

# E-Fuels – kommen diese jetzt in die Gänge?

Dr. Tobias Block | eFuel Alliance e.V.

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# eFuel Alliance – Who we are and what we stand for

- We are a **stakeholder initiative established** to foster a strong renewable fuel market within the next 2-3 years. We currently represent companies and associations **along the whole value chain of eFuels**. We are clearly committed to greater climate protection and a strong advocate of a **multi-solution approach**.
- Now or never – the **Green Deal is the unique opportunity** to change the regulation and achieve more holistic political decisions.

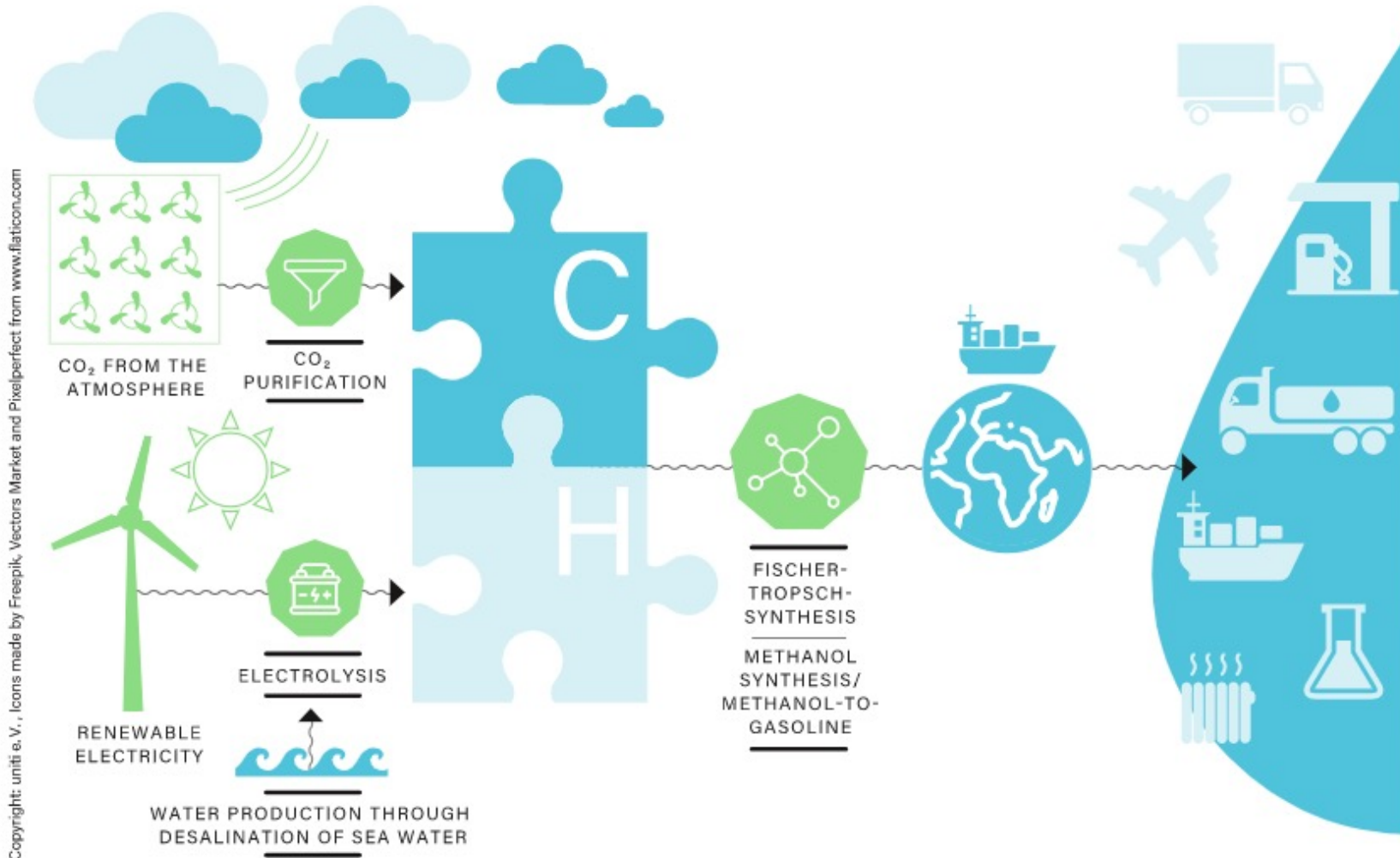
OUR MEMBERS – MORE THAN 150 COMPANIES, INCLUDING:



OUR POLITICAL MISSION:

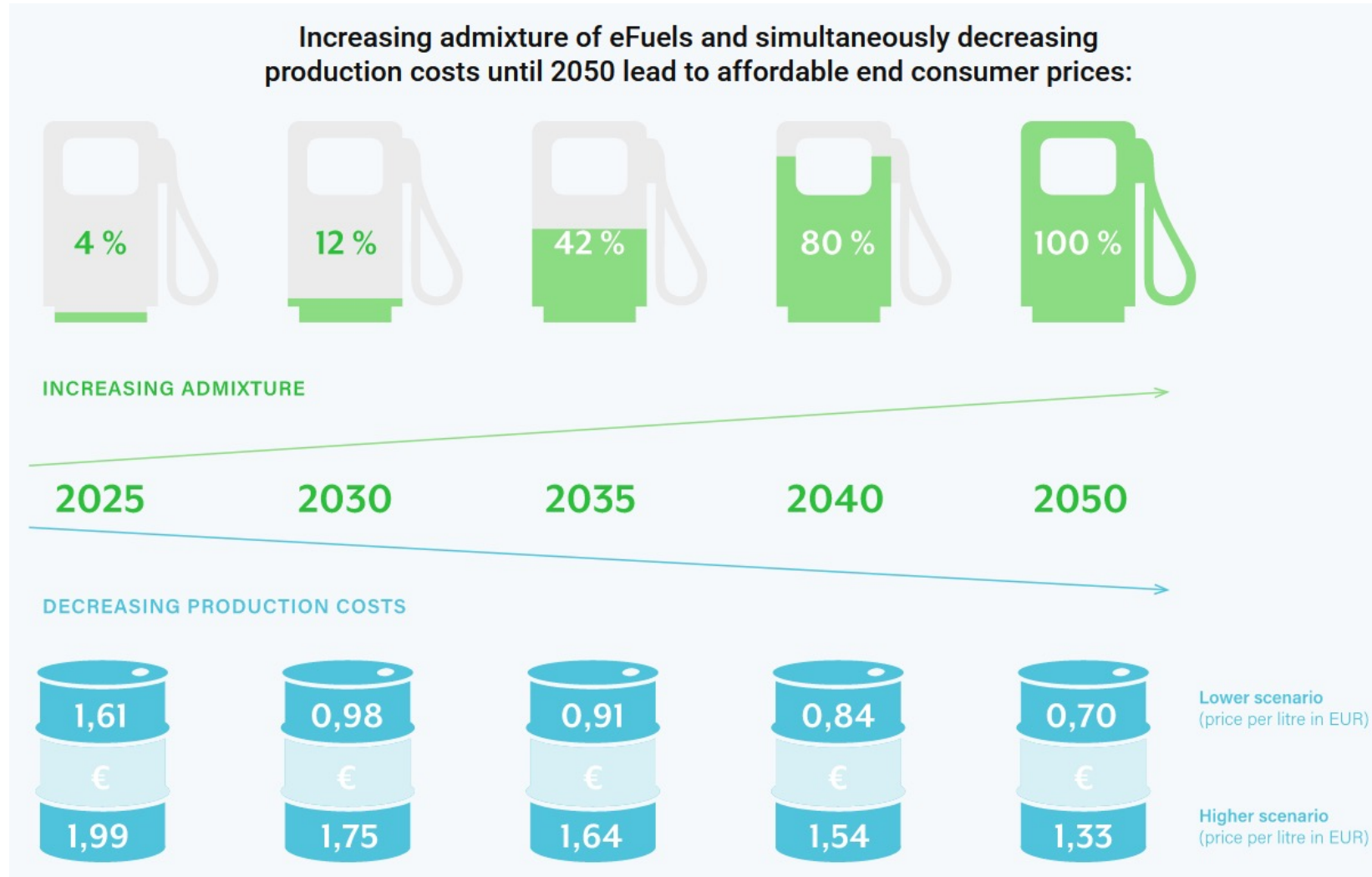
- 1 Account for renewable fuels in the revision of the CO2 standards of new cars, vans and trucks
- 2 Reflect the climate benefit of renewable fuels in the revision of the European energy taxation
- 3 Press for a more ambitious revision of the renewable energy directive / Fuel Quality Directive

# How are eFuels produced?



- Extraction of hydrogen from water by electrolysis using renewable electricity
- Hydrogen and CO<sub>2</sub>, directly captured from the atmosphere, are converted into a liquid energy carrier, by using e.g. Fischer-Tropsch synthesis.
- Power-to-X (PtX): Renewable electricity is converted into a synthetic, multi-purpose fuel with drop-in ability
- Climate-neutral process, no additional greenhouse gases are produced

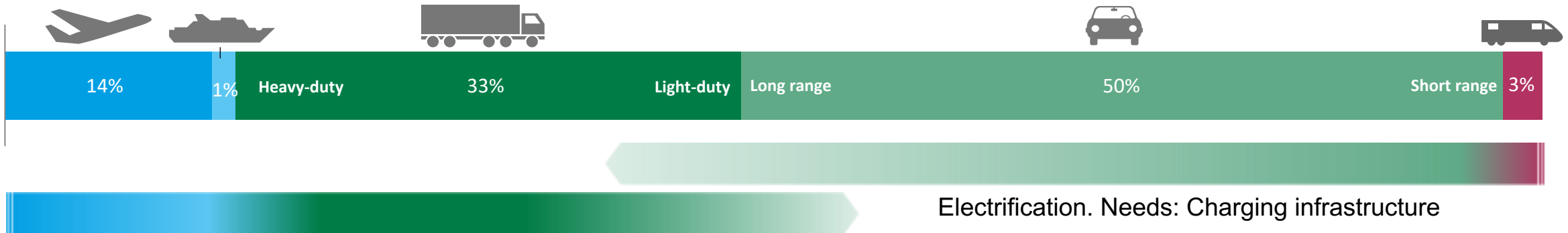
# Affordable mobility must be maintained



- Economies of scale will reduce the production cost of eFuels ...
- ... while in the meantime the share of blending is steadily increased.
- According to a study by Prognos AG, the Fraunhofer Institute UMSICHT and DBFZ, the production costs are assumed to be less than EUR 1 per litre in 2050.
- Climate neutrality thus remains affordable for everyone


# eFuels as an optimal complement to electric mobility

FORECASTED DIVISION ALONG THE ENERGY DEMAND IN 2030:



Electrification. Needs: Charging infrastructure

Necessity of gaseous or liquid renewable fuel. Needs: Technology ramp-up



**Optimistic calculation:**

Upon now: **Every second** new registered vehicle and from 2035 every vehicle is a **BEV** in the EU

- › 2,5 % / 5 % of the total fleet stock are replaced
- › Only after 2050 the entire fleet stock consists of BEVs

Total fleet: ~ 240 Mio. cars  
New registered cars: ~. 12 Mio. cars p.a

» A complete and timely transition of the transport sector requires the use of renewable fuels in addition to electrification

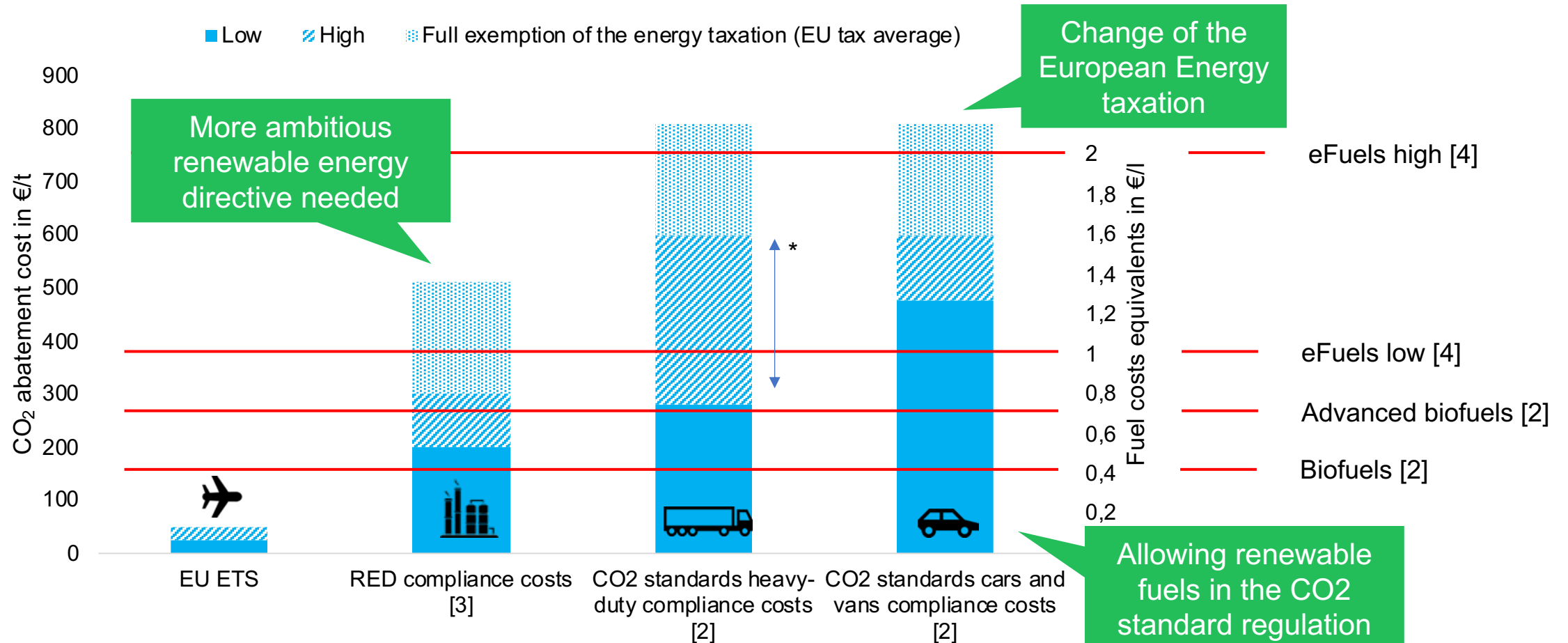
# In principle different use cases require a powertrain mix

THE GREATER THE REQUIRED PAYLOAD AND RANGE – THE LARGER THE BATTERY SIZE – THE GREATER THE BATTERY COSTS – THE GREATER THE INFRASTRUCTURE EXPANSION – THE GREATER THE ECOLOGICAL FOOTPRINT.



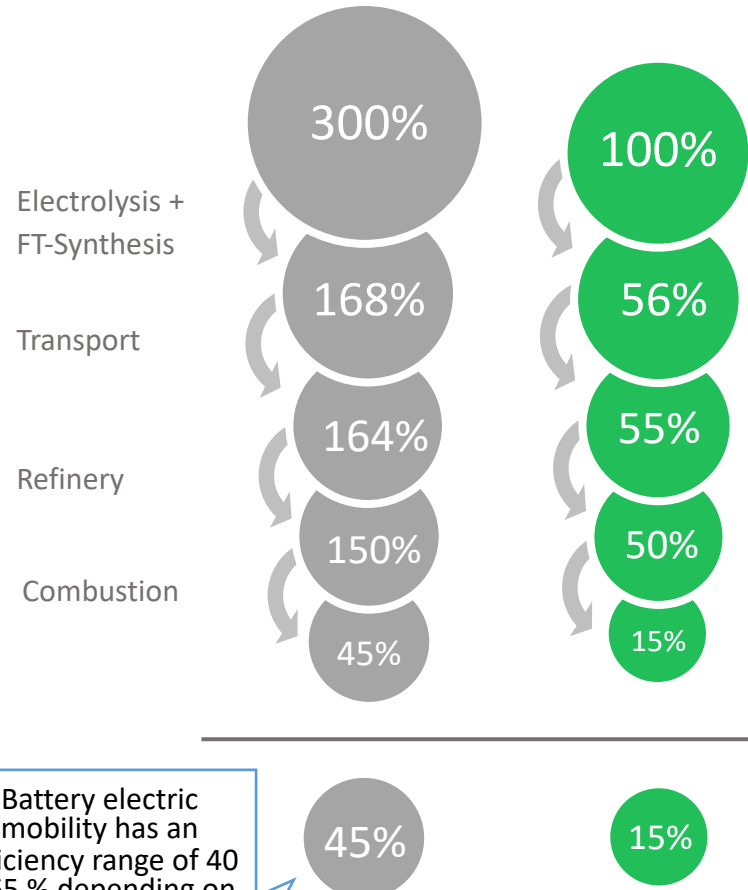
# eFuel Alliance – we create business cases

Our political proposals will generate an immediate market demand for all renewable fuels. The following graph shows the range of ability to pay in different target markets:

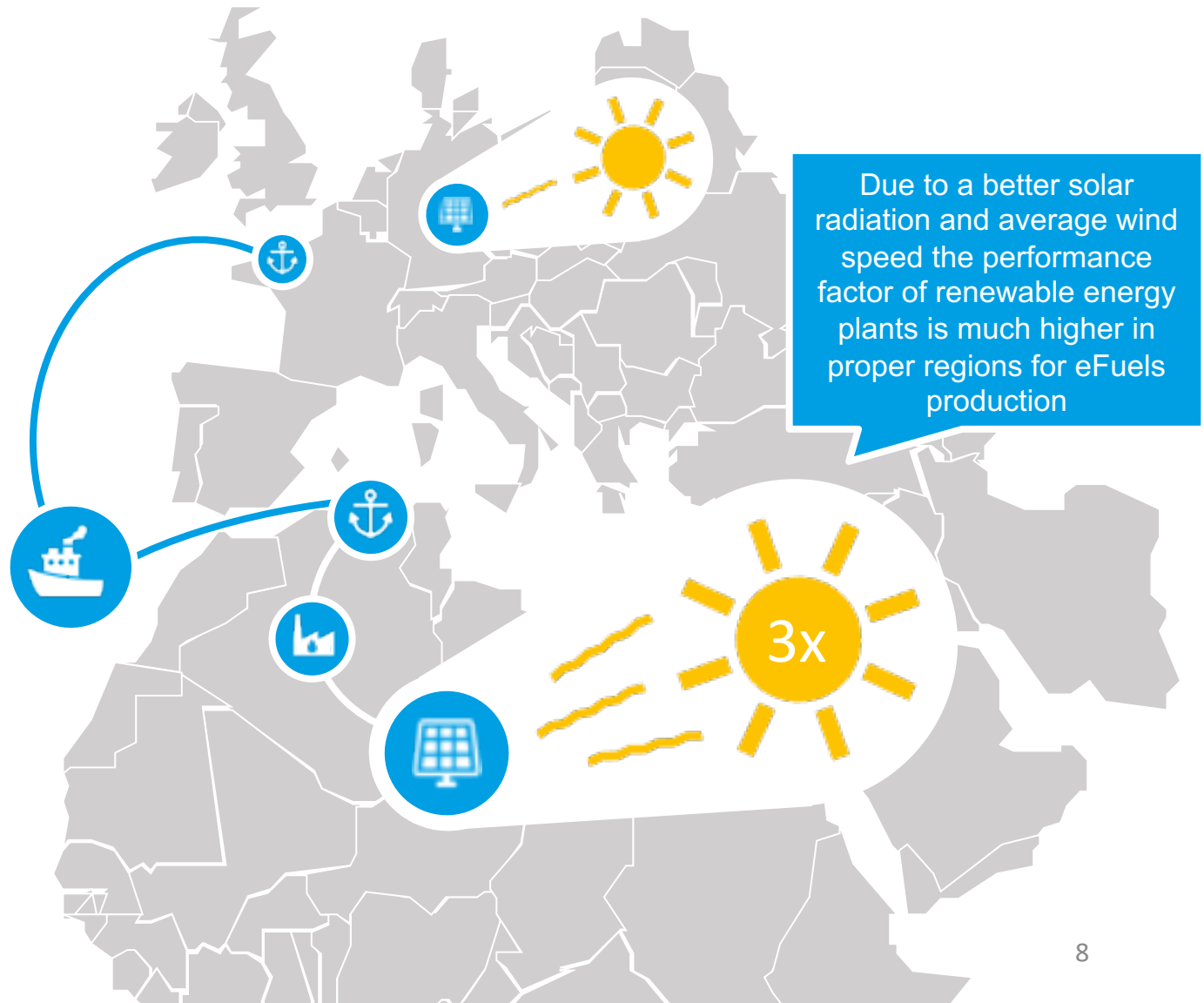


# Efficiency depends on the place of production

North Africa vs. Germany

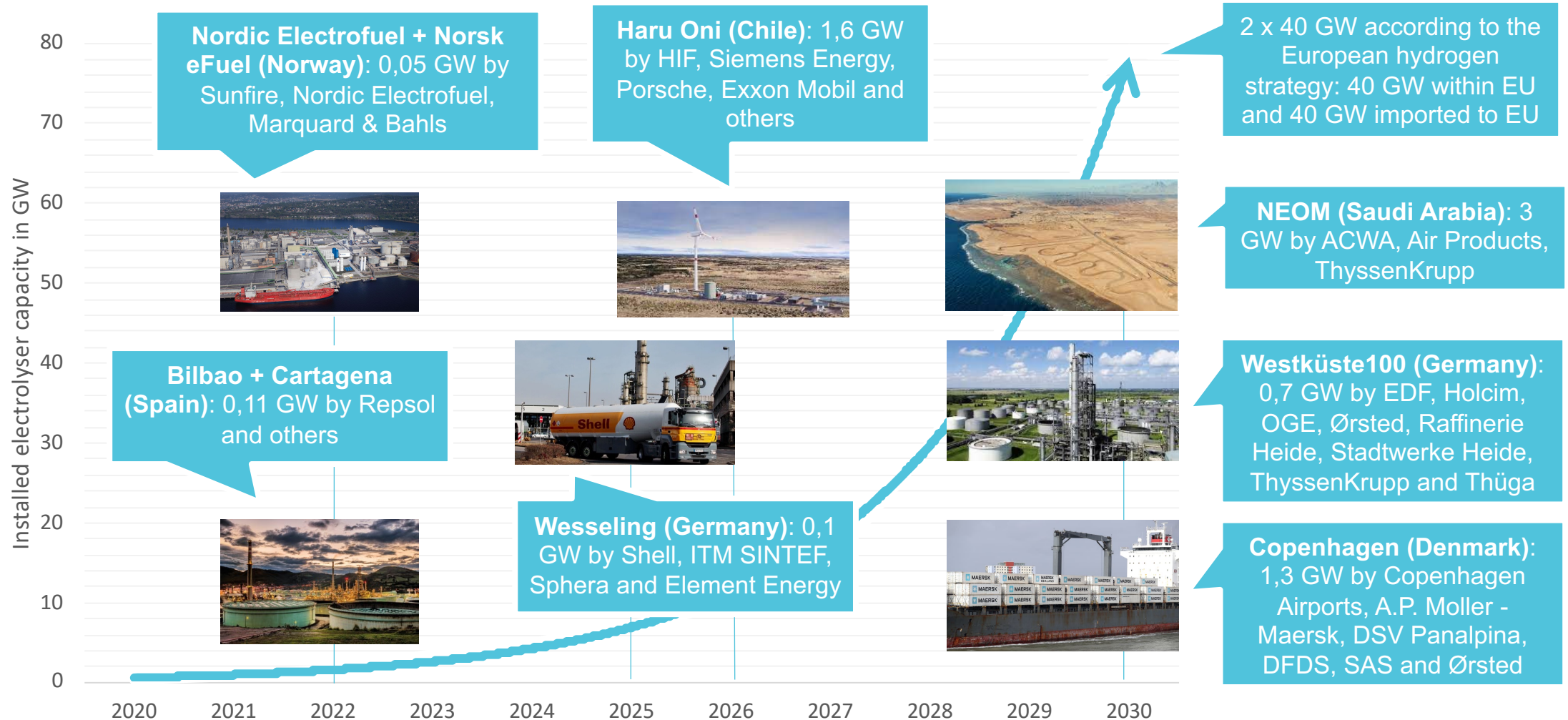


Battery electric mobility has an efficiency range of 40 – 65 % depending on the outside temperature





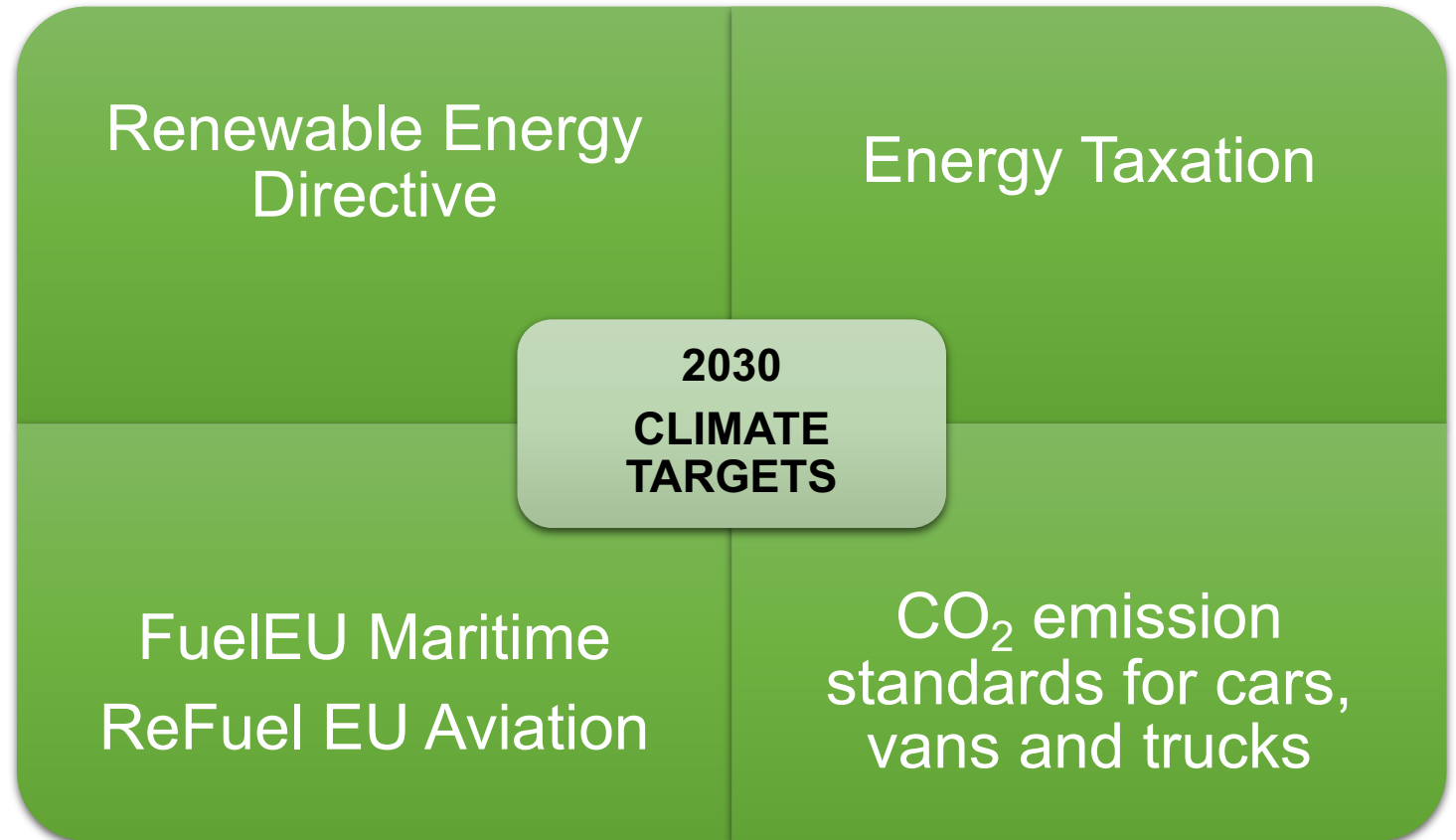
# When are eFuels available?



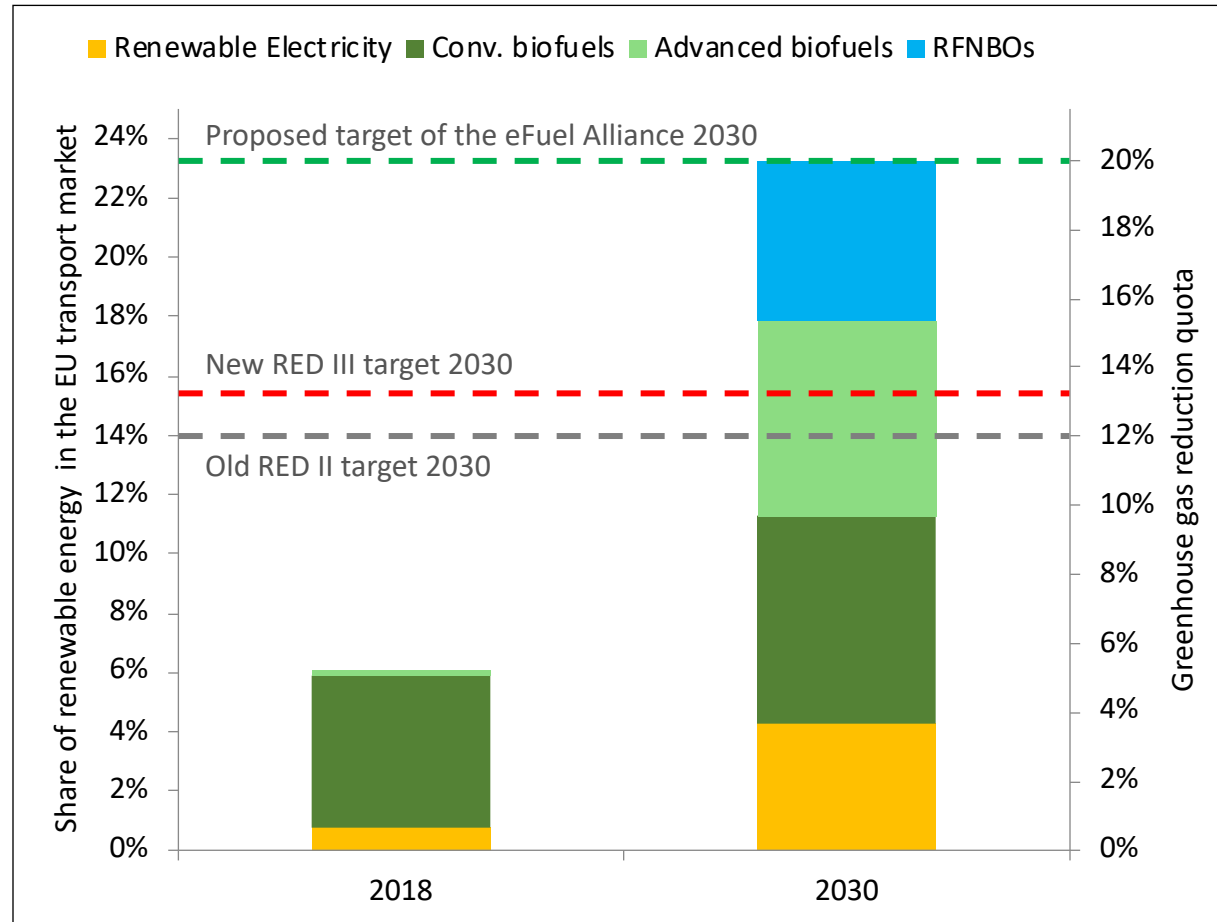
# What are the most important legislations for eFuels?

## EUROPEAN GREEN DEAL

Reduction of GHG  
emissions by at least  
55% by 2030



# REDIII – What we want to achieve in the transport sector



According to members of the eFuel Alliance and within the European hydrogen strategy

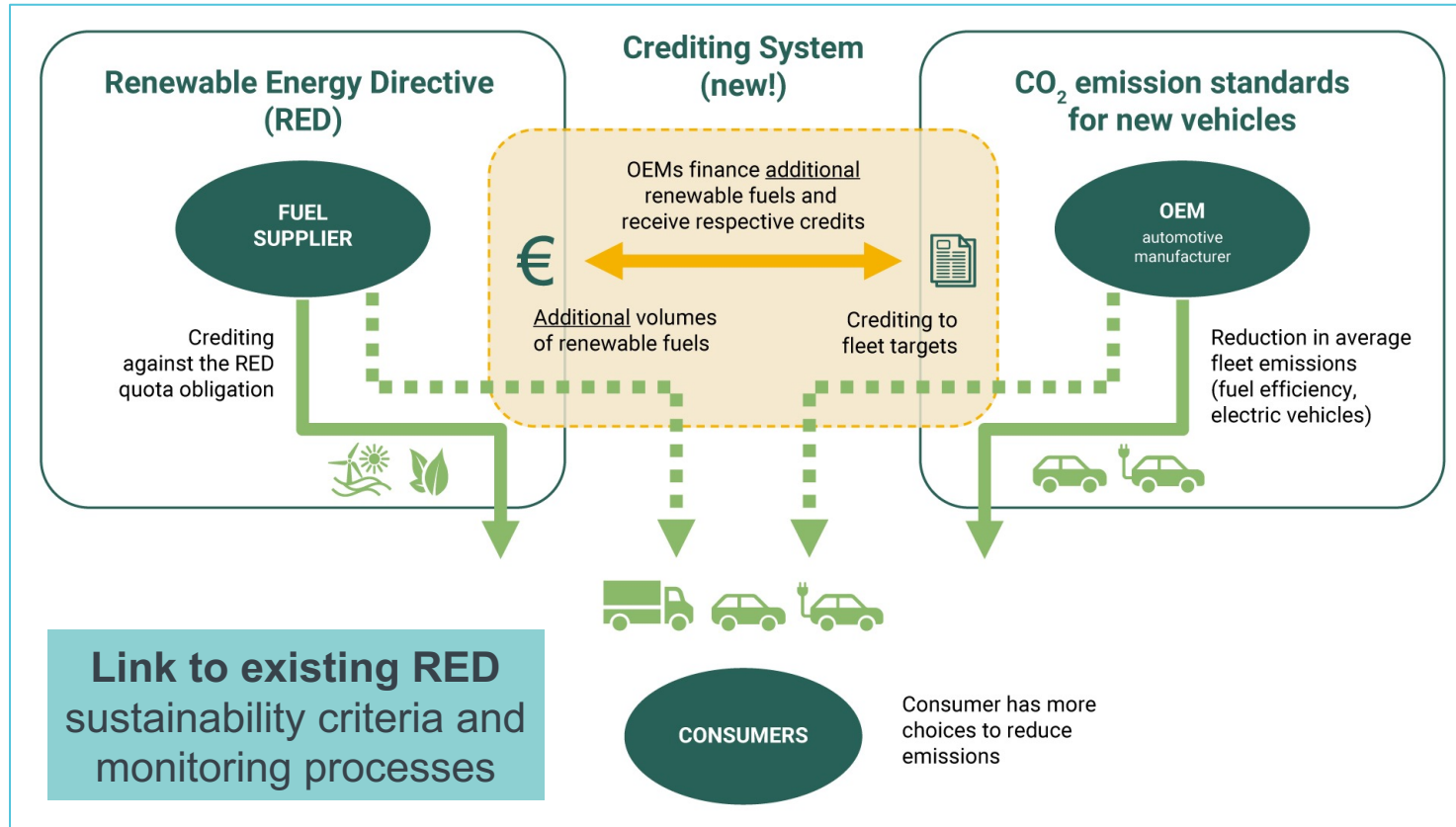
According to the subgroup on advanced biofuels (SGAB) on behalf of the EU commission

Conventional biofuels are limited by 7% in the RED

Considering 42 million electric vehicles and 17 million plug-in hybrids in the EU in 2030

Source: Quality of petrol and diesel fuel used for road transport in the European Union (Reporting year 2018). The reporting of electricity consumption is voluntary and only ten member states participated. Simplified GHG reduction factor of 0.85 for all energy carriers.

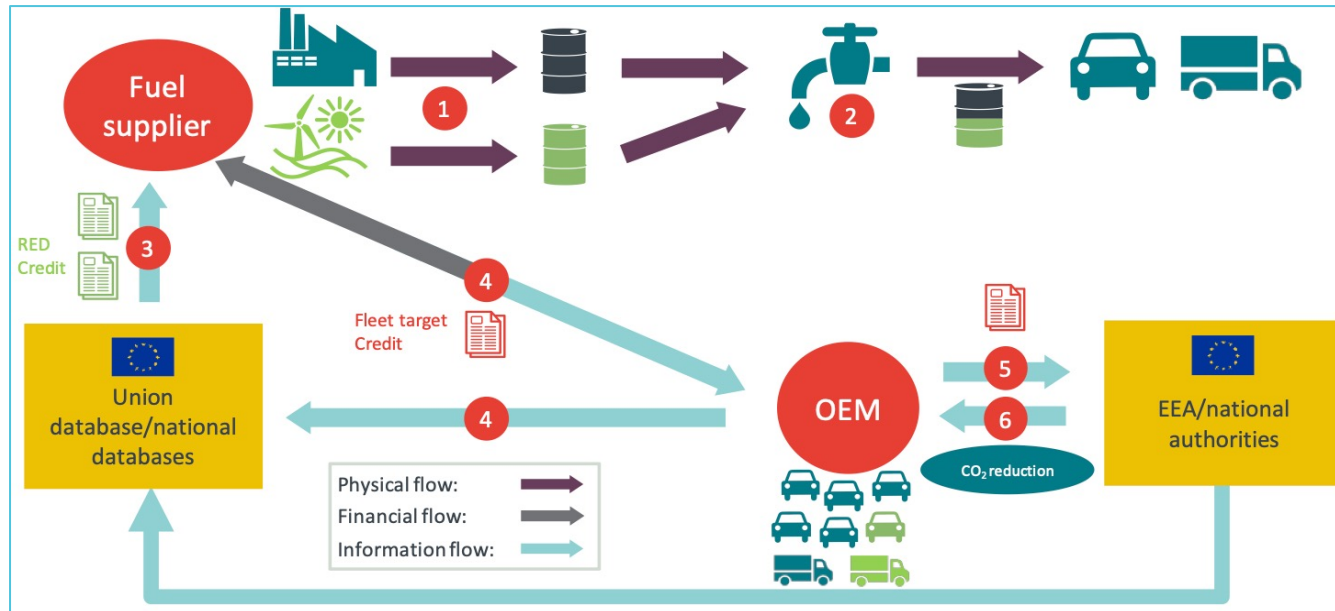
# Why do we need a Crediting System for Renewable Fuels in the CO<sub>2</sub> emissions standards for new vehicles?



Introduction of a voluntary *crediting system for renewable fuels, which:*

- ...offers more climate neutral choices for customers such as hybrid vehicles,*
- ...leads to more CO<sub>2</sub> reduction in comparison to electric vehicles only,*
- ...is a first step towards a holistic life cycle assessment,*
- ...can't undermine effectiveness and efficiency because it is voluntary,*
- ...considers only additional amounts of renewable fuels,*
- ...retain responsibilities, limitations, and sustainability criteria of the fuel industry,*
- ...uses established processes and official authorities to verify fuel amounts,*
- ...offers more solutions and a safety net for the automotive industry.*

# How does a crediting system of renewable fuels work?



Source: Bothe et al. (2020)

1. Fuel suppliers produce renewable fuels with a certain CO<sub>2</sub> reduction in comparison to the fossil reference factor
2. The renewable fuel is brought into the market
3. The fuel supplier receives a certificate for the renewable fuel that has been brought into market
4. The original equipment manufacturer (OEM) purchase the generated certificate from the fuel supplier and forward that information to the operator of the Union database
5. The OEM requests to achieve CO<sub>2</sub> reduction credits from an official authority
6. The OEM receives the credits and can reduce its individual fleet target

## ...but the Commission has rejected the Crediting System:

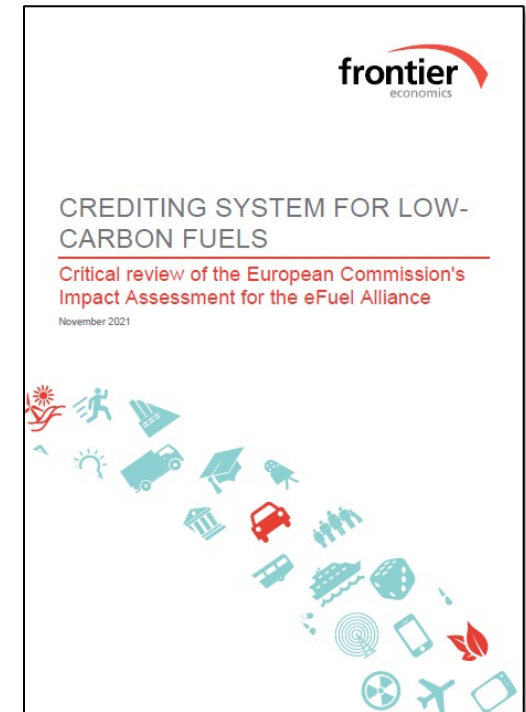
### Justification of the rejection of the crediting system:

- (3) a mechanism to take into account the potential contribution of renewable and low-carbon fuels for the purpose of target compliance assessment.

In this respect, two options were considered: either a carbon correction factor or a crediting scheme. However, the preferred option is not to include such an accounting mechanism, as this would **blur the responsibilities** of different players to reach the targets, **undermine the effectiveness and efficiency** of the legislation and **increase the administrative burden** and complexity. Promoting the use of renewable and low-carbon fuels will be done through the revision of the Renewable Energy Directive, the emissions trading system and the Energy Taxation Directive.

### We strongly disagree and have commissioned Frontier Economics to evaluate the Impact Assessment (IA) ->

- ...no comparison to penalties (not in line with IA guidelines regarding benchmarks)
- ...no distribution of future battery costs (not in line with IA guidelines regarding uncertainty)
- ...no range of use cases (not in line with IA guidelines regarding heterogeneity)
- ...no advantages of the crediting system mentioned (objectivity?)
- ...no consideration of the public consultation in terms of the crediting system



# The new forming German government in favor of eFuels?

Gemäß den Vorschlägen der EU-Kommission hieße das im Verkehrsbereich, dass in Europa 2035 nur noch CO<sub>2</sub>-neutrale Fahrzeuge zugelassen werden - entsprechend früher wirkt sich dies in Deutschland aus. Außerhalb des bestehenden Systems der Flottengrenzwerte setzen wir uns dafür ein, dass nachweisbar nur mit E-Fuels betankbare Fahrzeuge neu zugelassen werden können. Wir wollen Deutschland zum Leitmarkt für Elektromobilität machen und dafür den Ausbau der Ladesäuleninfrastruktur massiv beschleunigen. Ein generelles Tempolimit wird es nicht geben. Im Rahmen klimafreundlicher Mobilität werden wir die Entwicklung intelligenter Systemlösungen für den Individualverkehr und den ÖPNV unterstützen.

## What does it mean:


- ✓ From 2035 onwards only CO<sub>2</sub>-neutral vehicles should be able to register. How to verify?
- ✓ New vehicles, which are supplied with eFuels, should be able to register. How does it work?
- ✓ But it should be considered outside of the current CO<sub>2</sub> emission standards, which doesn't make sense and can't work.

# Energy Taxation Directive (ETD)

## Overview about different tax rates (motor fuels)

Motor Fuel	Energy tax in 2023 in ct/l	Energy tax in 2033 in ct/l
Gasoline	37.52	37.52
Diesel	40.21	40.21
Kerosine	4	39.56
Natural gas in €/GJ	7.17	10.75
Crop-based biofuel (Diesel-equiv.)	20.12	40.21
Sustainable biofuel (Diesel-equiv.)	20.12	20.12
Advanced biofuel (Diesel-equiv.)	0.56	0.56
eFuels (Diesel-equiv.)	0.56	0.56

Huge price advantage of eFuels

A green L-shaped arrow pointing from the text "Huge price advantage of eFuels" to the "eFuels (Diesel-equiv.)" row in the table.

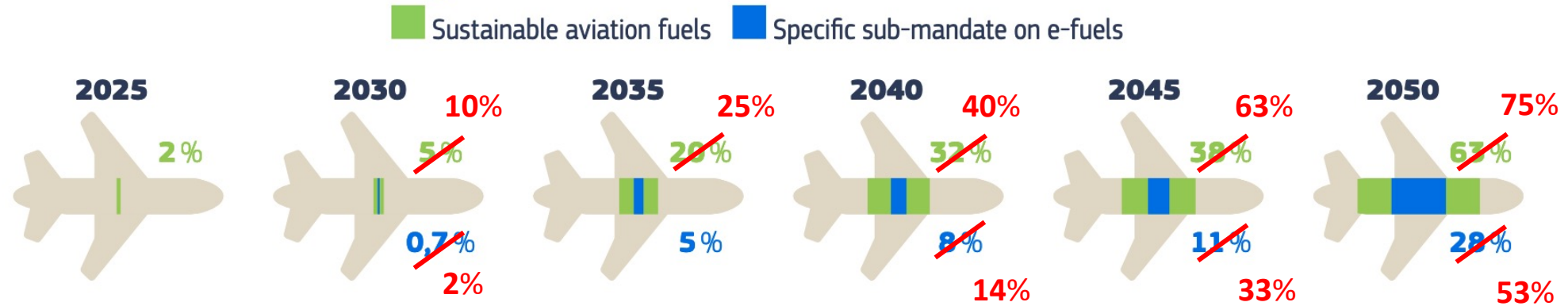


## Maritime targets on the limits on greenhouse gas intensity of the energy used on-board compared to 2020



- ✓ We welcome the well-to-wake approach.
- ✓ Each ship entering an European port has to document the fuel consumption. Carbon leakage is avoided.
- ✓ No provision of additional volumes of renewable fuels. Diversion of the quantities of renewable fuels from one sector to another without helping the climate.
- ✓ CO2 reduction can't be used in Effort Sharing Regulation. Problem for Netherland and Belgium

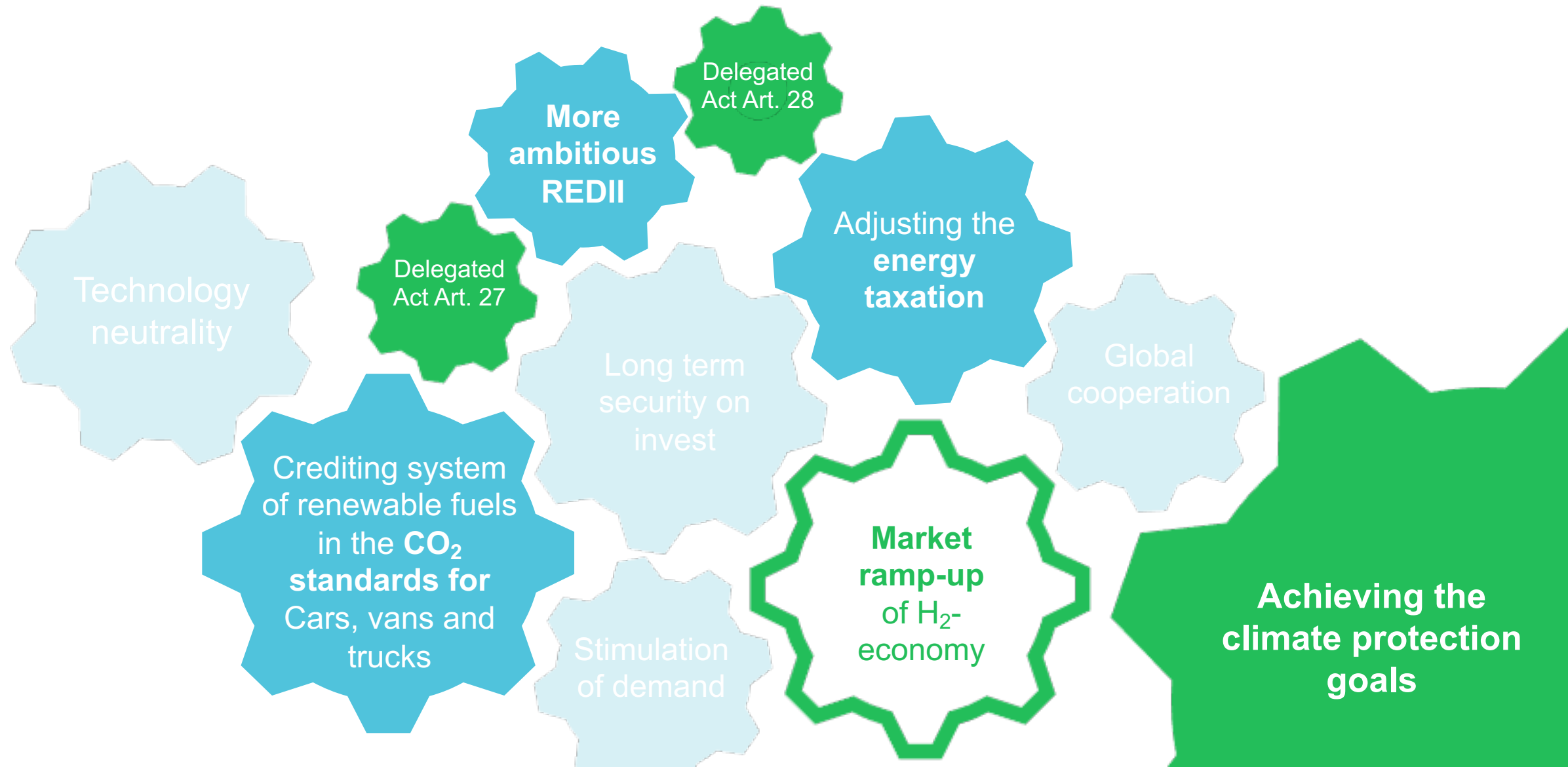
## New targets for sustainable aviation fuels (as % of fuel mix)



\*according to [World Economic Forum's "Clean Skies for Tomorrow"](#)

- ✓ Targets not ambitious enough
- ✓ No provision of additional volumes of renewable fuels. Existing fuel volumes can be steered from one sector to another without helping the climate.
- ✓ Intercontinental flights could easily departure from airports outside the EU (London, Zurich, Istanbul). Carbon leakage and competitive disadvantage for European airlines is probable. Therefore, we recommend to focus not only on aviation.

# The moving parts policymakers need to turn



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