Session 9: Integrating Hydrogen Development into LTES: Addressing Key Policy Questions

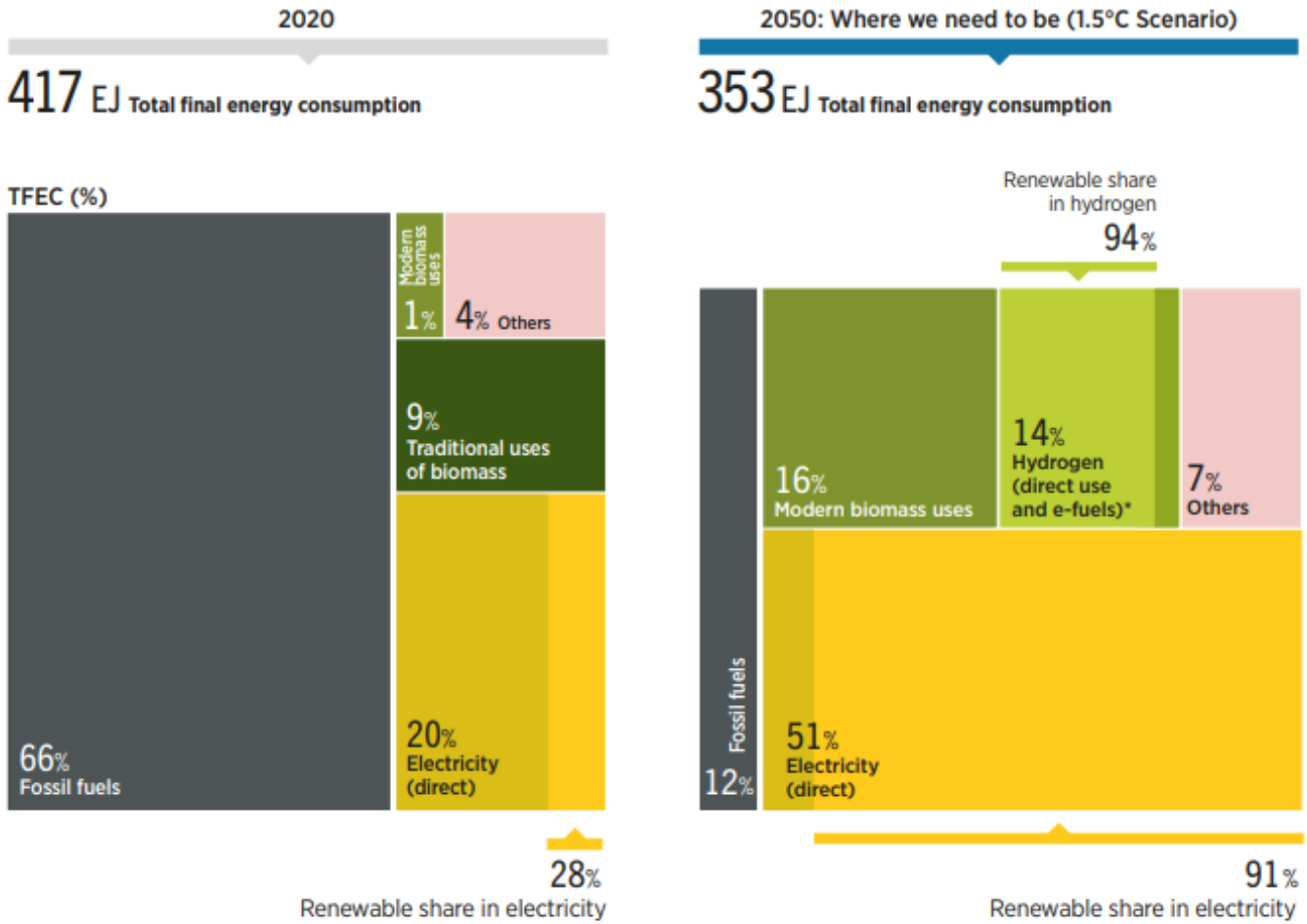
LTES Forum
September 11th 2024

IRENA Innovation and Technology Centre

Setting the scene

On the role of hydrogen in IRENA's 1.5°C Scenario

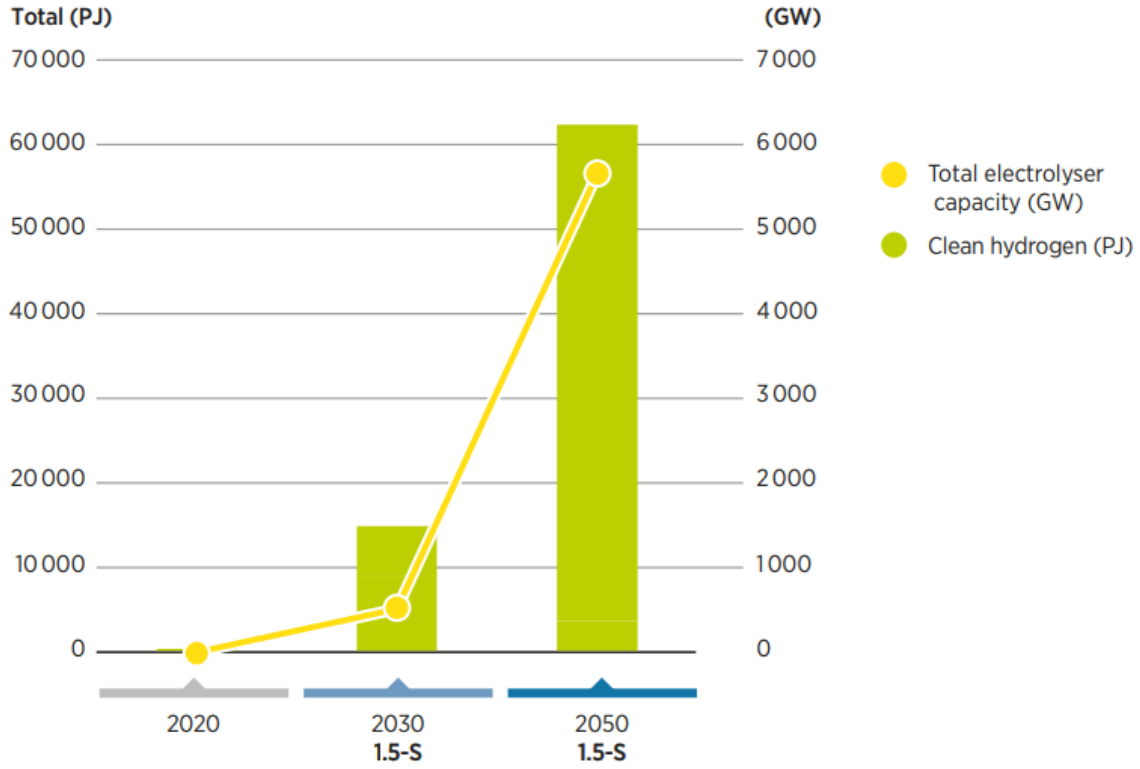
Breakdown of total final energy consumption by energy carrier in 2020 and 2050 under IRENA's 1.5°C Scenario:



- By 2050, **electricity becomes the main energy carrier**, accounting for more than half of the global final energy consumption.
- Hydrogen and hydrogen derivatives make up around **14% of total final energy consumption by 2050**.
- **94% of hydrogen production** should **come from renewables.**

Scaling hydrogen production will be a major challenge

Global clean hydrogen supply in 2020, 2030 and 2050 in IRENA's 1.5°C Scenario.



Notes: 1.5-S = 1.5°C Scenario; GW = gigawatt; PJ = petajoule.

- Most of **today's hydrogen production is fossil-derived** (mostly natural gas, but also coal)
- Most global hydrogen **production in 2050 should come from renewables**
- The electricity requirement for **green hydrogen in 2050 is comparable to today's global electricity consumption.**
- From **~ 1 GW to >5700 GW** electrolyser capacity by 2050.

Source: IRENA, 2023. World Energy Transitions Outlook 2023: 1.5°C Pathway, Volume 1

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International Renewable Energy Agency