



# Miksi Vety?

AFRY vetyseminaari 29.3.2022

ESA SIPILÄ

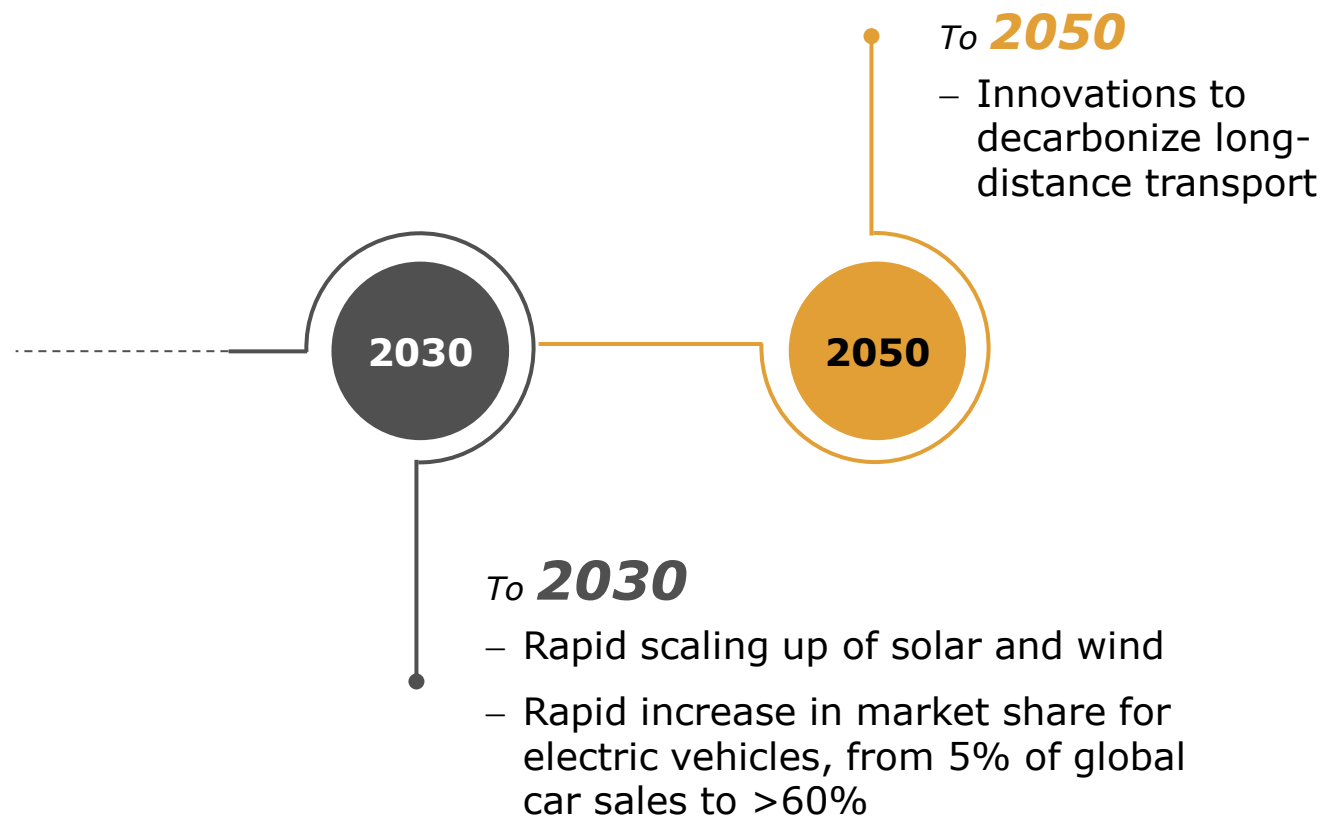
Energy contributes 75% of greenhouse gas emissions. Climate change mitigation requires complete decarbonization of the energy sector by 2050

### THE ENERGY TRANSITION REQUIRES









Deep reduction in emissions in all transport modes, which will require **alternative low carbon fuels** where electricity cannot be used

**Reduction in emissions from industry**, with recognition that certain sectors, such as cement and steel, will take longer to reduce emissions



# Renewable fuels will play an important role in heavy-duty road transport, aviation and maritime

	ROAD			AIR	WATER		
							
Range	Short	Medium	Long		Inland	Short area	Maritime
Natural gas				✗			
Electricity		✗	✗		✗	✗	✗
Liquid Biofuels and RFNBOs							
Hydrogen						✗	✗

-  Available or demonstrated at scale
-  Feasibility demonstrated at pilot
-  Feasibility has not been demonstrated

Sources: ACEA, EEA, IEA, Sustainable Aviation



Electric vehicle solutions for heavy-duty vehicles are expected to become available from 2030, leading to a **gradual conversion** of this segment between **2030 and 2050**.



**Aviation will still depend on liquid fuels to 2050.**

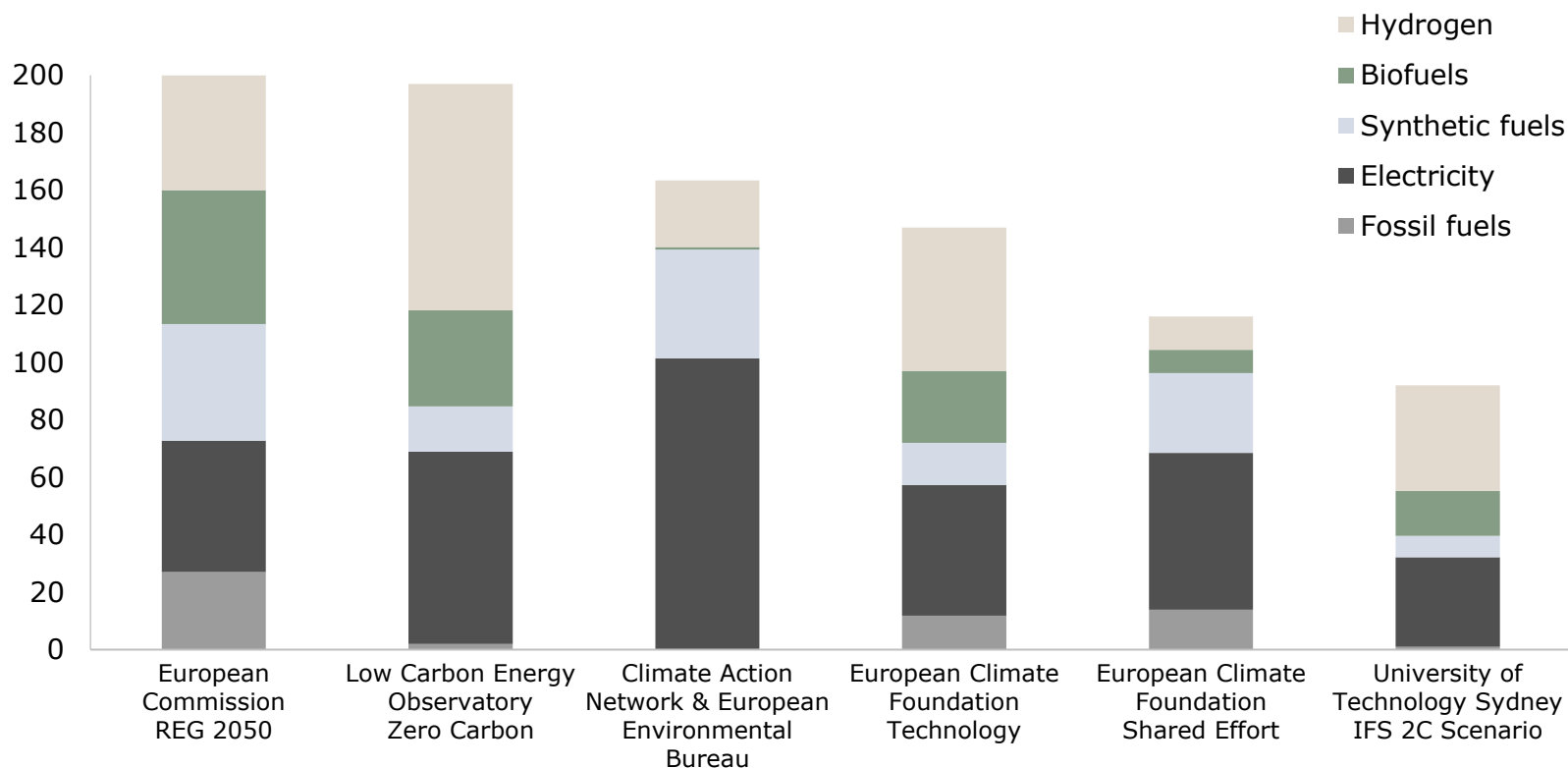


To date, maritime has **lacked policies** to drive decarbonization. The proposed FuelEU Maritime would introduce a fuel standard to limit GHG intensity of energy used on ships, with **targets for 2025 to 2050**.

## Decarbonization of transport will require a combination of biofuels, hydrogen, synthetic fuels and electrification

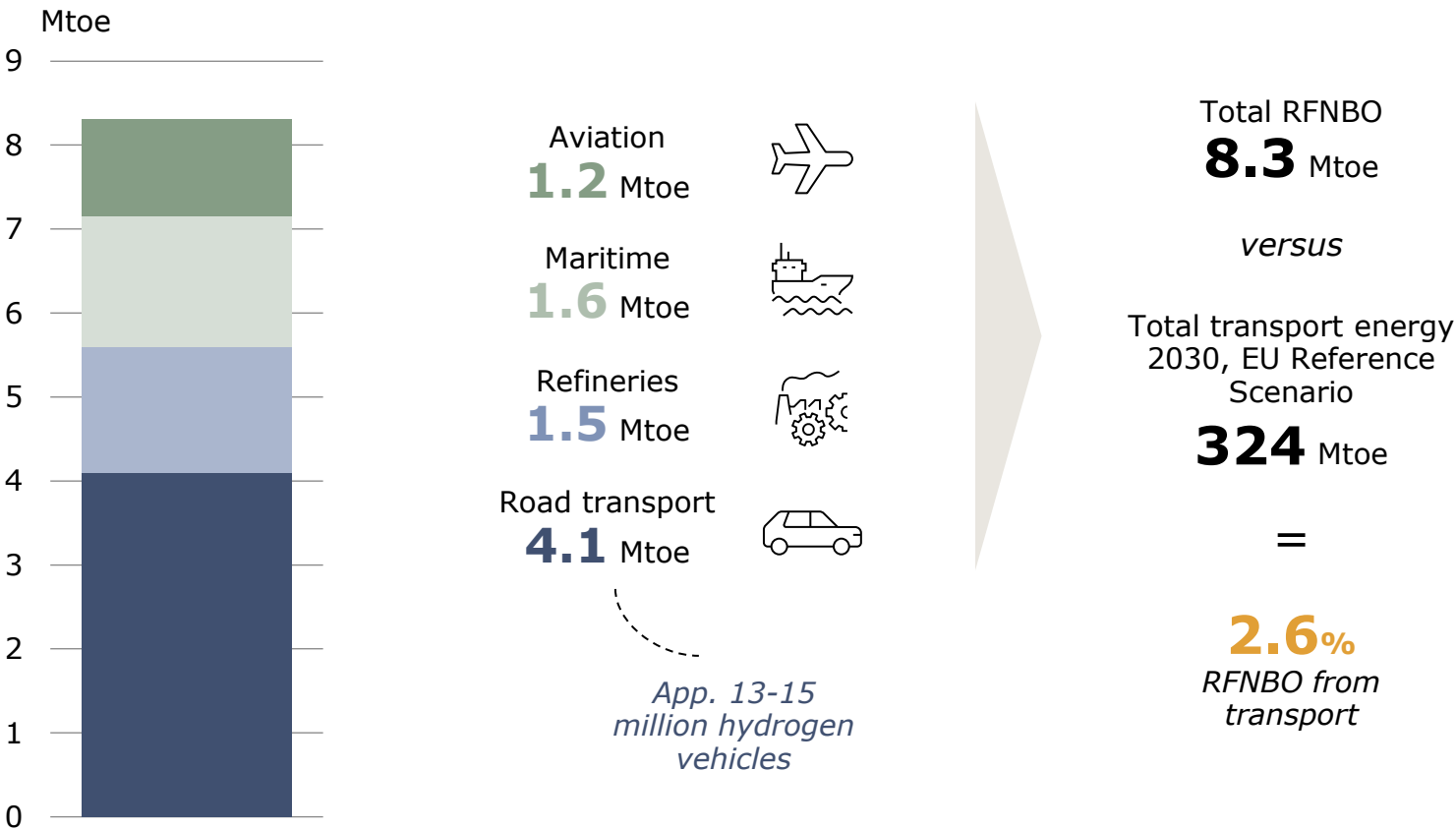
### DIFFERENT SCENARIOS FOR TOTAL EU TRANSPORT ENERGY DEMAND IN 2050

Mtoe



# The 2.6% RFNBO target by 2030 in the Fit for 55 package reflects a high hydrogen ambition

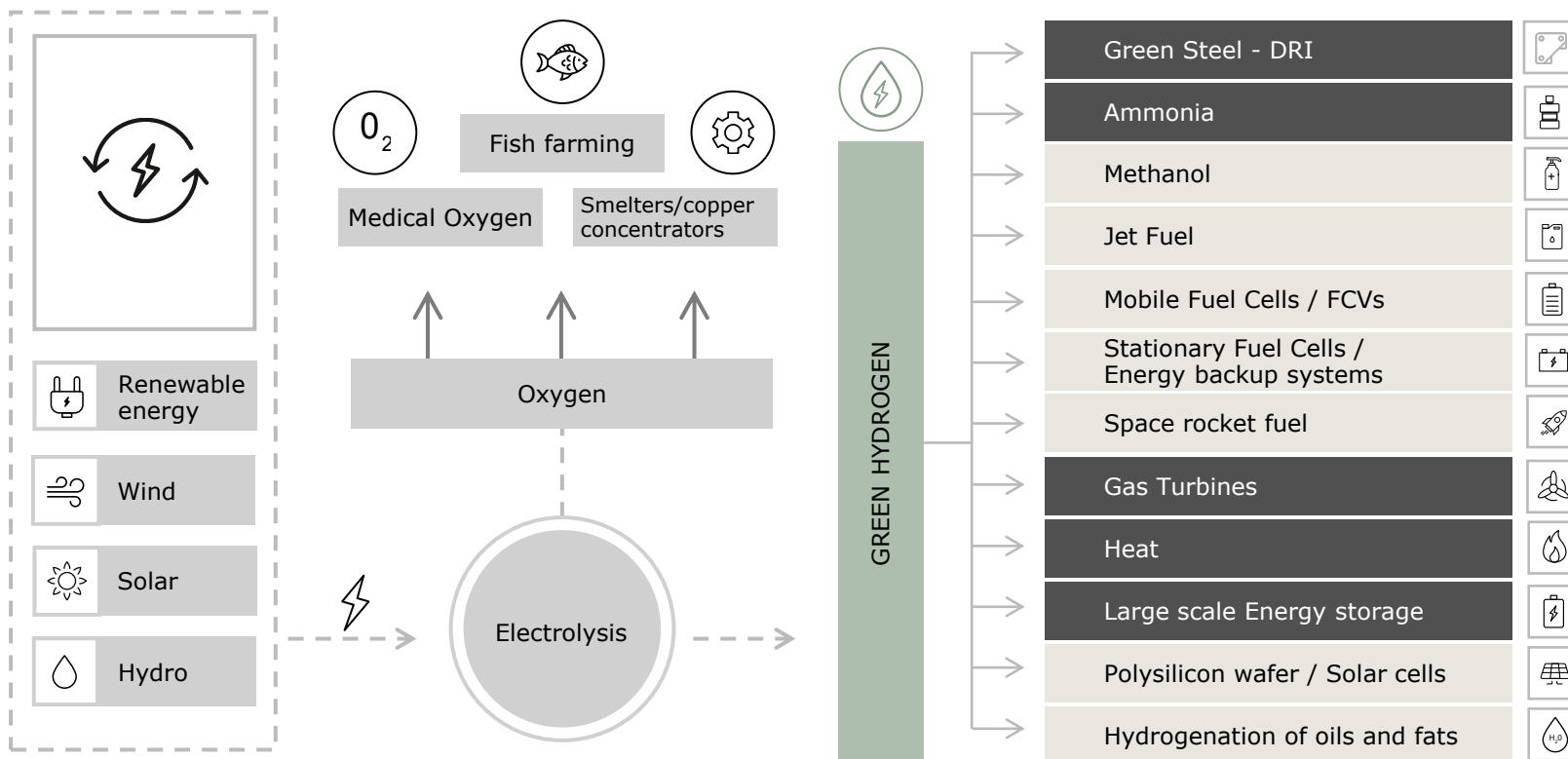
## RFNBO DEMAND EU-27, EUROPEAN COMMISSION SCENARIO



Source: EC RED II Amendment, "Promotion of innovative renewable and low carbon fuels" MIX-H2 scenario



Besides transport, hydrogen's role is in increasing energy independence and decarbonising those sectors with few other alternatives



### POTENTIAL SYERGIES WITH OTHER INDUSTRIES

- Reduced dependence on fossil fuels
- Green Ammonia, e-Methanol, Hydrogen Peroxide
- Enabler for CO<sub>2</sub> utilisation
- End-use for the excess of low cost green or low carbon electricity
- Hydrogen as fuel for FCEV's (trucks forklifts etc)
- Seasonal energy storage
- Special fertilizers for forestry

WHY AFRY: #1 ADVISOR AND ENGINEERING PARTNER FOR ADVANCED BIOFUELS

# Success in the first wave of PtL projects depends upon de-risking investment with public support and risk-sharing through partnerships

