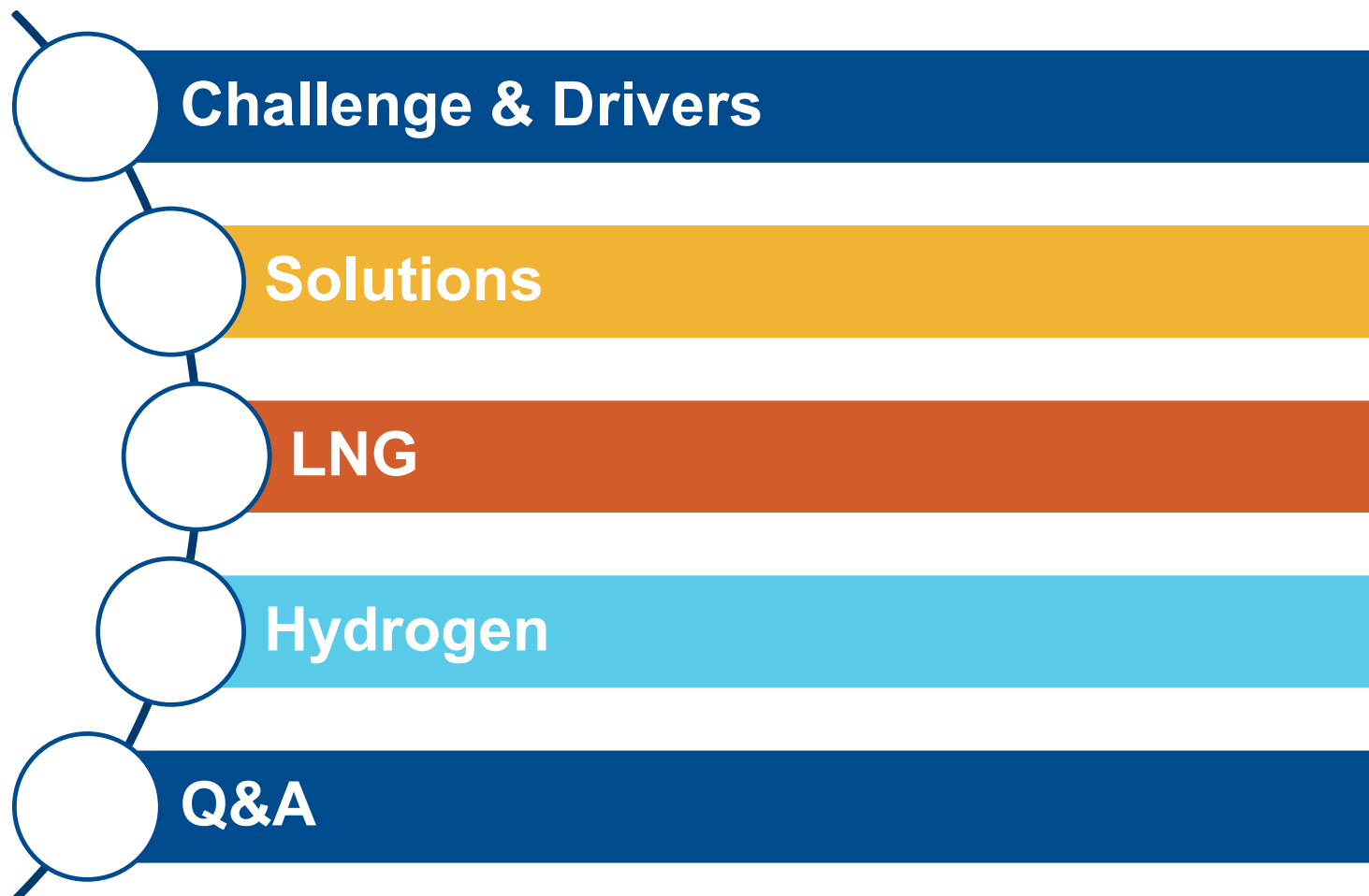




# Clean Energy – Evolution or Revolution?

UNITI Stuttgart 15<sup>th</sup> May 2024

DFS Worldwide Brands





# Many Brands. One Mission. Your Success.

We are a leading global provider of advanced customer-focused technologies, services and solutions in the fuel and convenience retail industries.



Site  
Efficiency



Dispensers  
(conventional + CE)  
& Payment



Consumer  
Experience



Connectivity



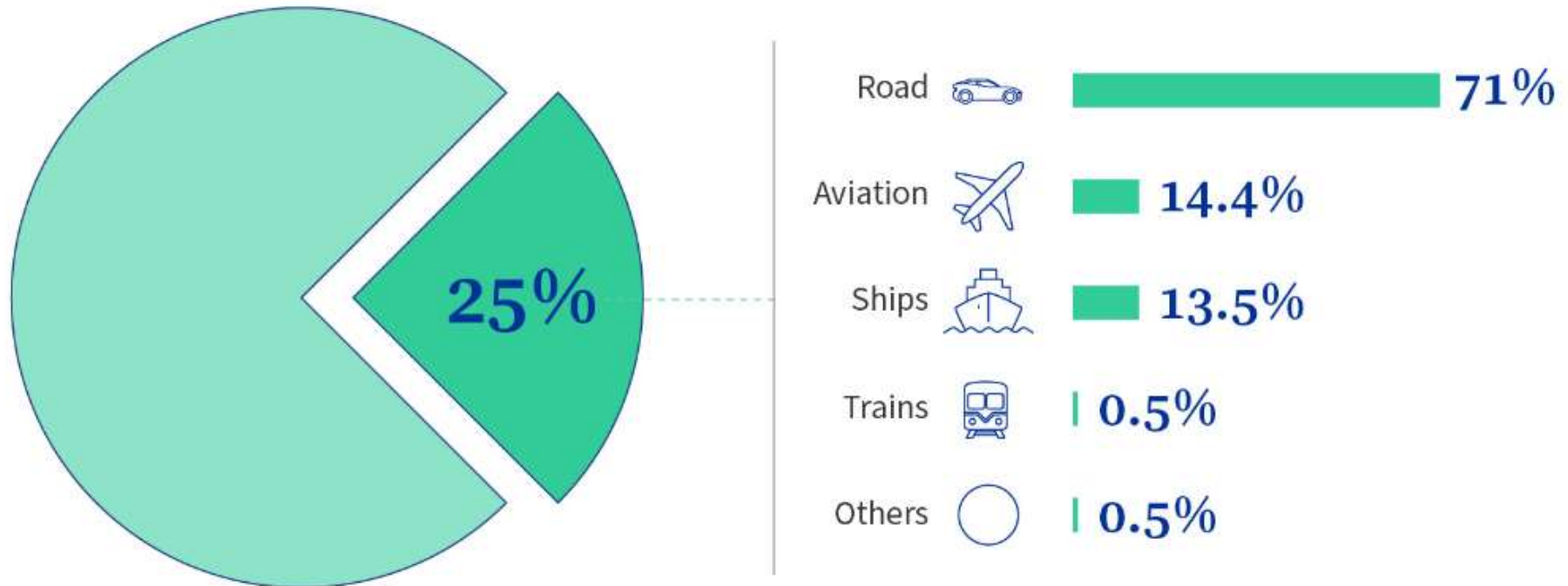
Retail Systems  
& Pricing



Fleet  
Solutions

## GHG emissions in the EU

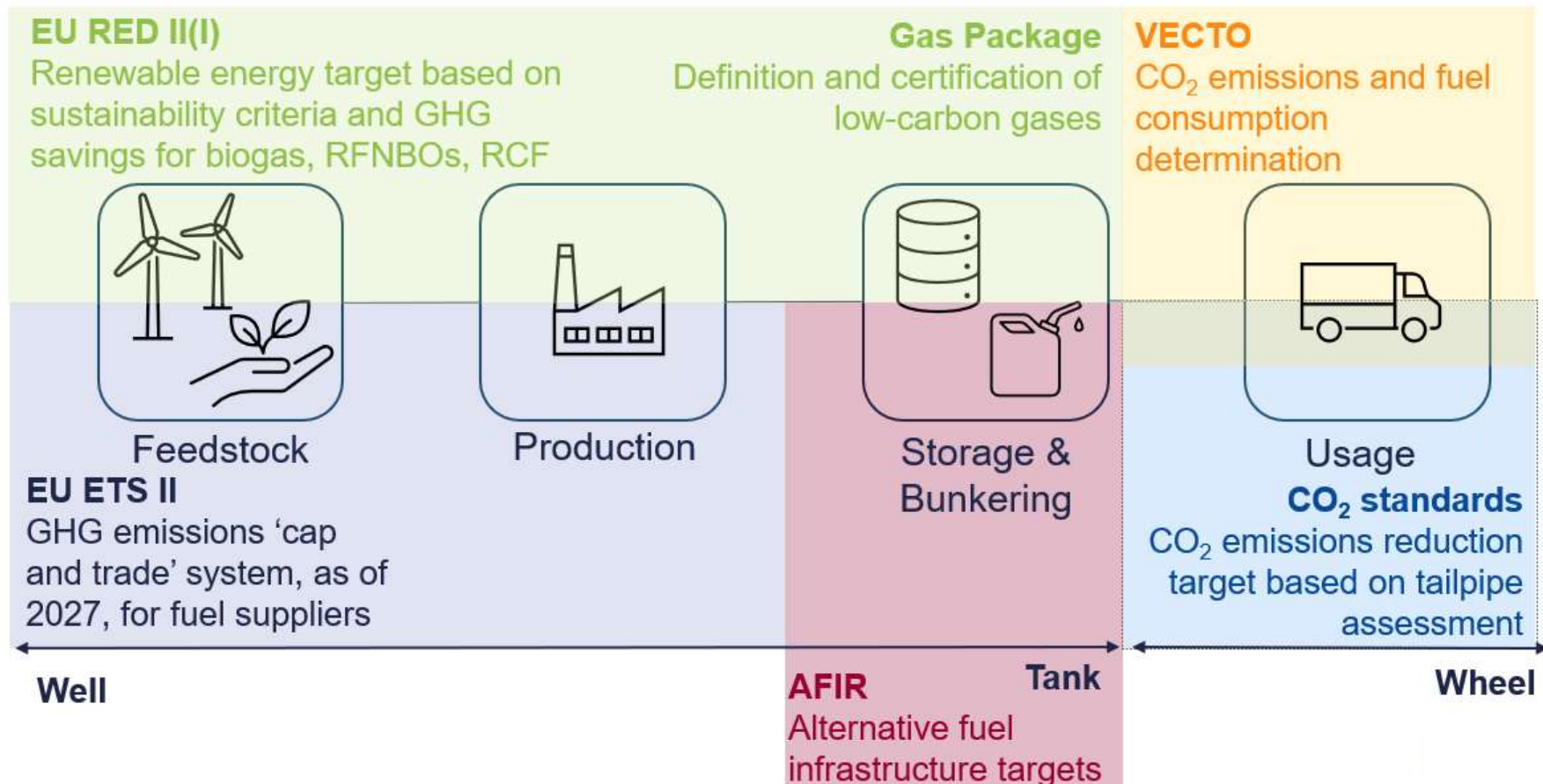
**Transport** is responsible for almost 25% of greenhouse gas (GHG) emissions in the EU





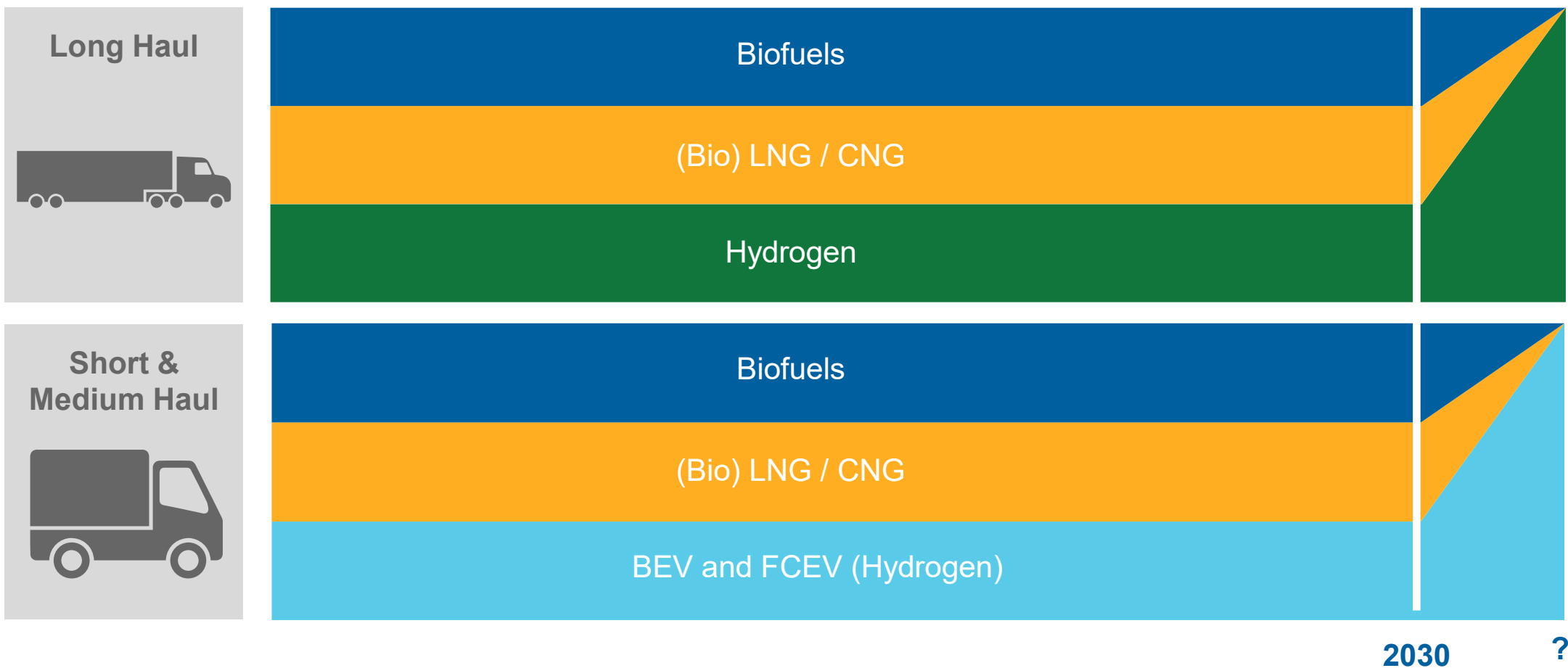
## Regulatory drivers for the fuel switch

### How does EU law affect heavy duty transport?



## Pathways to decarbonization

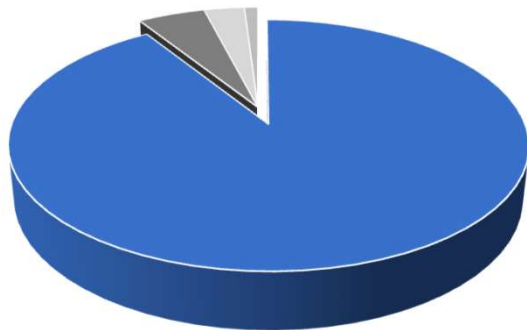
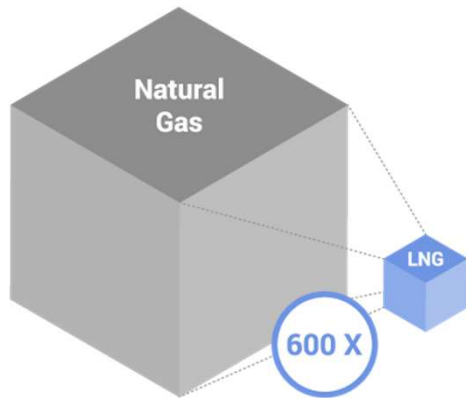
A mix of alternative fuels including bio-fuels is needed for immediate decarbonization.



# LNG

Ecological and Economical Clean Fuel in HD Transport

## LNG basics

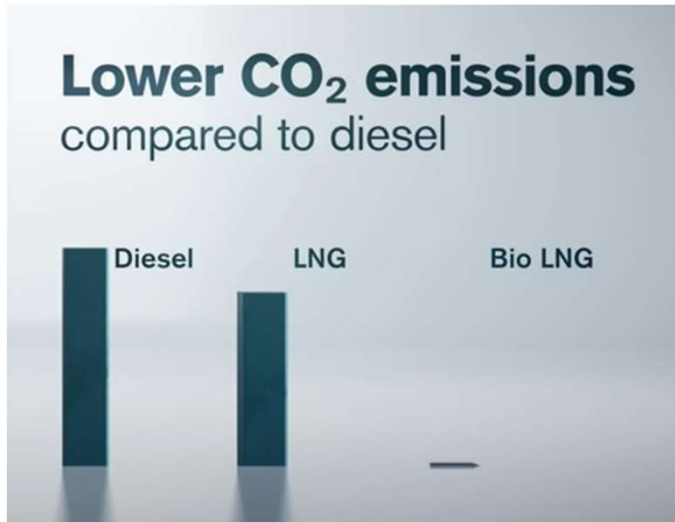


■ methane ■ ethane ■ propane ■ butane

- LNG = Liquefied Natural Gas
- Cool down natural gas to  $-162^{\circ}\text{C}$
- Volume reduces 600 times
- Clear
- Colorless
- Non-toxic liquid
- Safe fuel
  - Small flammability range
  - High ignition temperature
  - Lighter than air
  - PPE required to fuel LNG



## LNG basics



- Ecological alternative to diesel in heavy duty transportation
  - local air emissions
  - up to 20% CO<sub>2</sub> reduction
  - 50% less noise pollution
- Lower fuel consumption than Diesel
- Available today





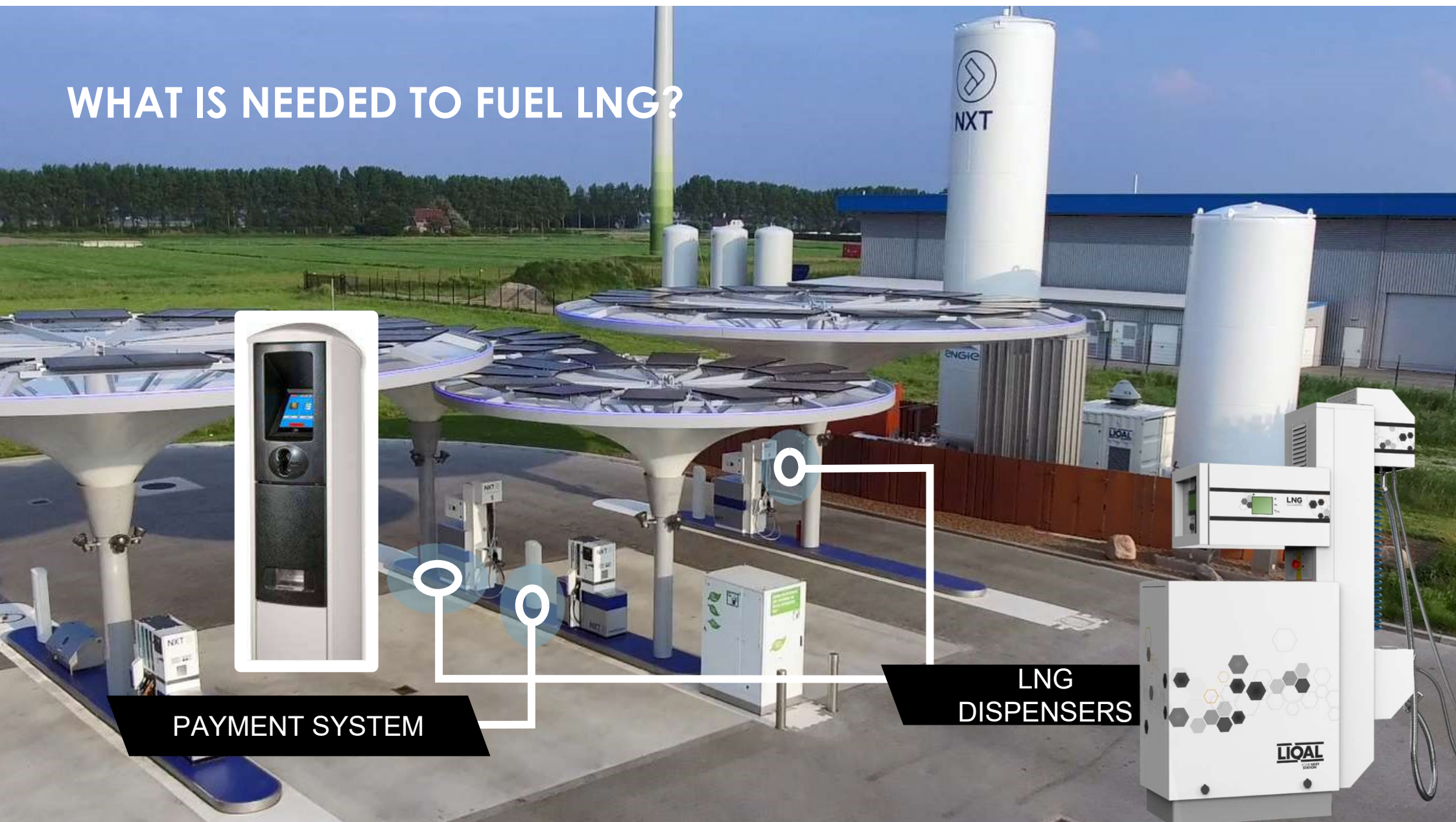
Bio-LNG from organic waste  
Up to 95% CO<sub>2</sub> reduction compared to diesel  
LNG fuel stations and trucks are compatible

**WHAT IS NEEDED TO FUEL LNG?**





# WHAT IS NEEDED TO FUEL LNG?







LCNG ADD-ON



CNG DISPENSER

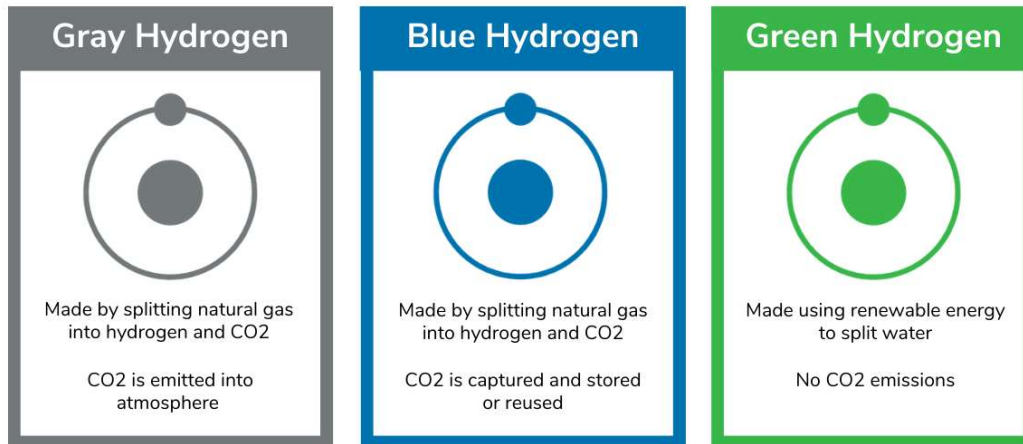
# Hydrogen

The Alternative Fuel on the Rise

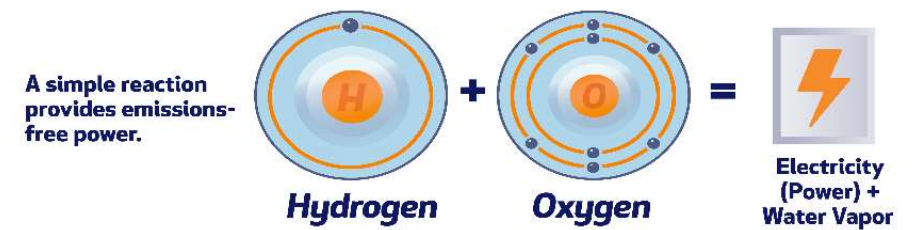


# Hydrogen basics

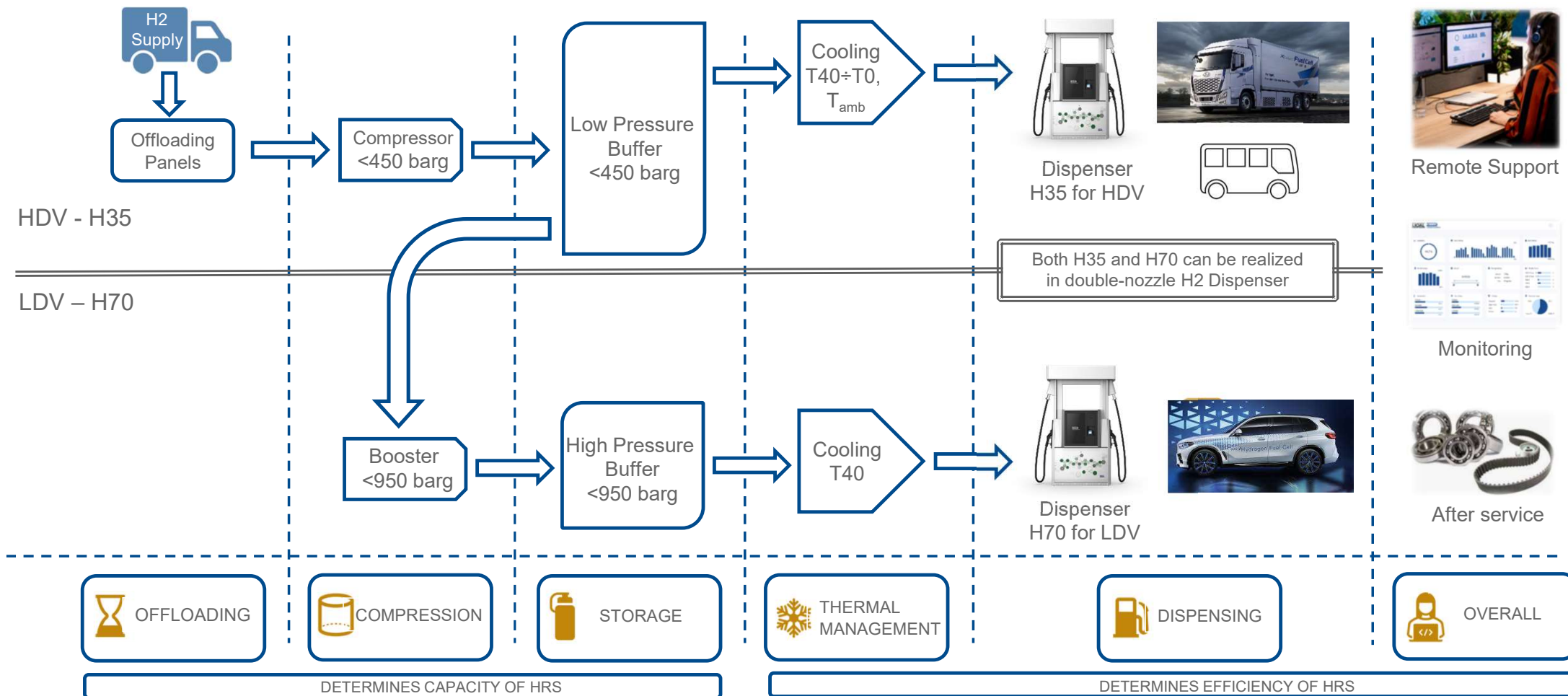
## Production of Hydrogen The colors



## Consumption in the fuel cell



# What is needed to fuel Hydrogen?



- Clear push to reduce CO<sub>2</sub> emissions from transportation
- Gradual move towards decarbonized fuels
- A mix of alternative fuels including bio-fuels is needed
- Stakeholder collaboration is key to success





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**Any questions?**

We are happy to support you