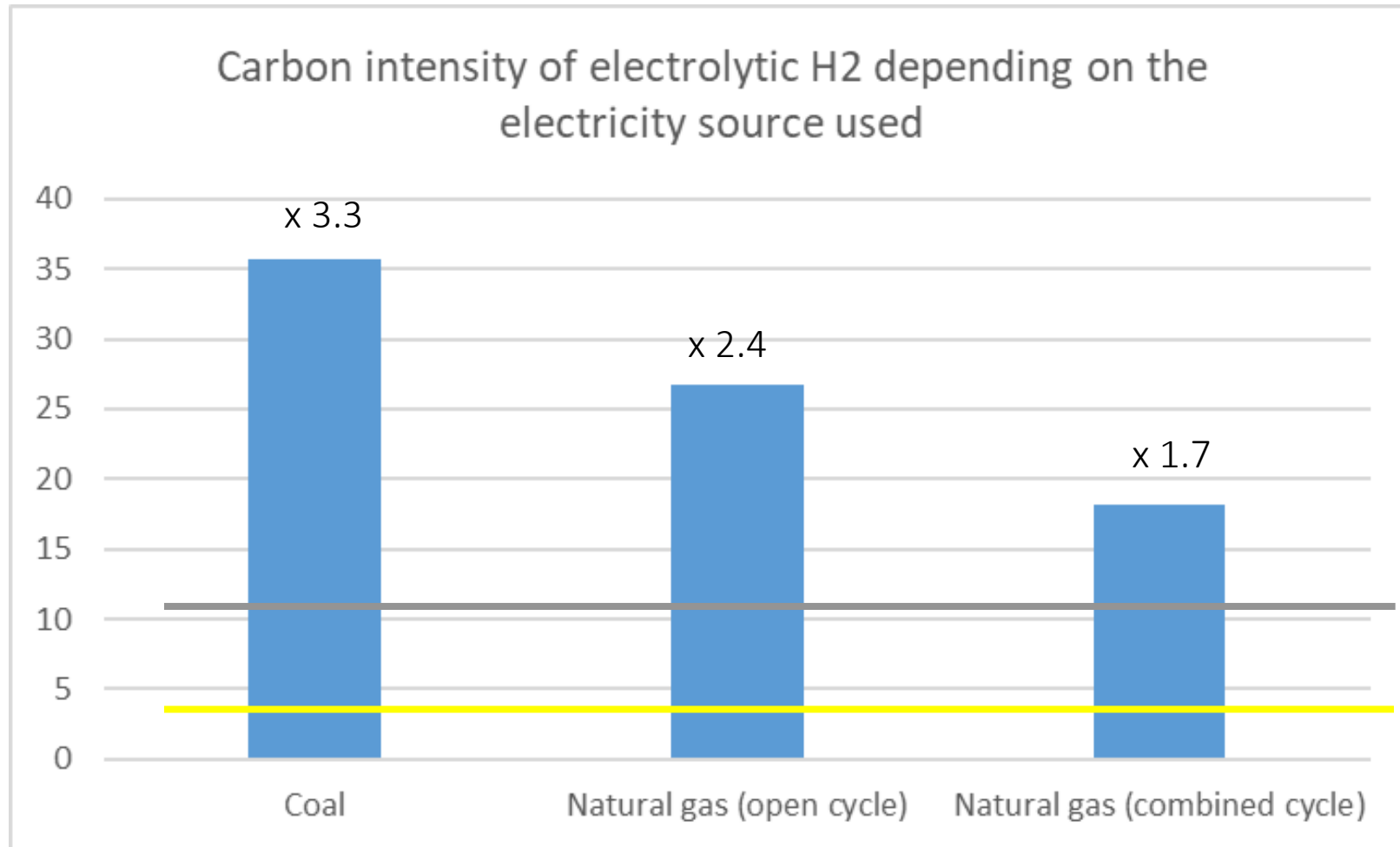
Incentives for their use in aviation and maritime (**1.2x or 1.5x multipliers** for advanced biofuels and RFNBO respectively)

New indicative target of **1.2%** in the maritime sector

RFNBO = Renewable Fuels of Non Biological Origin

# RFNBO delegated acts

# Why do we need criteria for renewable hydrogen production?



Grey hydrogen = 10,9 t or  
94g CO<sub>2</sub>eq/ MJ

70% threshold

# Options for sourcing of electricity for production of renewable hydrogen

## Case 1

### **Partial renewable hydrogen**

- Renewables share in electricity mix

## Case 2

### **100% renewable hydrogen**

- Direct connection between electrolyser and renewable power installation

## Case 3

### **100% renewable hydrogen**

- Electricity from the grid:
  - Additionality
  - Temporal correlation
  - Geographical correlation

# Key principles for sourcing fully renewable electricity

## Additionality

- Hydrogen production should add to the deployment of renewable energy

## Temporal correlation

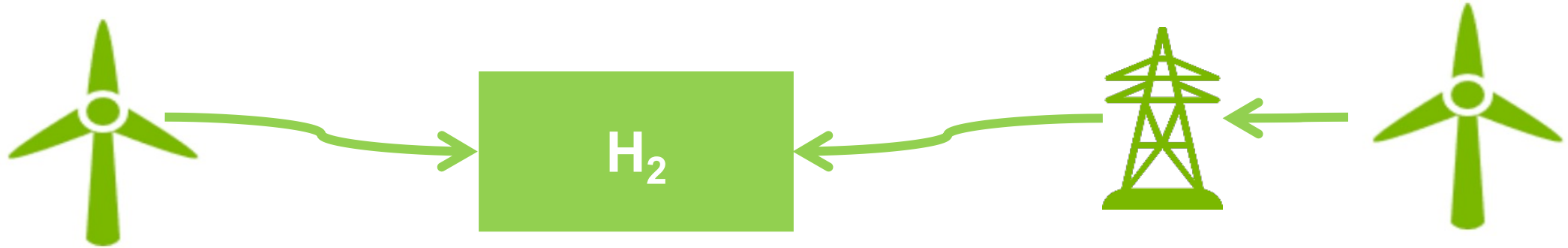
- Renewable hydrogen should be produced when renewable electricity is available

## Geographic correlation

- There should be no grid congestion between the place where the renewable electricity is produced and where the renewable hydrogen is produced



# How is the matter addressed?



## Direct connection:

- Renewable power asset should be **less than 36 months old**
- Electricity is consumed **at the hours** that the renewable power asset is producing
- Renewable power asset is located **at the site** of the hydrogen production

## Sourcing via the grid:

- **Power purchase agreement with unsubsidised** renewable power asset
- Renewable power asset should be **less than 36 months old**
- **Hourly correlation** between hydrogen production and renewable power generation
- Located in the same **bidding zone**

# How is industrial uptake ensured?

No additionality

Jan '28: phase-in of additionality

Jan '38: end of grandfathering

Monthly correlation

Jan '30: mandatory phase-in of hourly correlation (optional from 07/27)

# Rules for highly decarbonised electricity mix

- Additionality no longer required if electricity mix is already largely decarbonised
  - Threshold to be achieved (bidding zone): **emission intensity < 18g CO<sub>2</sub>/MJ**
  - Reason: Hydrogen produced from such electricity achieves 70% emission savings
- Need to demonstrate that electricity is renewable:
  - Renewables PPA
  - Criteria of temporal and geographic correlation

# Sunset clause

- Additionality no longer required if electricity mix is already largely based on renewable energy
  - Threshold to be achieved: RES- E share > 90%
  - Hydrogen produced from electricity that is 90% renewable achieves 70% emission savings
- Full-load hours should not exceed the RES-E share in order not to run at peak times

# Methodology for determining GHG emissions of RFNBOs

- **$E = e_i + e_p + e_{td} + e_u - e_{ccs}$**
- where:
- **$E$  = total emissions from the use of the fuel (gCO<sub>2eq</sub> / MJ fuel)**
- **$e_i = e_{i\text{ elastic}} + e_{i\text{ rigid}} - e_{\text{ex-use}}$ : emissions from supply of inputs (gCO<sub>2eq</sub> / MJ fuel)**
  - $e_{i\text{ elastic}}$  = emissions from elastic inputs (gCO<sub>2eq</sub> / MJ fuel)
  - $e_{i\text{ rigid}}$  = emissions from rigid inputs (gCO<sub>2eq</sub> / MJ fuel)
  - $e_{\text{ex-use}}$  = emissions from inputs' existing use or fate (gCO<sub>2eq</sub> / MJ fuel)
- **$e_p$  = emissions from processing (gCO<sub>2eq</sub> / MJ fuel)**
- **$e_{td}$  = emissions from transport and distribution (gCO<sub>2eq</sub> / MJ fuel)**
- **$e_u$  = emissions from combusting the fuel in its end-use (gCO<sub>2eq</sub> / MJ fuel)**
- **$e_{ccs}$  = emissions savings from carbon capture and geological storage (gCO<sub>2eq</sub> / MJ fuel)**

# Interrelation of the GHG methodology and additionality delegated act

Renewable energy share of electricity

Carbon intensity of electricity

## Requirements of additionality delegated act are not met

- Share or renewable electricity equals the share of renewable electricity in the country
- Default: Emissions savings are determined based on the average emission intensity of electricity in the country
- Alternatives based on marginal emission intensity of electricity

## Requirements of additionality delegated act are met

- Electricity counts as fully renewable
- Electricity is considered as carbon neutral

Thank you