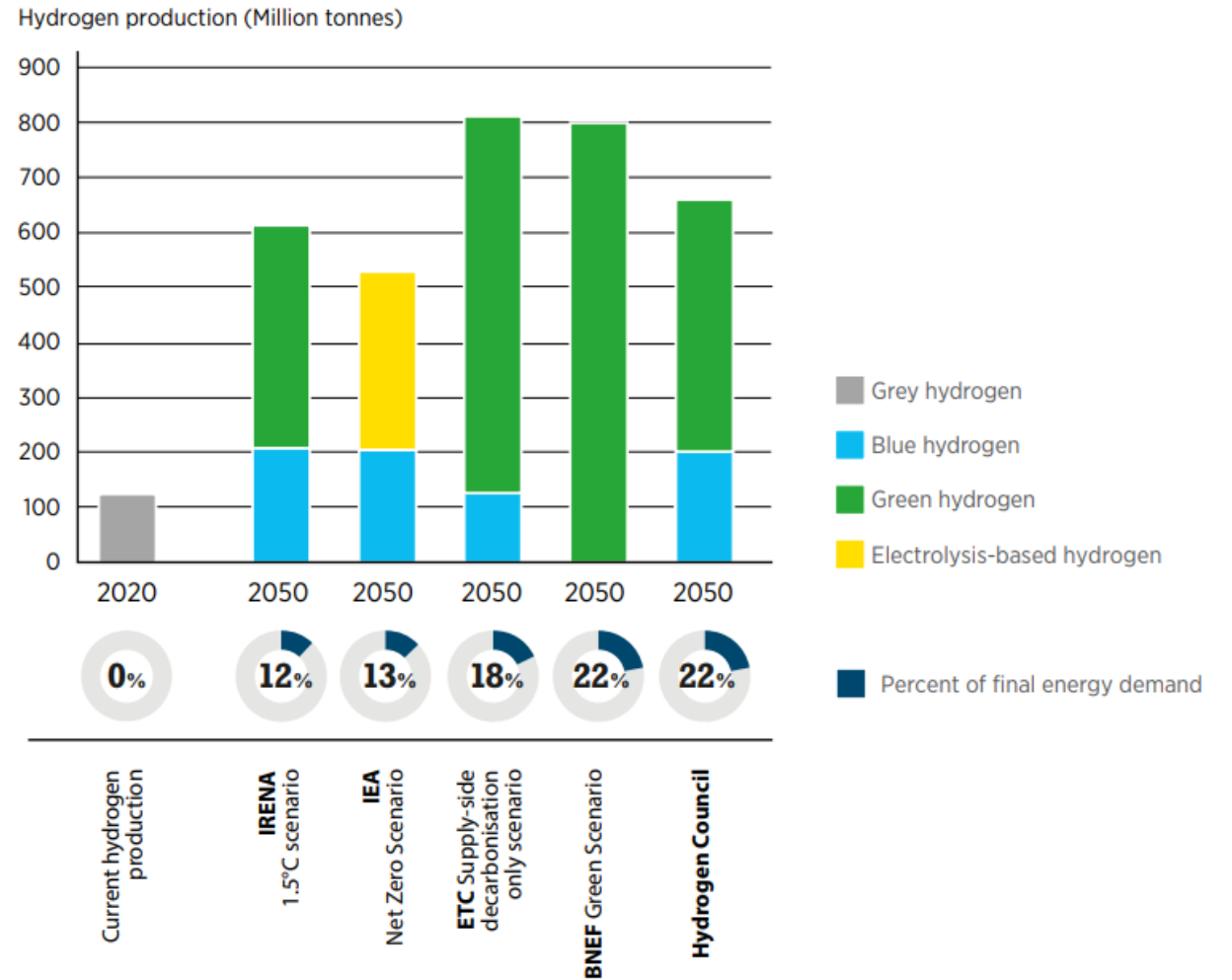


# Hydrogen

## a new energy vector!

Elli Varkaraki  
 EPFL & Yara International  
 ICES 2022, Geneva, 29.9.2022

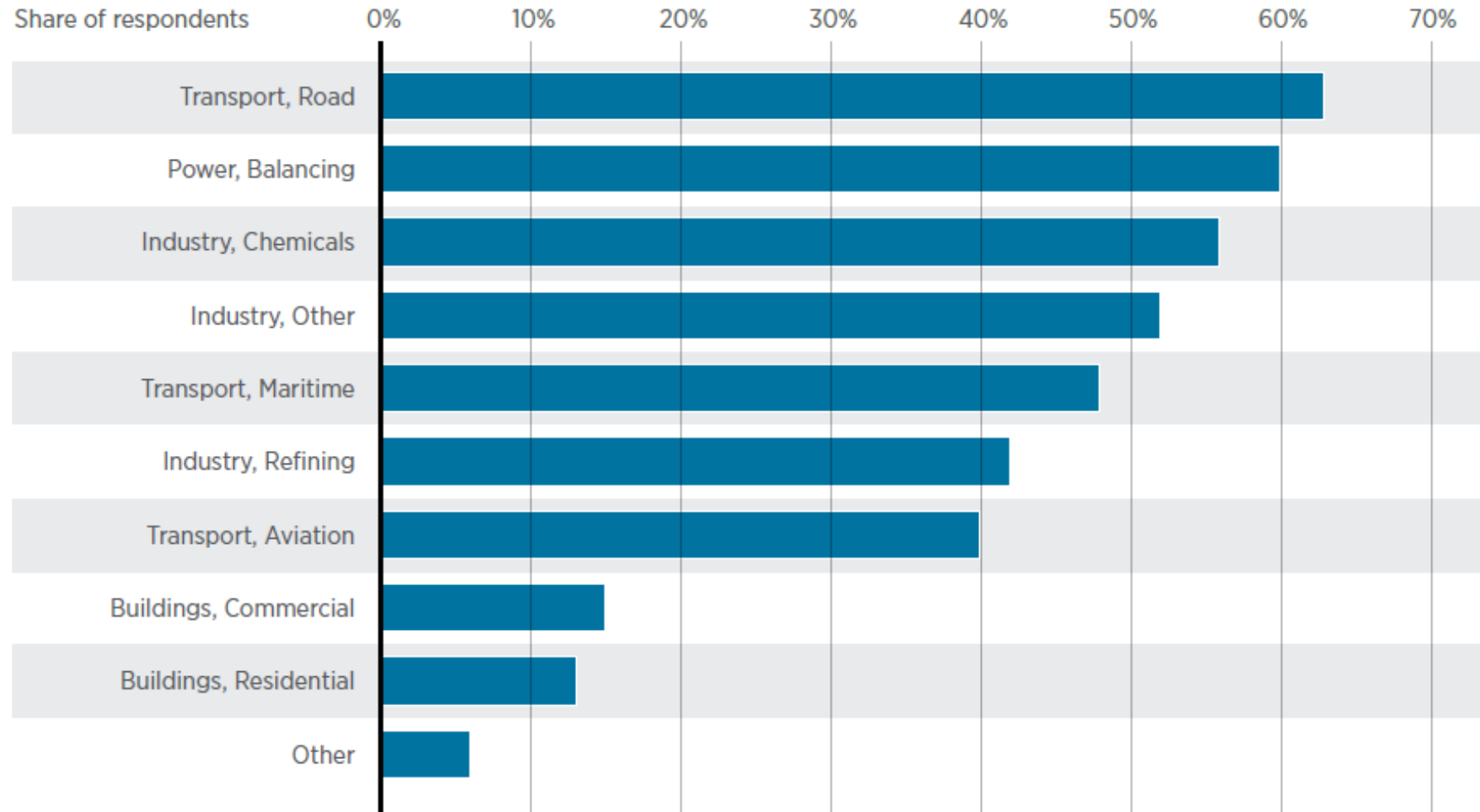
**Figure 1.1** Estimates for global hydrogen demand in 2050



Sources: BloombergNEF (2021a); ETC (2021); Hydrogen Council (2021); IRENA (2021a); IEA, (2021a).

- [Geopolitics-of-the-Energy-Transformation-Hydrogen IRENA, 2022](#)

# Hydrogen in different sectors of the economy in 2050



Note: Multiple selections permitted

# Hydrogen Strategies, October 2021



228 large-scale hydrogen projects  
\$300 billion through 2030  
[Hydrogen Insights 2021 - Hydrogen Council](#)

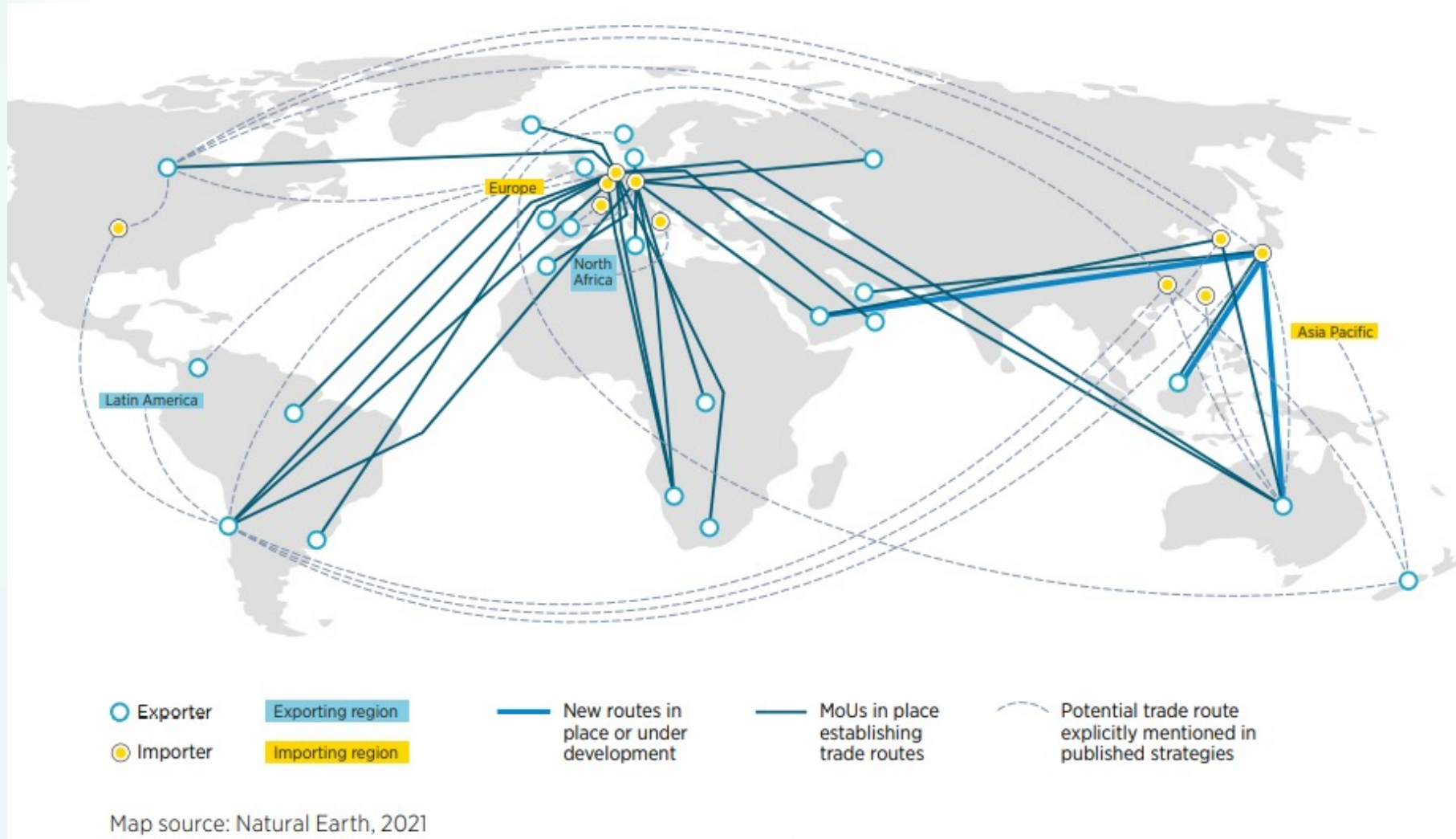
EU hydrogen market by 2050  
\$820 billion  
5.4 million jobs  
560 Mt CO<sub>2</sub>/y abatement

USA dedicates \$9.5 billion  
for the hydrogen industry  
in \$1.2 trillion  
Infrastructure Investment and Jobs Act

Source: Bloomberg (2021b) and WEC (2021). Map source: Natural Earth, 2021

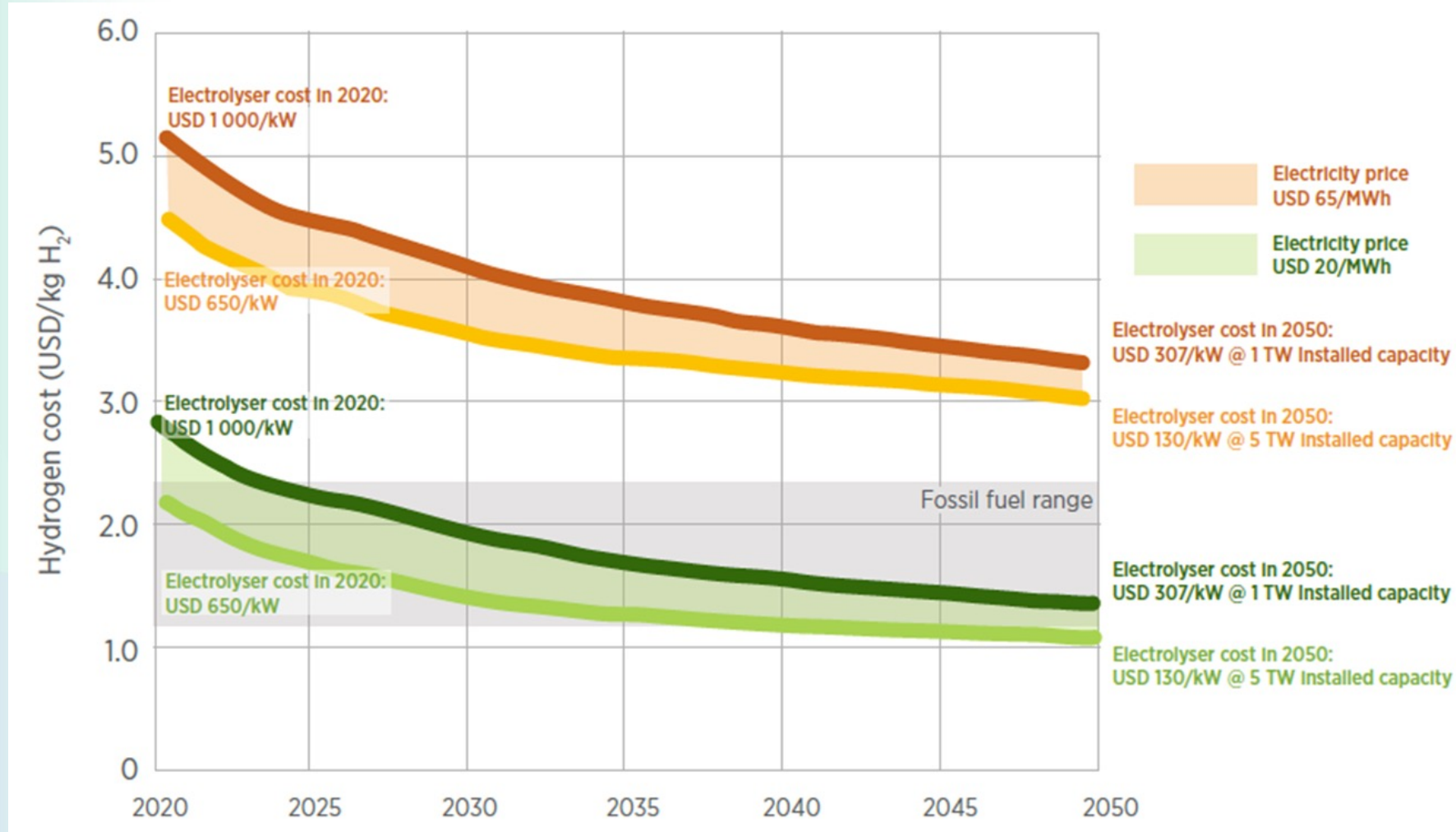
- [Geopolitics-of-the-Energy-Transformation-Hydrogen IRENA, 2022](#)
  - [Geopolitics-of-the-Energy-Transformation-Hydrogen IRENA, 2022](#)

# An expanding network of hydrogen trade routes and agreements



- [Geopolitics-of-the-Energy-Transformation-Hydrogen IRENA, 2022](#)

# Levelised cost of Hydrogen: a wild guess!



- [Global Hydrogen Review 2021 – Analysis - IEA](#)
- [2020, Green hydrogen cost reduction \(irena.org\)](#)