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1.

NGV Italy and Global Gas Mobility Association

- NGV Italy represents the Italian industrial excellence and expertise in technologies related to natural gas and bio-methane (CNG-LNG), blended fuels and hydrogen for transport;
- Since 1996 the Association gathers Italian companies engaged in: upstream and midstream gas activities; engine design (car, truck, ship); OEM production; retail station management; fleet ownership and management; cryogenic, bio-methane and hydrogen technologies production;
- It's one of the leading actors in the European and global NGVs, sharing know-how, technology expertise, and best practices for the implementation of sustainable transport.
- NGV Italy promotes the decarbonisation of transport in line with AFID approach and the principle of technological neutrality.

World Gas Mobility Association – WGMA 1/2

WGMA is a non-profit Association gathering individuals, companies, associations and national, regional, international **foundations**, public and private bodies interested in the pursuit of the aims of the Association and / or engaged in carrying out activities similar or related to those of the Association or which are interested in any way in the purposes of the Association and accept the Statute.

- **Represents** the interests of the Associates at a global level in promoting the use of gas in the various transport sectors (road, sea, rail) and create a common platform for the various national and regional associations, institutions and, in general, companies related to the gas as a fuel;
- **Encourages** the development and harmonization at a global level of technical standards for quality and safety as well as common procedures for the certification of products and technologies for the use of methane, biomethane, blended fuels in general and of hydrogen in transport, both in the gaseous and liquid phase, also sharing best practices between regional associations in order to support Associates and third-party companies in their certification activities;

World Gas Mobility Association – WGMA 2/2

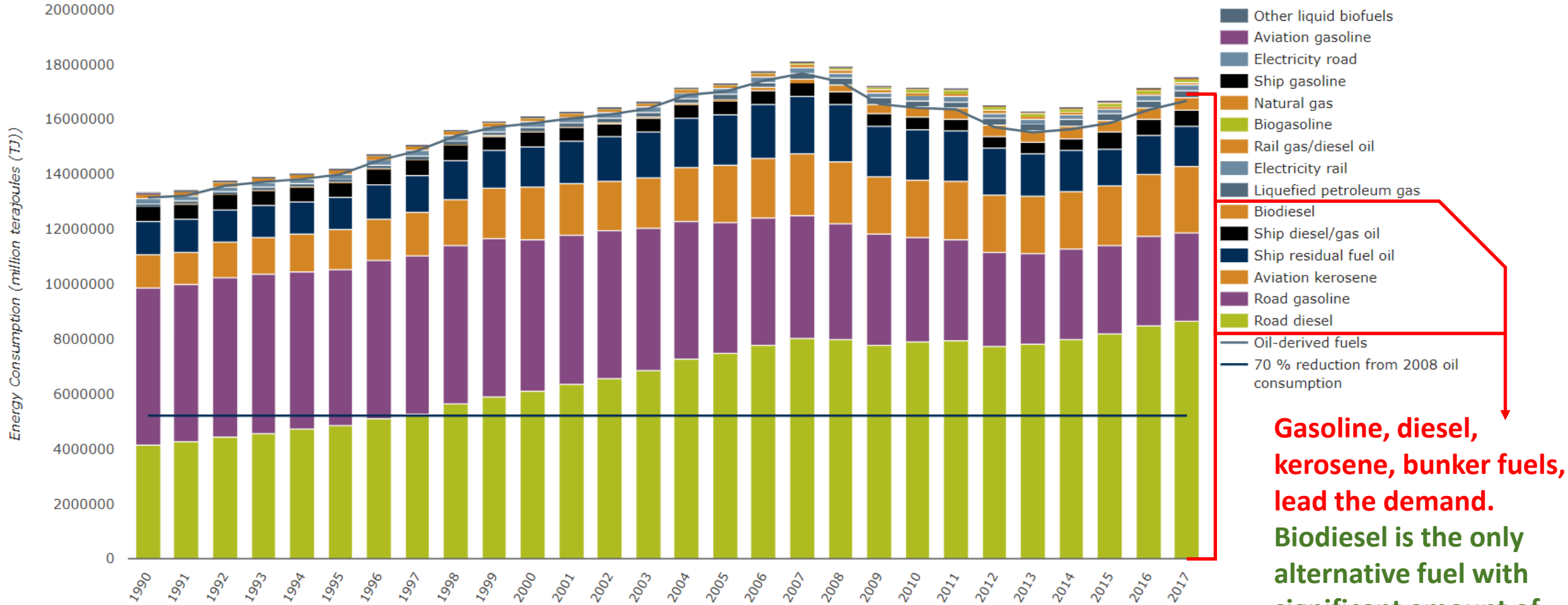
- **Provides** with assistance in the development of all the opportunities deemed advantageous for the Associates in line with the purposes of the association, including industrial products related to the use of gas such as industrial gas pressure regulators, safety devices and related stations, infrastructures, etc
- **Assists** Associates for new commercial initiatives or in the search for interested partners for the marketing of products, sharing know-how and best practice also developing links with the structures of the European Union or with international organizations;
- **Promotes** internal and external communication relating to the Association's scope through the media and the organization of conferences, workshops, technical committees, working groups, etc.

2.

Alternative fuel demand in Europe

Europe: total fuel demand for transport

Chart — Energy consumption in transport

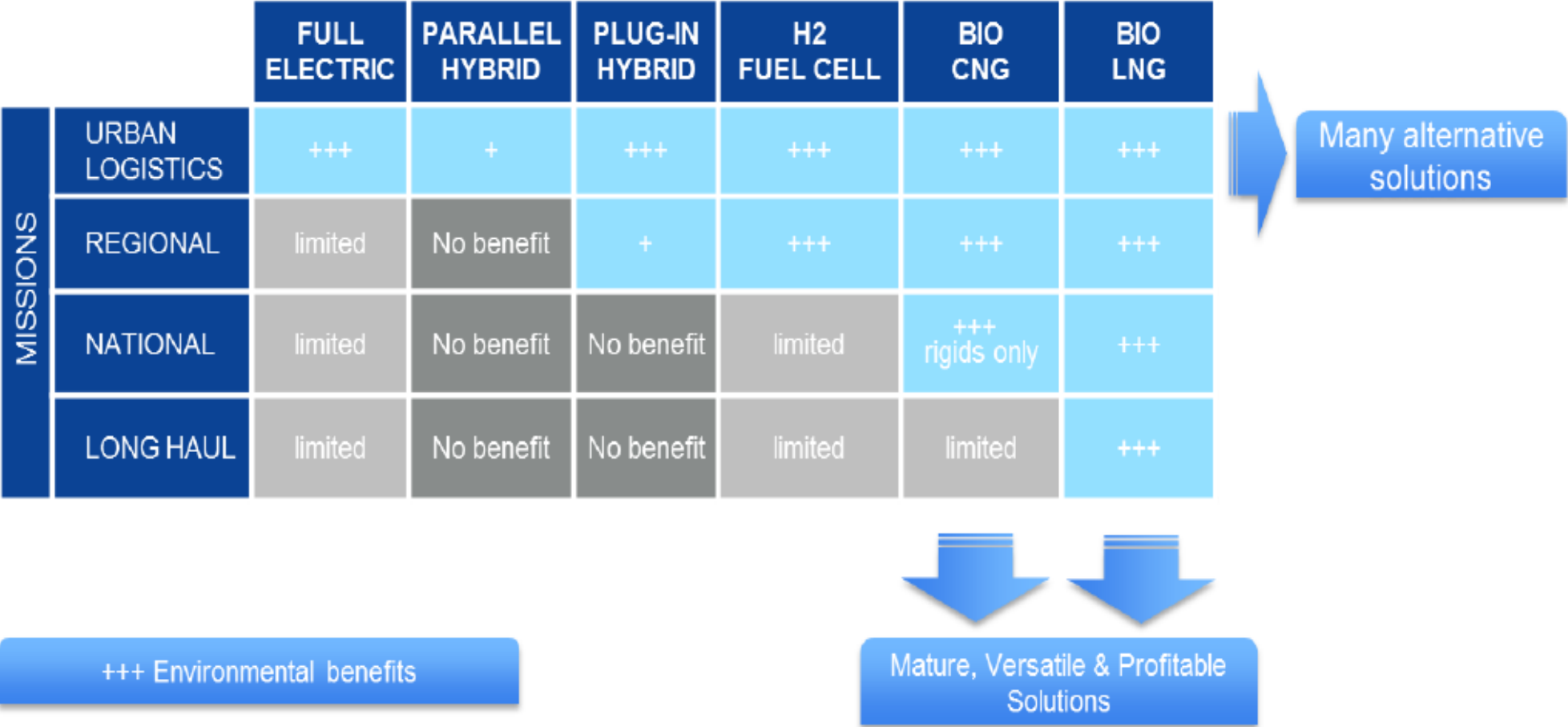


Gasoline, diesel, kerosene, bunker fuels, lead the demand.

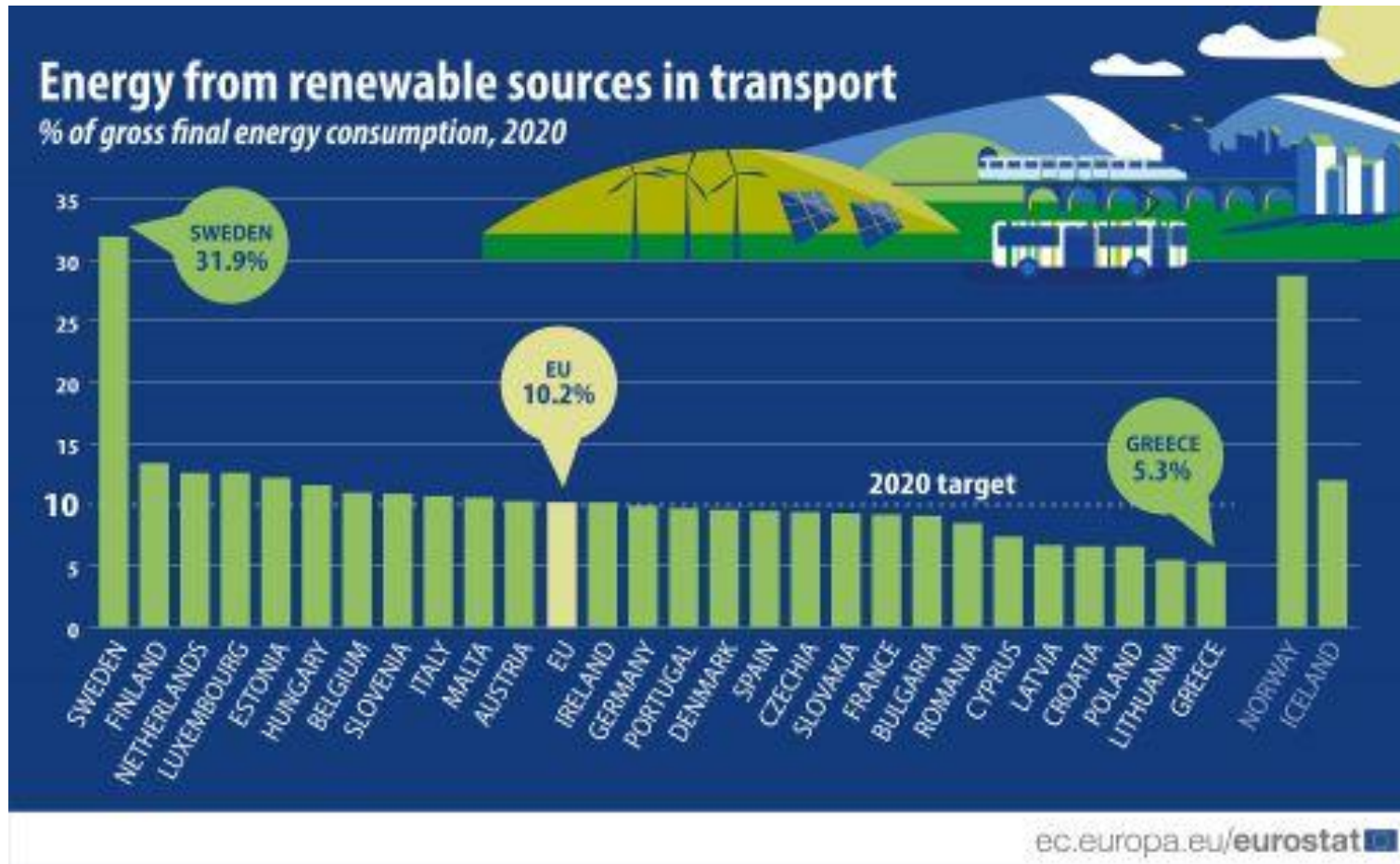
Biodiesel is the only alternative fuel with significant amount of consumption

Note: The light blue line represents total oil-derived fuels, while the dark blue line represents the 70 % reduction from 2008 oil consumption by 2050.

European Alternative Fuel strategy based on technology neutrality



Europe: Alternative fuel demand implementation



The EU agreed to set a common target of 10 % for the share of renewable energy (including liquid biofuels, hydrogen, biomethane, 'green' electricity, etc.) used in transport by 2020

Europe: strong and developing refuelling station network



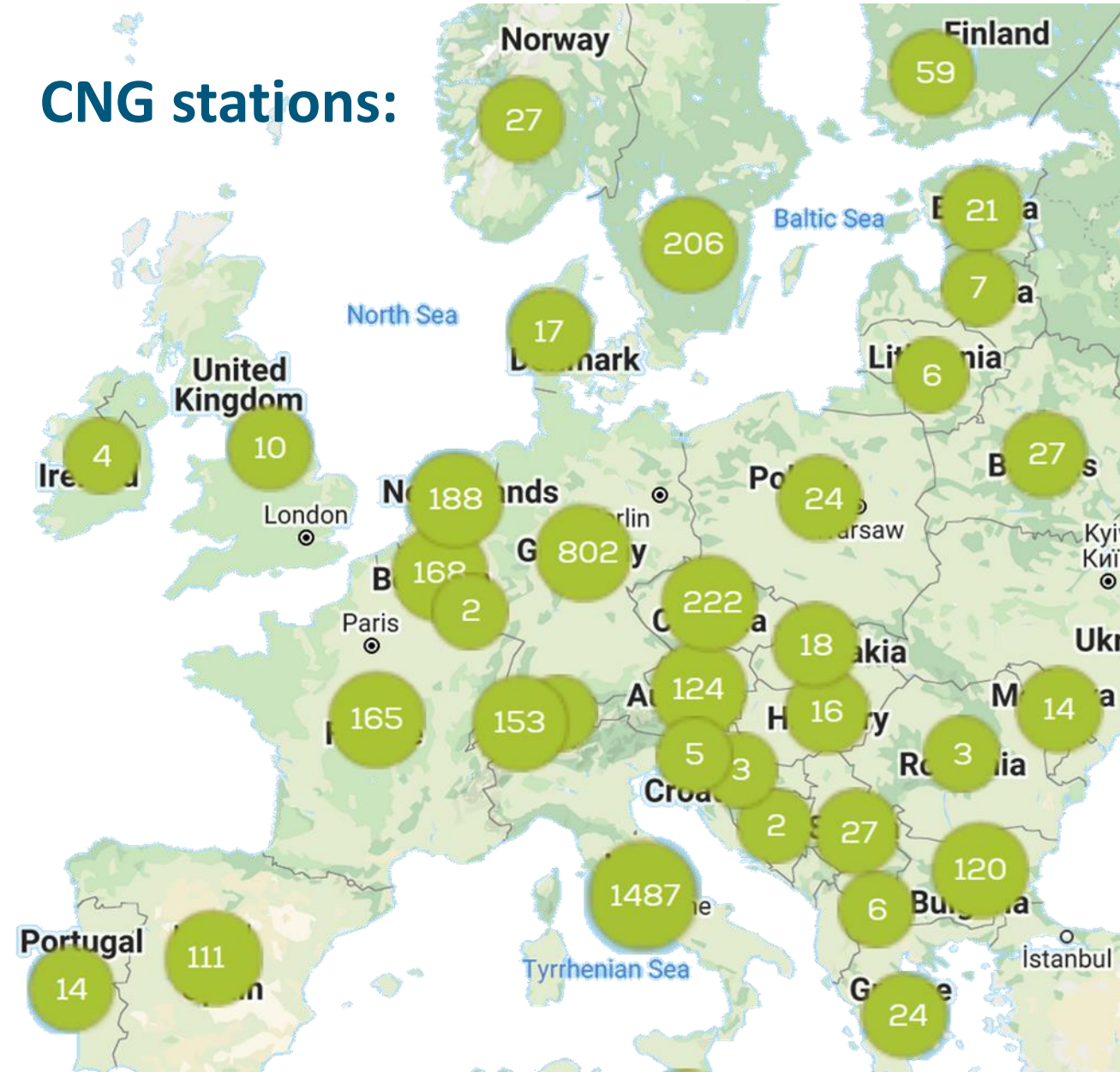
CNG stations:

Already today

4,098 CNG stations

By 2030

10,000 CNG stations needed



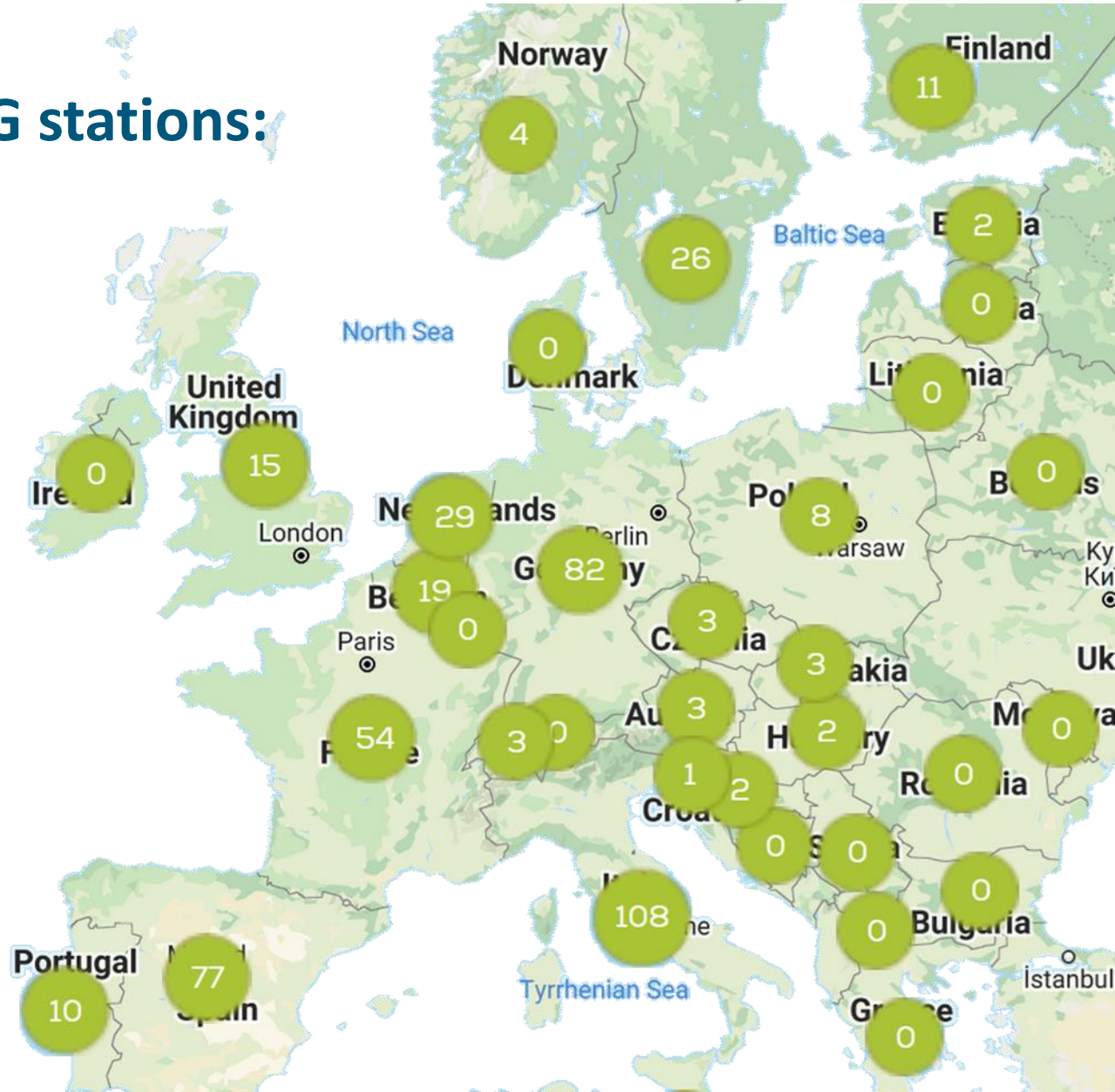
Europe: strong and developing refuelling station network

Already today,
463 LNG stations

By 2030,
2 000 LNG stations needed

By mid-2021, in Italy
3.585 LNG fuelled trucks
on the road and 103 LNG
stations

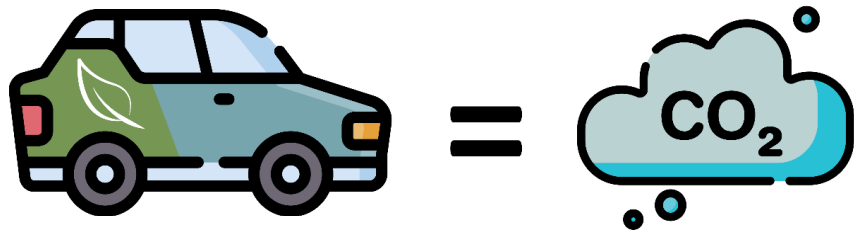
LNG stations:



Europe: potential emission reduction thanks to methane/biomethane vehicles by 2030

Today

1.5 million vehicles fuelled by *(bio)*methane

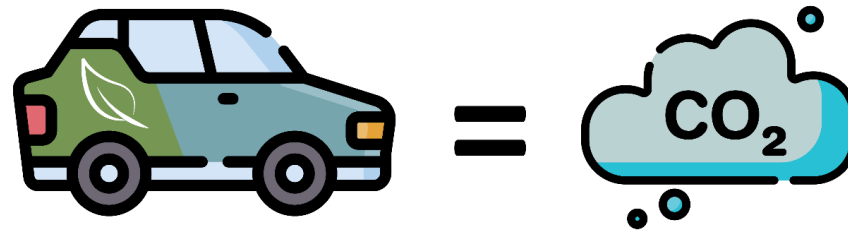


17% BIO

-40% CO₂
emissions*

2030

13 million vehicles fuelled by *(bio)*methane



40% BIO

-55% CO₂

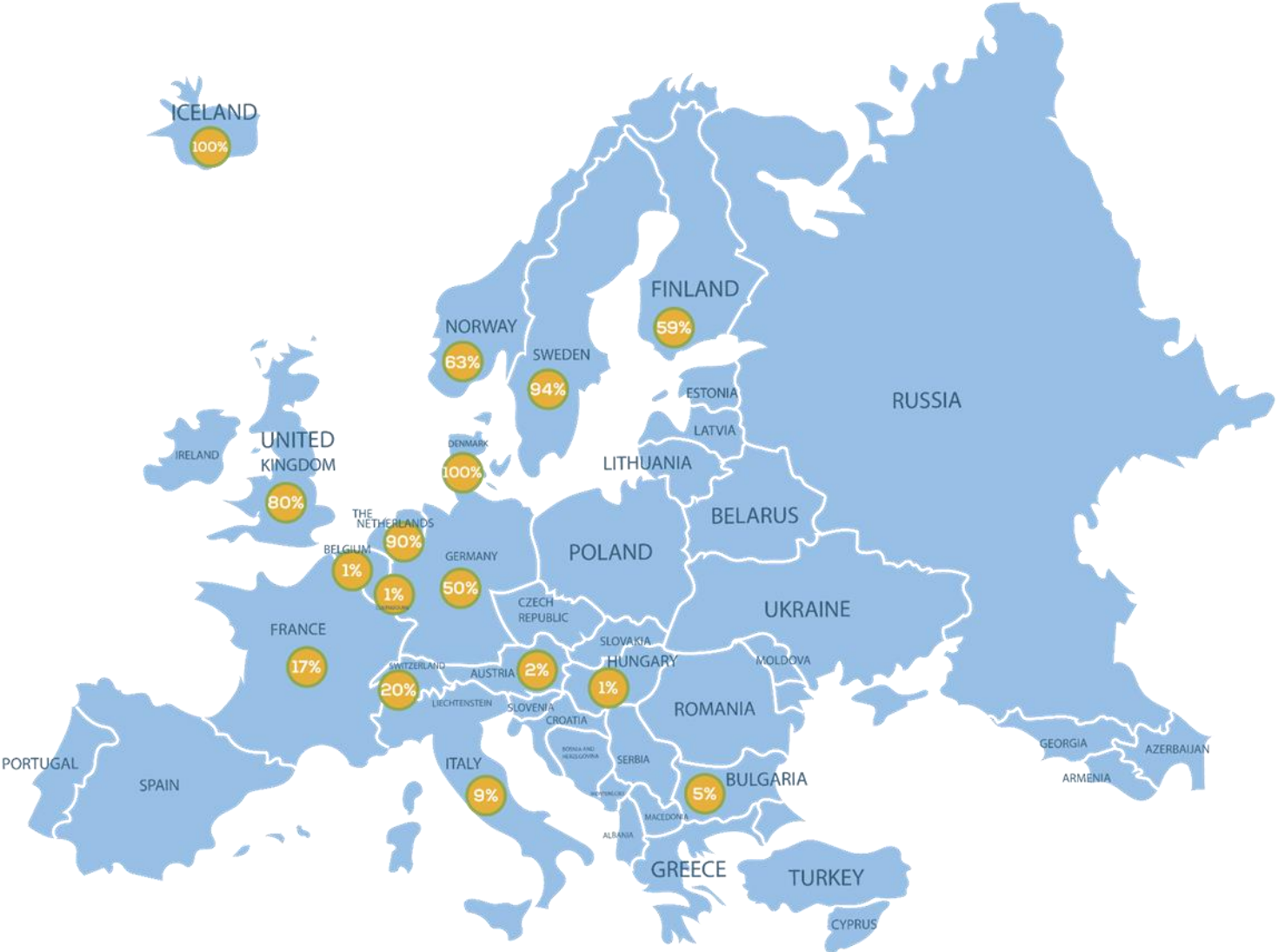
9 bcm
biomethane

FIT FOR
55

Considering the significant reduction of emissions compared to vehicles using traditional fuels, we should develop this option also recognising the increasing blending of renewable gases.

*WtW approach in comparison to diesel use

Increasing demand in biomethane for road transport: today and by 2030

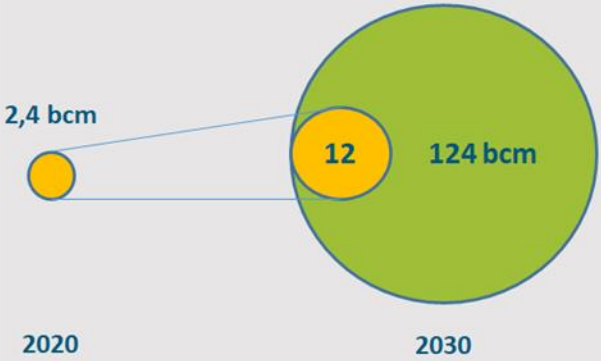


Biogas consumption from the road transport sector = 2,4 bcm (23,4 TWh)



Average bio-share value at EU level

Current and future consumption from road transport vs potential



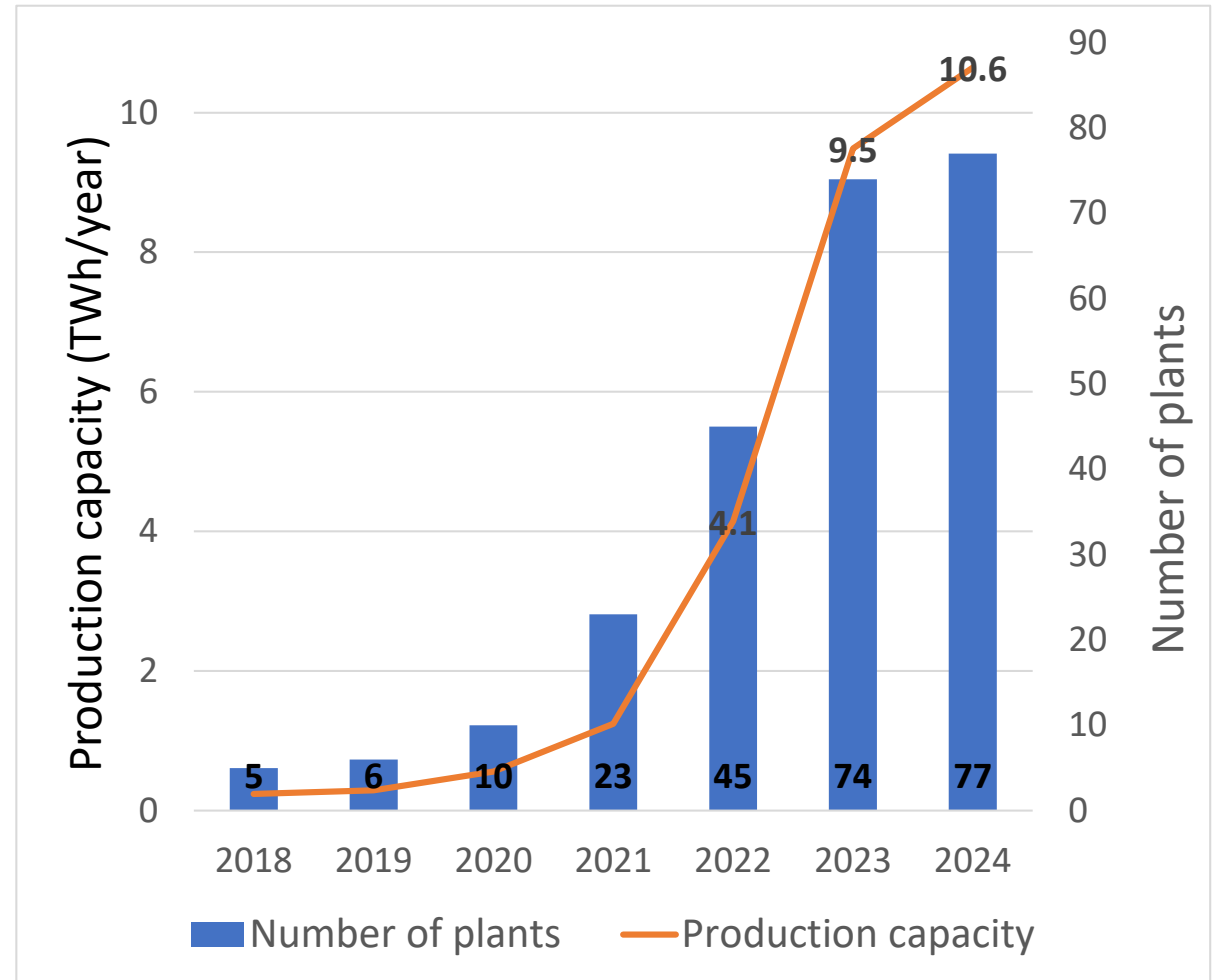
Data: March 2020, gibgas/NGVA Europe

Europe: biomethane production

Number of Bio-LNG plants and Bio-LNG production capacity by 2024

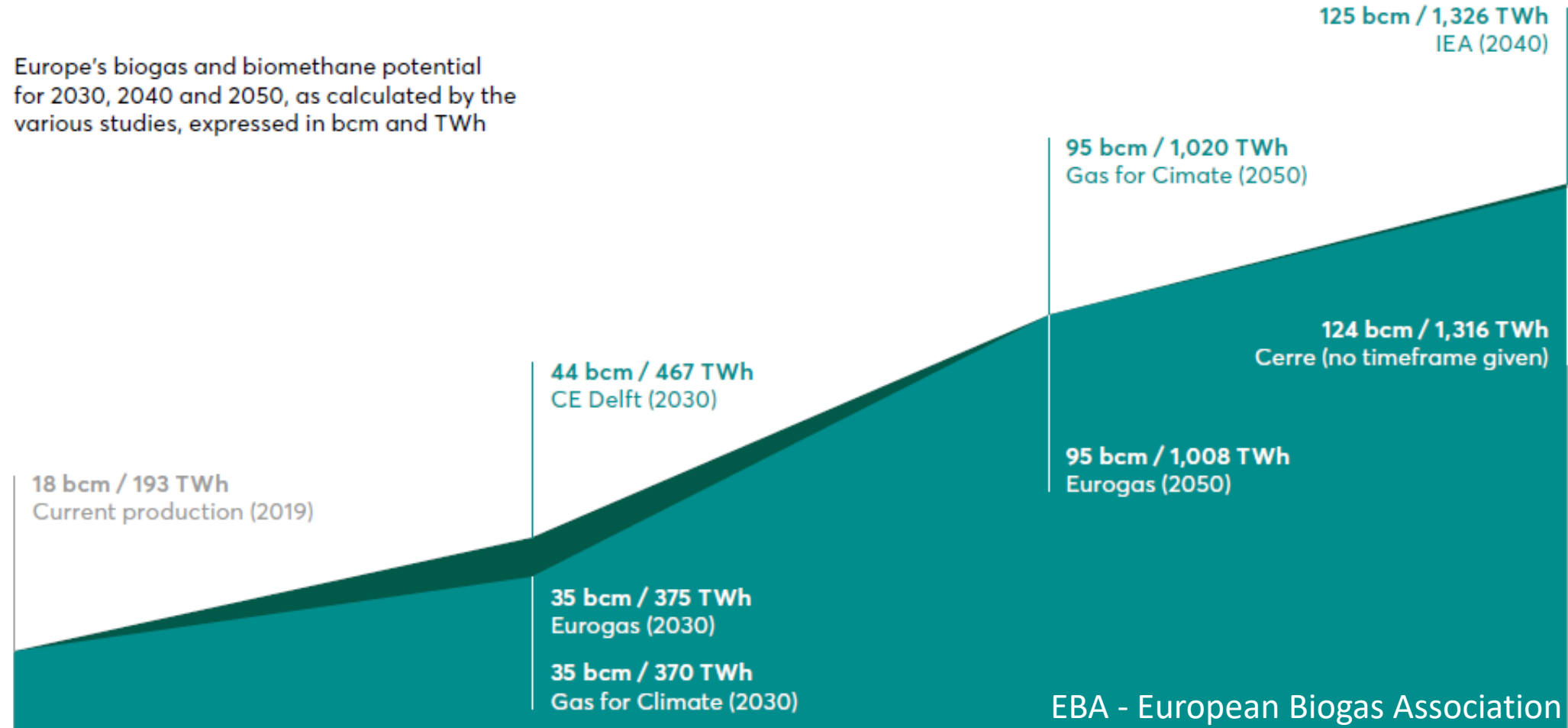
The Bio-LNG production capacity by **2024**, considering only confirmed plants, adds up to **10.6 TWh per year**.

With this volume, almost **25,000 LNG trucks** can be fuelled year-round.



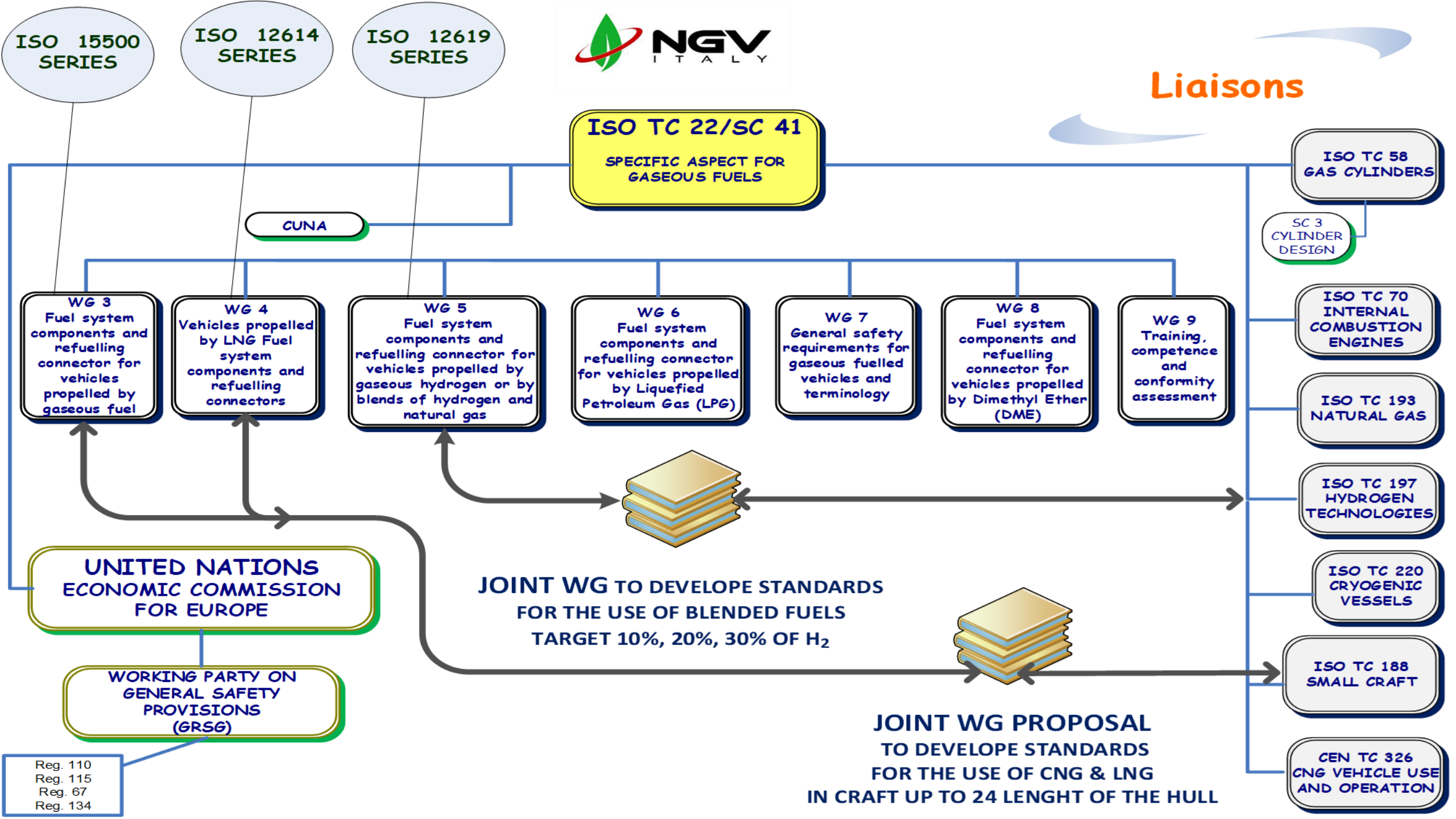
Europe: potential increase in production

Europe's biogas and biomethane potential for 2030, 2040 and 2050, as calculated by the various studies, expressed in bcm and TWh



5.

**Hydrogen blending and Production,
Compression, Storage, Distribution and
Dispensing Technologies.**



ISO 15500 SERIES

ISO 12614 SERIES

ISO 12619 SERIES



ISO TC 22/SC 41
SPECIFIC ASPECT FOR GASEOUS FUELS

Liaisons

CUNA

WG 3
Fuel system components and refuelling connector for vehicles propelled by gaseous fuel

WG 4
Vehicles propelled by LNG Fuel system components and refuelling connectors

WG 5
Fuel system components and refuelling connector for vehicles propelled by blends of hydrogen or by blends of hydrogen and natural gas

WG 6
Fuel system components and refuelling connector for vehicles propelled by Liquefied Petroleum Gas (LPG)

WG 7
General safety requirements for gaseous fuelled vehicles and terminology

WG 8
Fuel system components and refuelling connector for vehicles propelled by Dimethyl Ether (DME)

WG 9
Training, competence and conformity assessment

ISO TC 58
GAS CYLINDERS

SC 3
CYLINDER DESIGN

ISO TC 70
INTERNAL COMBUSTION ENGINES

ISO TC 193
NATURAL GAS

ISO TC 197
HYDROGEN TECHNOLOGIES

ISO TC 220
CRYOGENIC VESSELS

ISO TC 188
SMALL CRAFT

CEN TC 326
CNG VEHICLE USE AND OPERATION

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

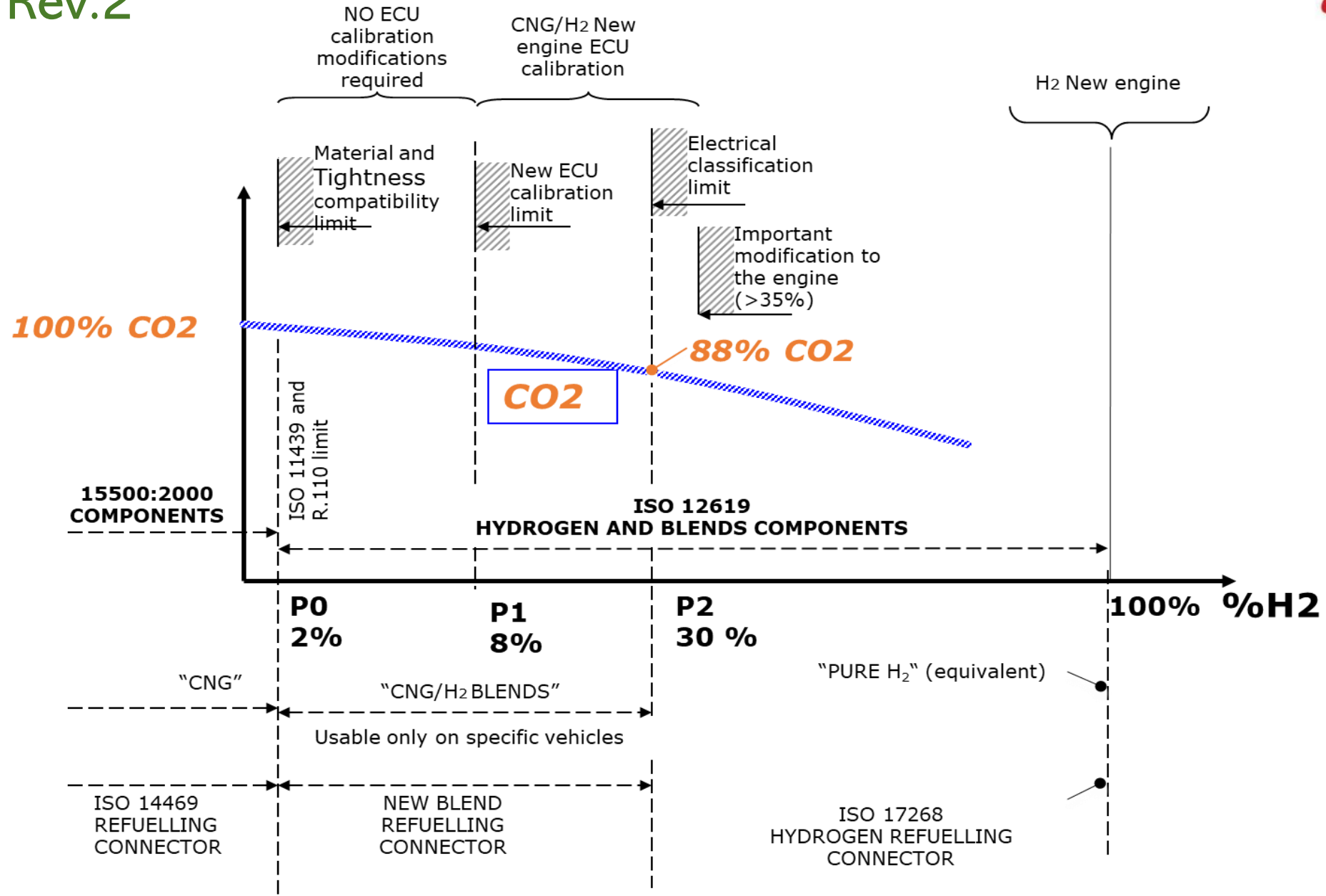
WORKING PARTY ON GENERAL SAFETY PROVISIONS (GRSG)

JOINT WG TO DEVELOPE STANDARDS FOR THE USE OF BLENDED FUELS TARGET 10%, 20%, 30% OF H₂

JOINT WG PROPOSAL TO DEVELOPE STANDARDS FOR THE USE OF CNG & LNG IN CRAFT UP TO 24 LENGHT OF THE HULL

Reg. 110
Reg. 115
Reg. 67
Reg. 134

CNG-HYDROGEN BLENDS POSITION PAPER ISO/TC22/SC25/WG5 N003 Rev.2



Thank you!
presidente@ngvitaly.com

NGV Italy

Mariarosa Baroni
Chairwoman

BACKUP