

An aerial photograph of a multi-lane highway stretching into the distance. A white semi-truck is driving away from the viewer on the right side of the road. The scene is set during sunset, with the sun low on the horizon to the right, creating a bright, golden glow and long shadows. The landscape consists of dark, plowed fields and green grassy verges. The sky is a mix of blue and orange.

The case for renewable natural gas in transport

23 March 2023



Film in stream

Hexagon Composites in short



Listed and
headquartered in
Norway



Global leader in
Type 4 cylinders
and fuel systems



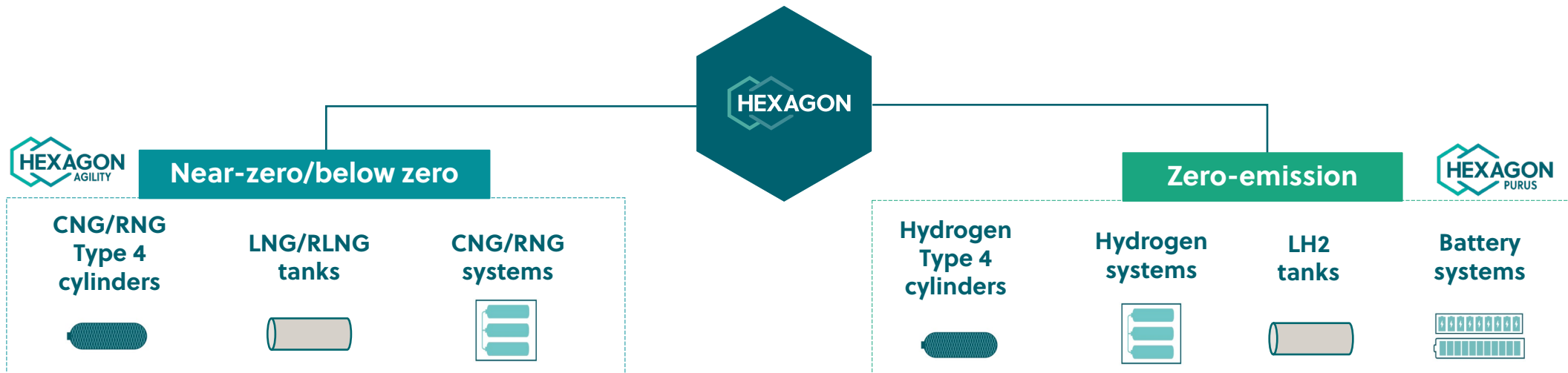
Trusted supplier to
blue chip industrial,
automotive and
logistics companies



NOK 4.9bn
revenues in 2022

Hexagon offers a complete portfolio of clean fuel solutions

Fuel- and technology agnostic approach



Driving Energy Transformation

In 2022, our solutions avoided



1.35 million¹

metric tons of CO₂ equivalents



280,000

Petroleum cars off the road
for one year



1.5 million

Acres of forest saved

1) Number is subject to full-year review. Source: Calculated based on the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) tool from the Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET®) model has been used for estimating emission reductions, Greenhouse Gas Equivalencies Calculator | US EPA

RNG or biomethane?

Renewable natural gas = biomethane

Renewable natural gas (RNG) will be used throughout this presentation

Renewable natural gas made from organic waste

Renewable natural gas (RNG) is generated from organic waste – does not compete with food and feed

Part 1:

Sustainability-focused regulation and its impact on renewable natural gas

- Opening remarks by CEO
- Navigating the regulatory landscape in Europe
- Key learnings from the US
- Panel discussion & audience participation



Presenters



Jon Erik Engeset
CEO
Hexagon Composites



Ashley Remillard
SVP Legal &
Governmental Affairs
Hexagon Composites



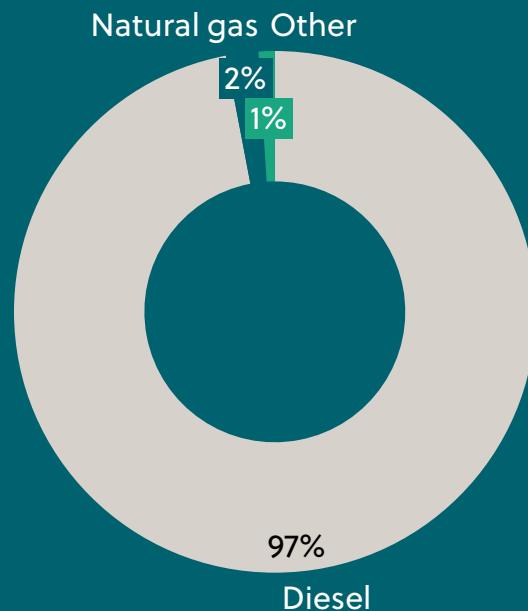
Harmen Dekker
CEO
European Biogas
Association



Daniel Gage
Secretary General
NGVAmerica

Challenge: nearly all commercial vehicles sold in the world run on diesel

Medium-duty trucks/Heavy-duty truck sales by drivetrain, 2020¹⁾ (US + EU)



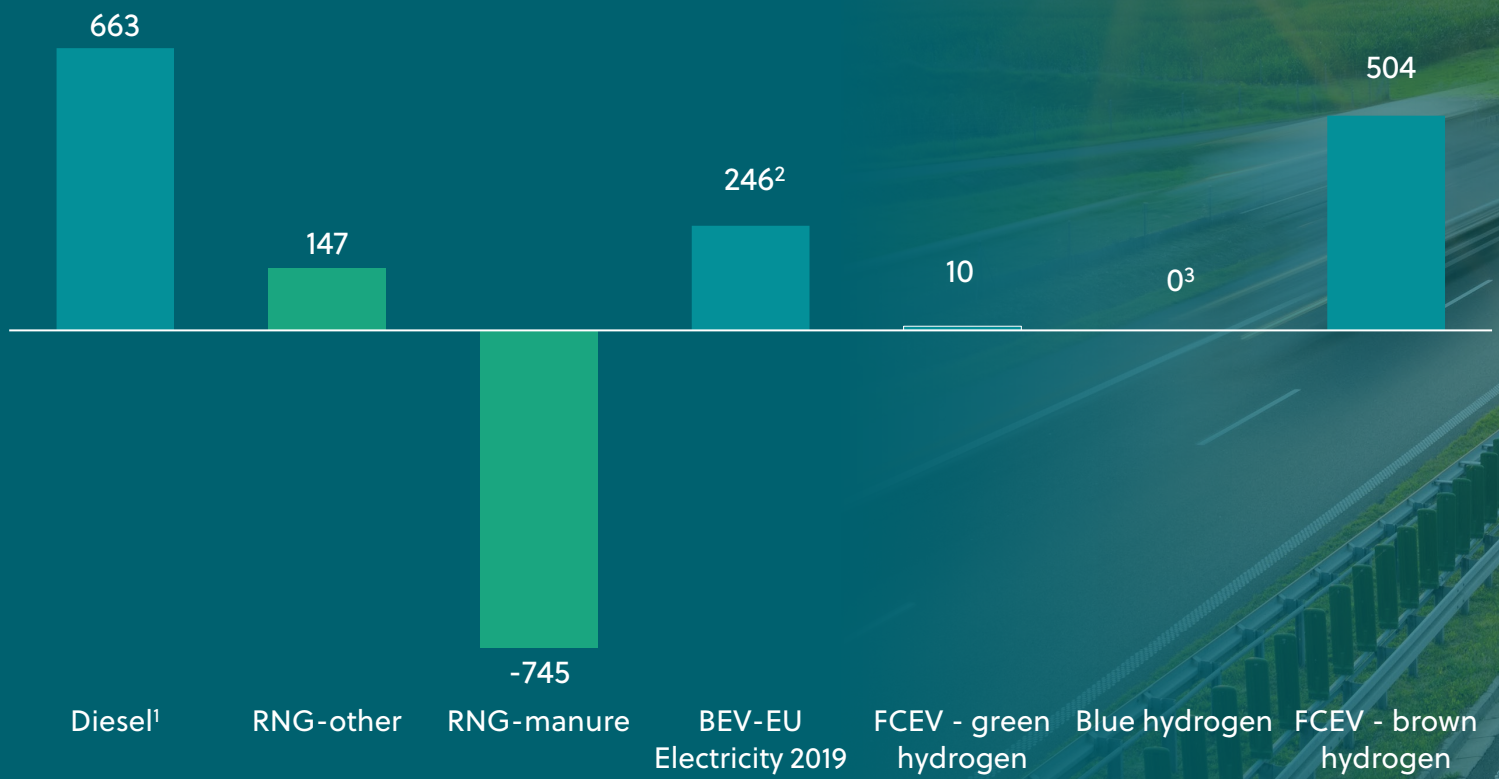
Heavy-duty trucks represent ~25% of global road emissions

Transportation sector responsible for >20% of CO2 emissions

European heavy-duty transport projected to grow by 55% by 2050²⁾

We need to look at energy-sources from a well-to-wheel approach

Well-to-wheel CO_{2-eq} emissions, in g/km for class 7 truck



Source: 1) RED II, Annex VI, published 21.12.2018, 2) JEC Well-to-Wheels Report v5, 2020 – synthetics based on pathways with electricity and CO₂ from renewables
3) Hexagon estimate

Majors investing in RNG

October
2022

3 minute read · October 17, 2022 5:42 PM GMT+2 · Last updated 4 months ago
BP to buy U.S. biogas producer Archaea for \$4.1 bln

By Ron Bousoo and Ruhi Soni



BP logo and stock graph are seen in this illustration taken May 1, 2022. REUTERS/Dado Ruvic/Illustration

Summary Companies

- BP bets on growing demand for waste-sourced fuel
- BP aims to grow output five-fold by 2030
- Deal is biggest since CEO Looney took office in 2020

November
2022

1 minute read · November 28, 2022 6:28 PM GMT+1 · Last updated 3 months ago
Shell to buy Danish firm Nature Energy for nearly \$2 billion

Reuters



Shell and Nature Energy logos are seen in this illustration taken, October 18, 2022. REUTERS/Dado Ruvic/Illustration

Companies

- Shell PLC
- Tome Nature Energy Lic.

February
2023

2 minute read · February 6, 2023 12:55 PM GMT+1 · Last updated 6 days ago
Goldman Sachs to invest over \$1 bln in Europe biomethane venture

By Virginia Furness



The logo for Goldman Sachs is seen on the trading floor at the New York Stock Exchange (NYSE) in New York City, New York, U.S., November 17, 2021. REUTERS/Andrew Kelly/File Photo

Summary Companies

- Launches Verdalia Bioenergy
- Aims to invest the amount over four years
- Part of efforts to green EU economy



There is not one solution that can replace diesel

- The fuel system must fit the purpose and range of the vehicle and the infrastructure where it operates
- **We cannot wait** to transition the heavy-duty sector
- **RNG is available today**

Let's understand what RNG is....

SYSTEM OF REPRESENTATION
REPRESENTATION OF THE WORLD

Film in stream

RNG captures methane that would otherwise be emitted to the atmosphere



The UN projects 25% growth in global population by 2050



The World Bank expects 69% more municipal solid waste (MSW) by 2050



According to European Commission decomposing waste accounts for 26% of EU methane emissions



RNG is already part of the solution across Europe and North America

Depending on biomass source **RNG has an 80-200% reduction in CO₂-eq emissions** on a well-to-wheel basis

Navigating the regulatory landscape in Europe

The background of the slide features a photograph of several European Union flags on tall poles, set against a large, modern building with a curved facade. The scene is captured during the 'golden hour' of sunset or sunrise, with a warm, yellowish glow from the sun on the right side. The entire image is overlaid with a semi-transparent teal color that serves as a background for the white text.

RNG retains solid regulatory support in heavy duty vehicle segment



REPower EU

- 35 billion cubic metres biomethane production and use by 2030
- Biomethane Industrial Partnership (BIP) to support EU biomethane target

EU Taxonomy

- RNG qualifies as contributing substantially to climate change mitigation

Renewable Energy Directive (RED) III:

- Increases current target for renewable energy sources of 32% to at least 40% by 2030
- Recognizes decarbonization potential of RNG

Advanced Fuel Infrastructure Directive

- Requires one LNG refueling station at least every 400 km on TEN-T Core Network
- Retained in *Fit for 55* for LNG – Parliament adopted recommendations of Transport and Tourism Committee in October 2022, retaining majority of concepts from EU proposal

Harmen Dekker CEO, European Biogas Association

CO₂ Emission Regulation – Light Duty

Aimed at achieving EU's goal of net-zero carbon emissions by **2050**

Reduction's target of 100% for passenger cars and light commercial vehicles by 2035

Reduction's target of **55%** for passenger cars by 2030 and **50%** for vans by 2030

Agreed in principle in October 2022 but reopened in February 2023 due to pressure from coalition of member states opposing ICE ban

Against 2035 internal combustion engine ban



**10 Member States, 56.2%
of the EU population**

Pro 2035 internal combustion engine ban



**6 Member States, 33.1% of
the EU population**

CO2 Emission Regulation Proposal Medium and Heavy-Duty vehicles

UPDATED EMISSION TARGETS

- **45%** emission reductions from 2030
- **65%** emission reductions from 2035
- **90%** emissions reductions from 2040

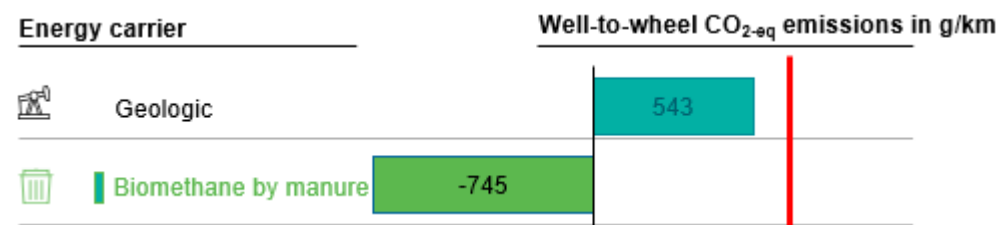
ZEV TARGET FOR URBAN BUSES

- **100%** by 2030

Proposal on CO2 Standards for HDVs Analysis

- Proposal will be discussed and amended by EU Parliament (lead by Environment Committee) and EU Council (expect ~18 months before final rule)
- Commission rejected credit system or carbon correction factor as **too complex**
- Commission declined to use life cycle/well-to-wheel analysis
- All eyes are on light duty rulemaking, as that may heavily impact heavy duty regulation

Proposal does not currently credit the CO2-savings to the manufacturers' fleet-emission targets.





Key learnings from the US

Positive regulatory landscape in the United States - Sustainable finance initiatives and credit programs

Inflation Reduction Act

- Extension of Alternative Fuel Tax Credit through 1 Jan 2024
- Transitions to Clean Fuels Production Credit for 2025 -2027
- Extension of energy Investment Tax Credit (ITC) to include biogas

EPA Clean Trucks Plan

- Sets NOx standard at 0.035 grams per horsepower hour
- Expected to drive up costs for diesel trucks

Renewable Fuel Standard & Low Carbon Fuel Standard

- Credit programs driving production and use of biomethane

Decarbonization of heavy-duty transport must begin now

No one-size-fits-all clean energy solution for heavy-duty transport – now or in the future

Path to decarbonization can be **accelerated** immediately by targeting the **high emitting long-haul heavy-duty transport** segment

The RNG solutions leverage technology, infrastructure and an energy source that is readily **available today**



We are back at 12:05

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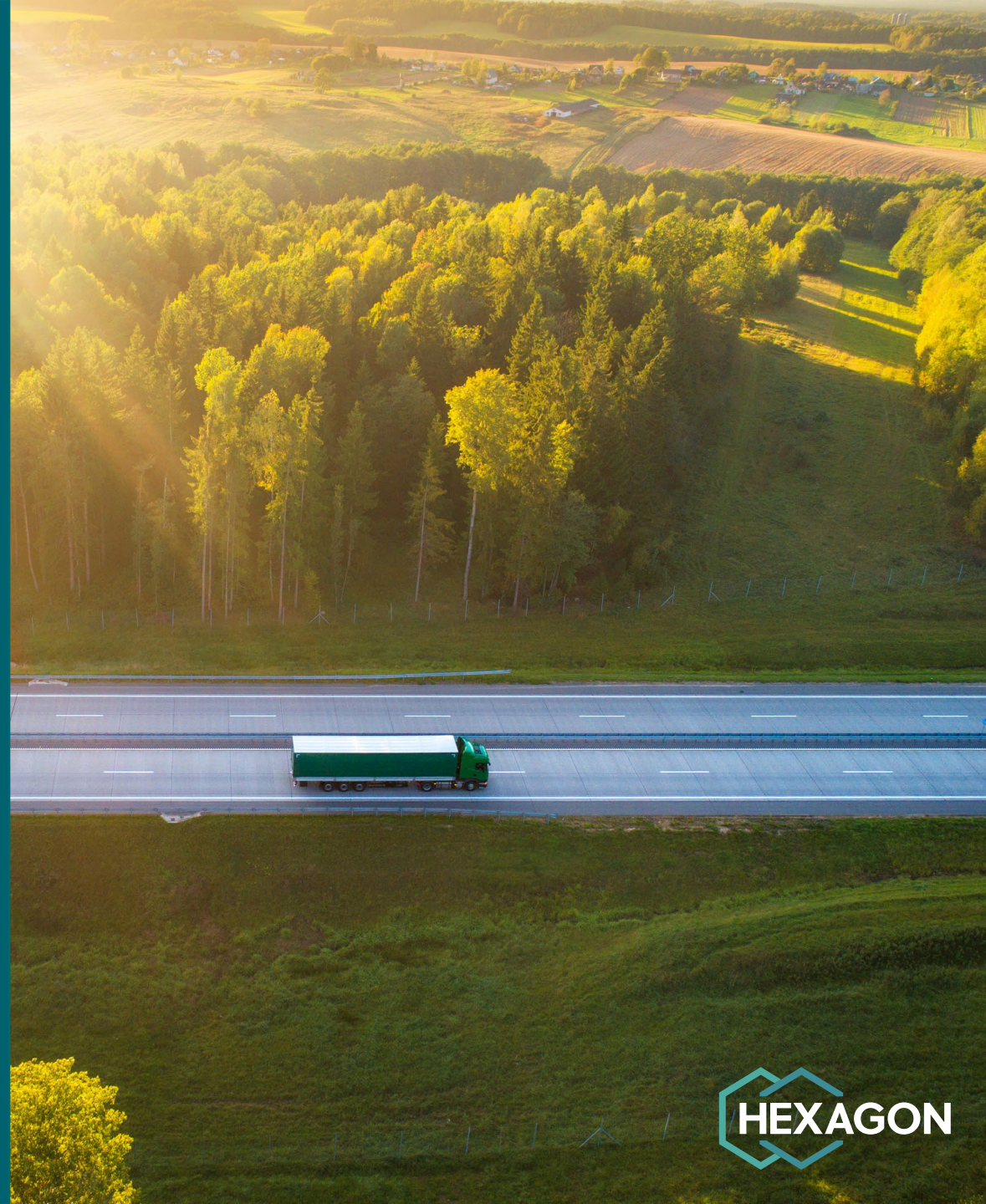
The case for renewable natural gas in transport

23 March 2023

Part 2:

Accelerating the decarbonization of commercial transportation

- RNG: The most cost effective and scalable renewable solution for heavy duty transport
- Heavy duty industry landscape & technology demand
- A fleet's perspective
- Q&A led by Thomas D. Næss, Equity Research at SpareBank 1 Markets
- Closing remarks



Presenters



Eric Bippus

**SVP Global Sales &
Marketing**
Hexagon Agility



Mike Casteel

UPS Fleet Procurement
Director - retired



Thomas D. Næss

Equity Research,
SpareBank 1 Markets

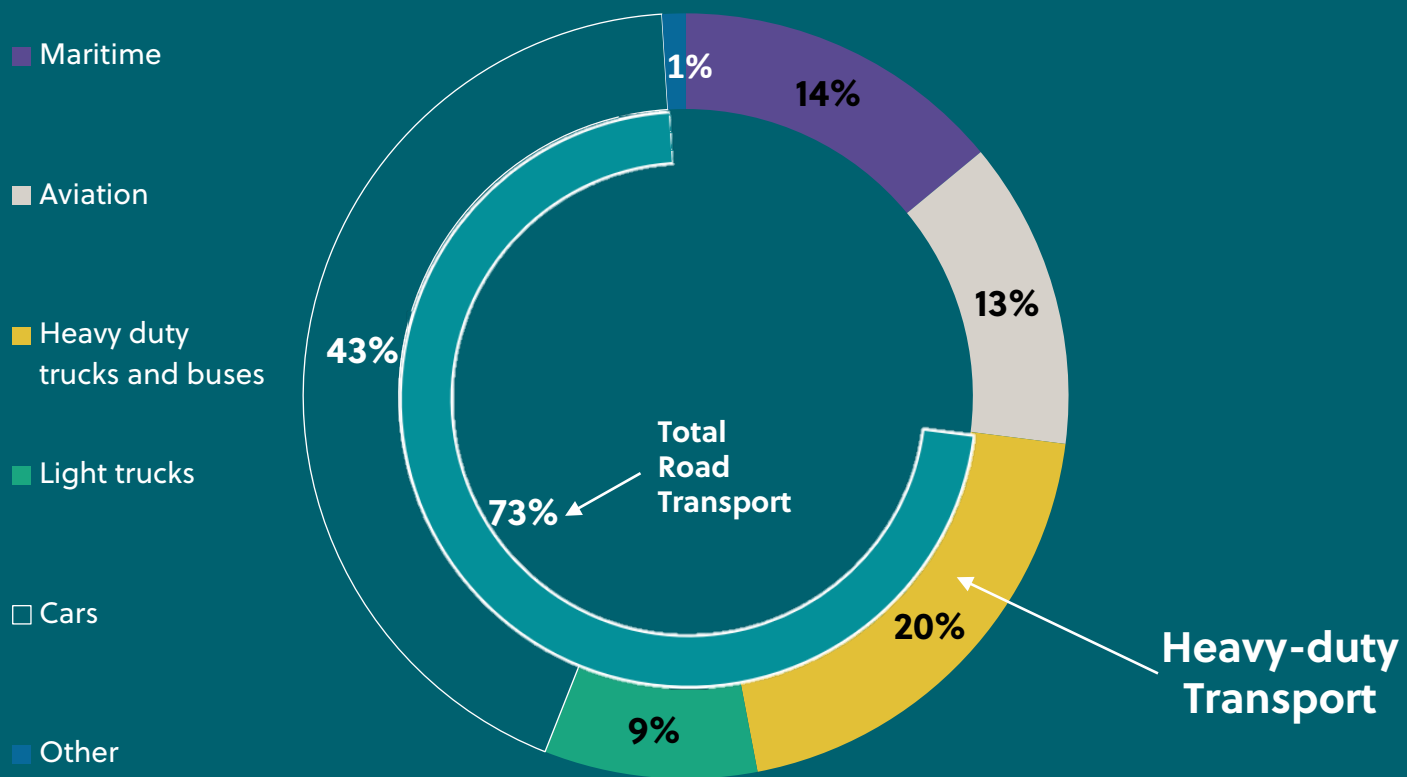
Decarbonizing the transportation sector with urgency is required to reach global climate targets by 2030

Transportation is responsible for almost **20%** of global CO2 emissions

+330,000 heavy-duty transport vehicles sold in both North America and Europe
97% are still diesel

Sustainability targets for HD road transport are being fast-tracked targeting a **30%** reduction by 2030

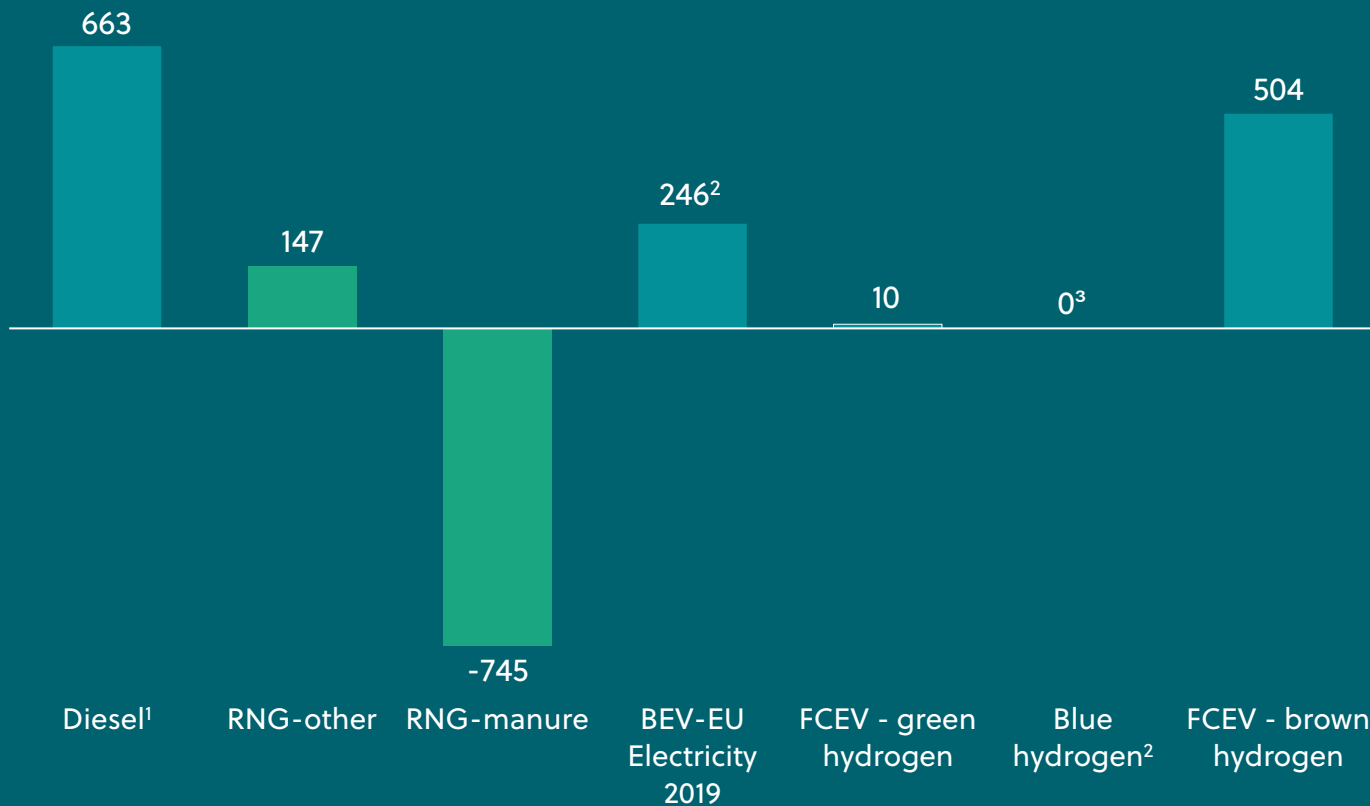
European CO₂ intensive transport modes



Trucks are high emitters of GHG
1 truck equivalent to 20 cars

Today RNG is already making a positive impact on heavy duty transport emission reduction well ahead of 2030 targets

Well-to-wheel CO_{2-eq} emissions, in g/km for class 7 truck



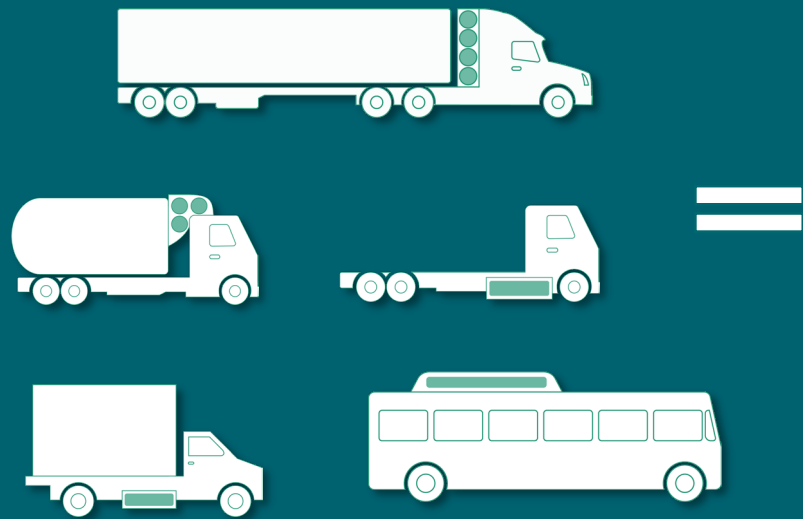
Low to negative CO₂ emissions
from capturing methane otherwise emitted to the atmosphere

Drop-in fuel
Fully interchangeable with CNG as a drop-in fuel

Well-suited for transportation
80% of the RNG produced in the US goes into transportation

There is enough biomass to support future energy demand of EU commercial vehicle segment

Energy commercial vehicle fleet



1,100+ TWh

Energy demand of the European commercial vehicle fleet



Food waste



Manure



Waste water



Landfill

~1.5x Demand

Potential supply of biomass in North America & Europe compared to expected commercial vehicle RNG energy demand.

Natural gas filling station infrastructure is in place along key transport routes in the US and in the EU, supporting long-haul transportation



Over 64%

Natural gas used in transportation is renewable

1,523/115

CNG/LNG fueling stations in operation in the US today

+15/35

Additional CNG/LNG fuel stations planned



634

Public LNG/bioLNG fuel stations in operation in Europe today (+~200% in 2Y)

17%

Estimated content of RNG in today's European natural gas used for transport sector

100%

RNG Stations
Available in Sweden, United Kingdom and the Netherlands

Today there are over 100 mature natural gas vehicle offerings from 15+ OEMs in EU and North America

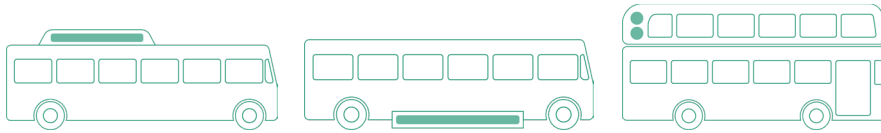
Heavy Duty Truck



Refuse



Bus & Coach



Medium Duty



SCANIA



KENWORTH



IVECO



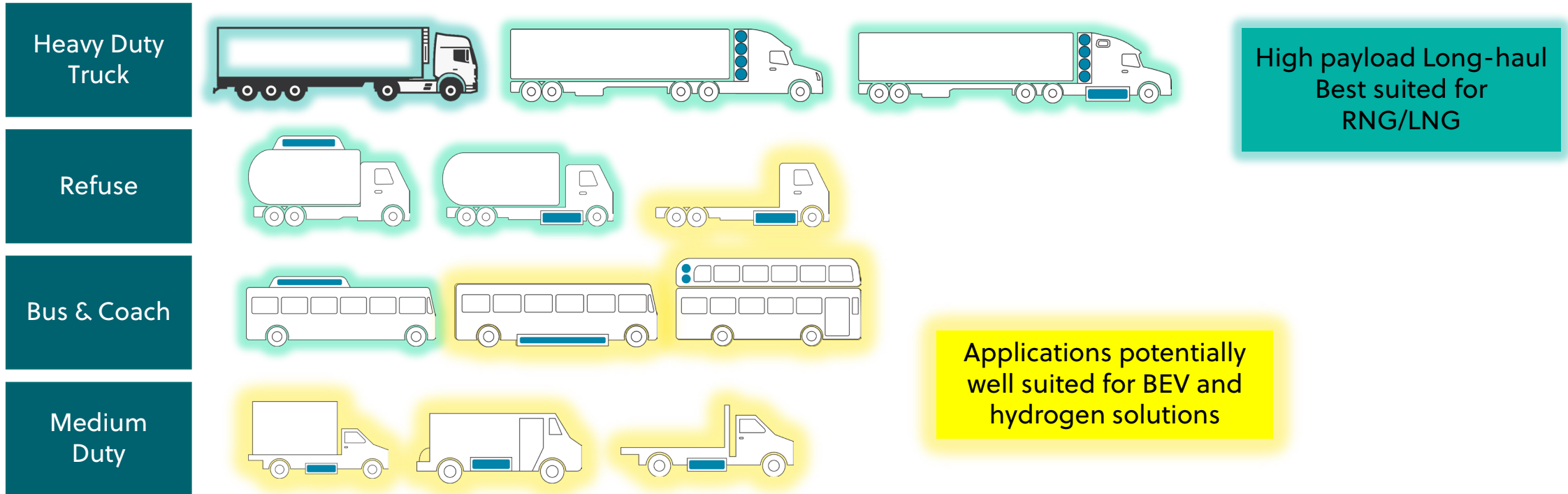
VOLVO



Notable OEMs



We believe there are multiple clean energy solutions for today and into the future



SCANIA



KENWORTH



IVECO



VOLVO

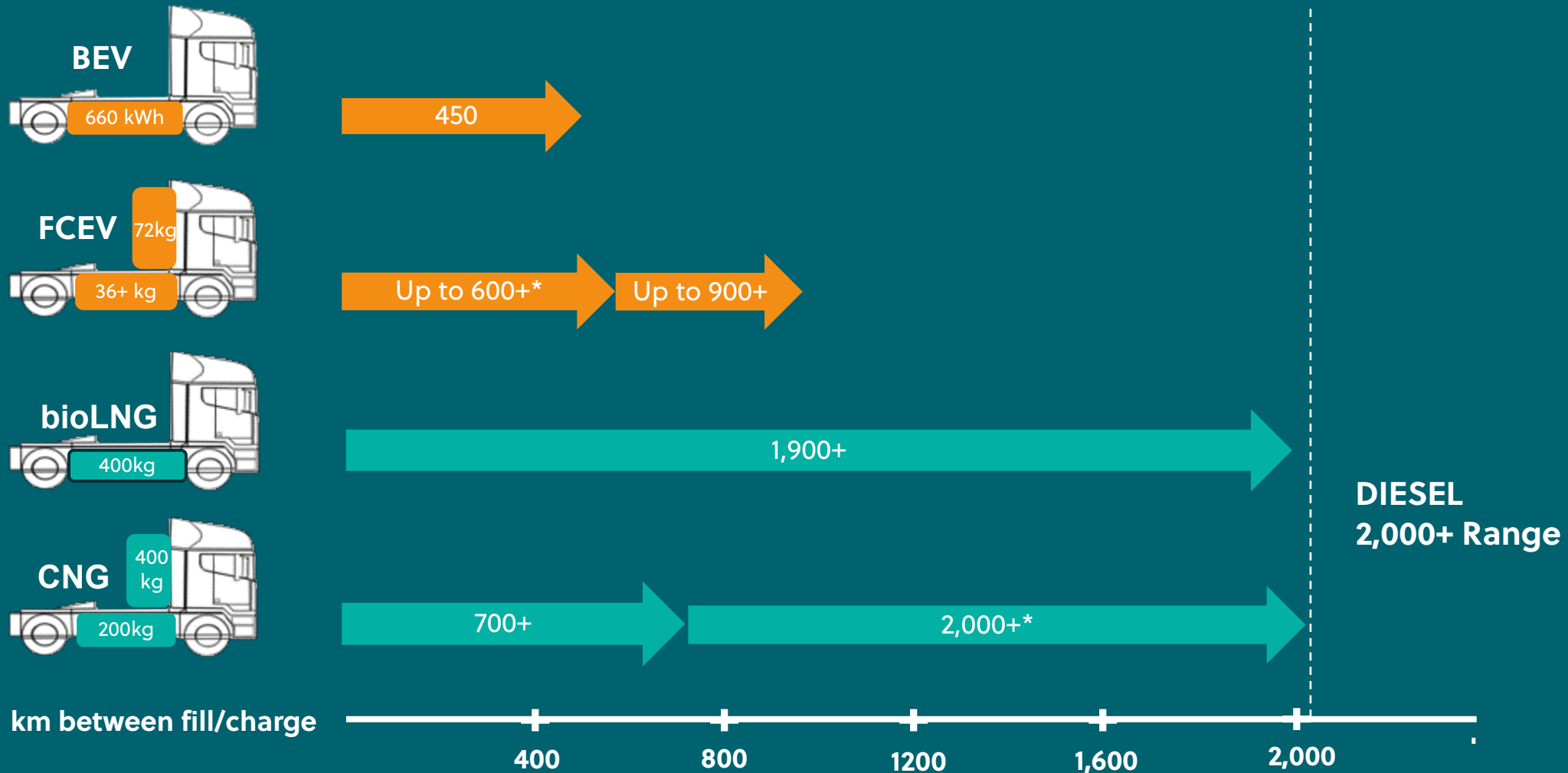


Notable OEMs





Clean energy solutions for today's European transport sector vary greatly in readiness and suitability for HD long haul

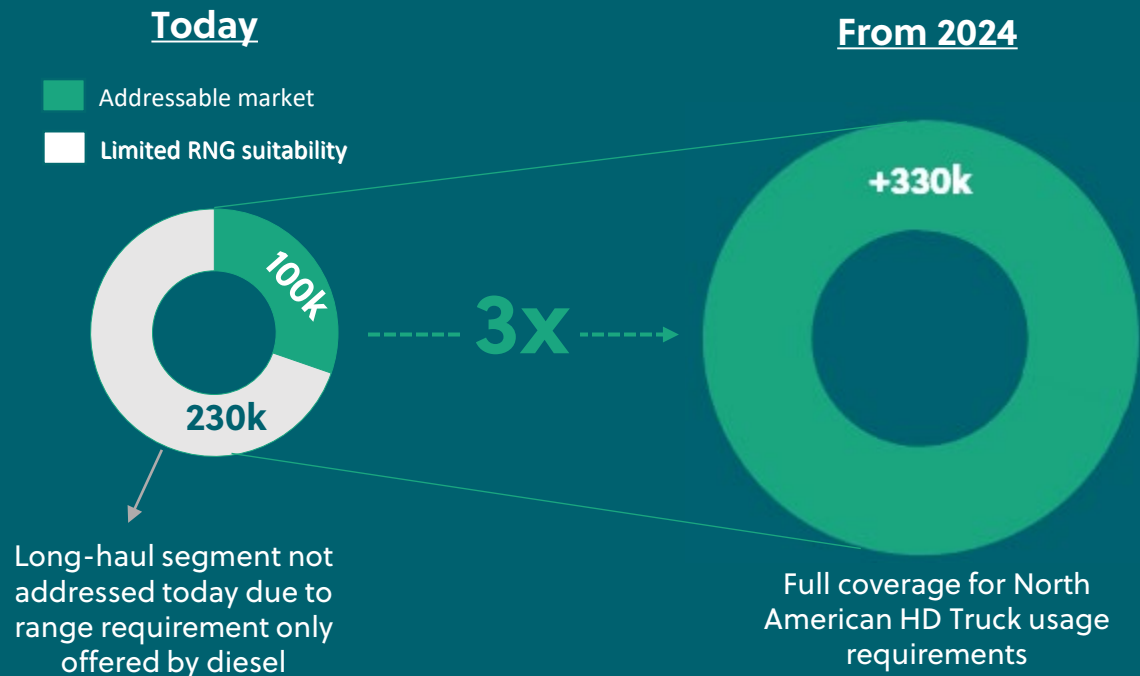


New industry-changing natural gas engine being launched in 2024 unlocking the North American long-haul market segment for RNG



- New OEM engine offering will expand RNG addressable market by additional 230,000 HD trucks
- Specifically designed for long-haul high payload applications offering better fuel economy, efficiency and range
- Range of RNG long-haul truck 1,300+ miles or 2,000km for North American market

Heavy-duty truck addressable market for natural gas solutions in North America (# trucks sold per year)



RNG is the only alternative fuel that is immediately deployable at scale

Highest carbon abatement potential

Up to
200%

CO₂-eq emissions savings of biomethane from manure compared to trucks with diesel

Best performing energy choice for fleets

1,900+

Kilometer range potential for HD transport between fill with no loss of payload

Available fuel and filling stations

150%

Sufficient biomass in Europe and North America to meet energy demands of HD transport

630+

HD LNG filling stations available in Europe with another 1,500+ CNG in North America

Mature technology with OEM support

100+

OEM Natural Gas vehicle platforms available in Europe and North America

15+

Global OEMs with mature offering in CNG/LNG, incl. Scania, Iveco, Volvo, Freightliner, and more

Positive TCO for today's HD fleet

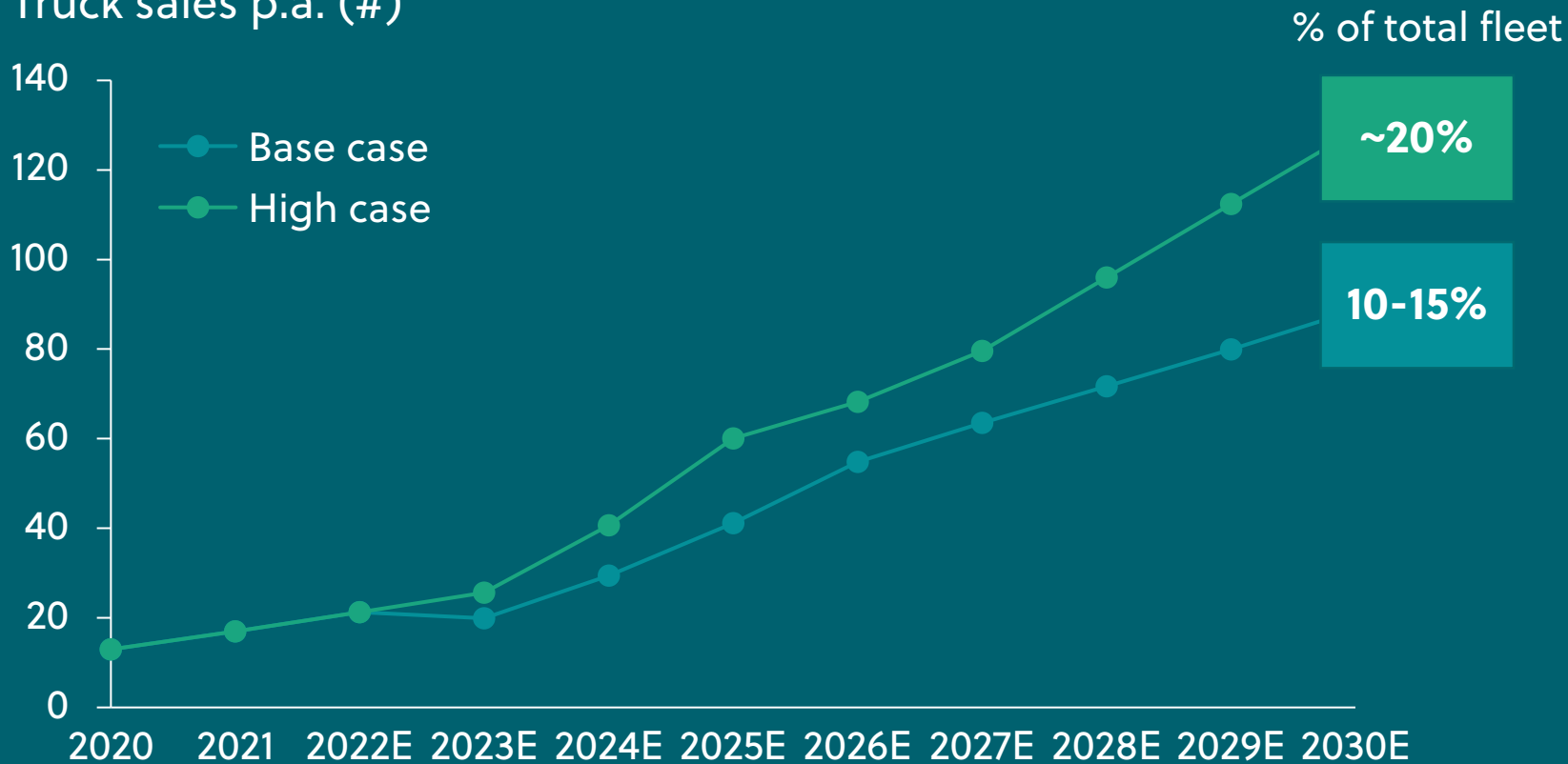
1st

Available renewable fuel, mature product platforms, OEM support and an operating model that allows for fleet efficiency make RNG the best alternative fuel solution

RNG truck demand is strong and will further accelerate in 2024 when the new 15L engine is introduced to the market

Natural gas potential uptake in US/EU heavy-duty transportation

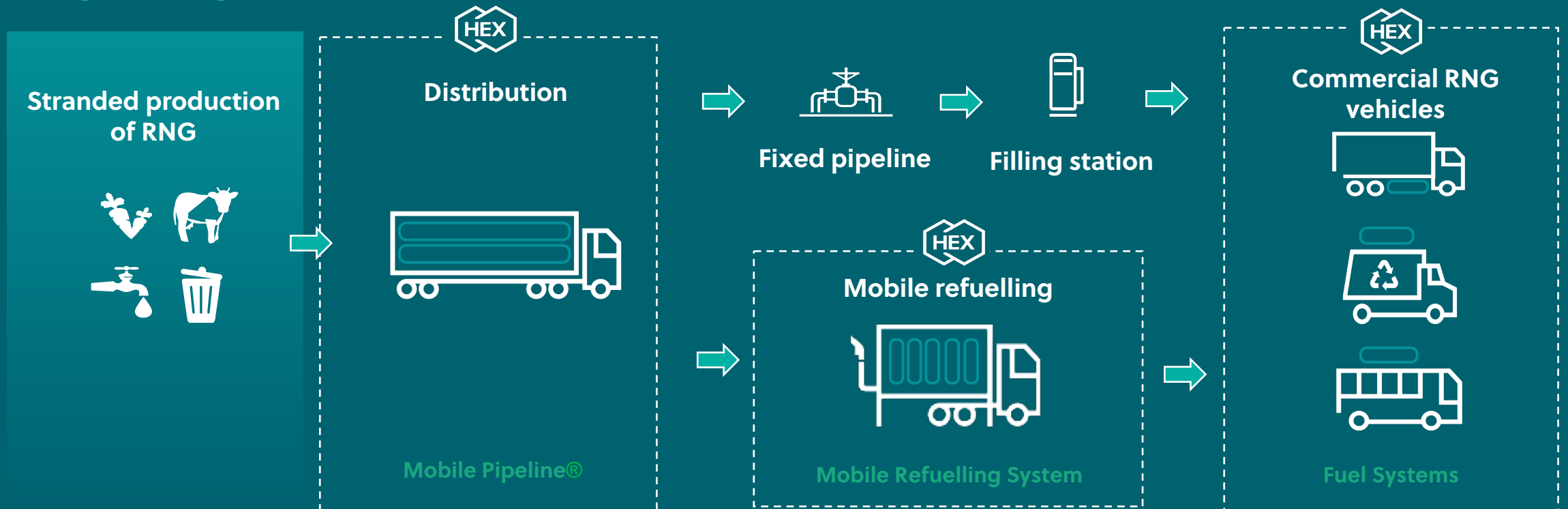
Truck sales p.a. (#)



Hexagon is a key enabler of RNG

The RNG (biomethane) value chain

Hexagon offering



Over 70,000 commercial vehicles on the road globally with Hexagon Agility solutions





Clean air everywhere