IRENA
International Renewable Energy Agency

WORLD ENERGY TRANSITIONS OUTLOOK 2022

1.5°C PATHWAY

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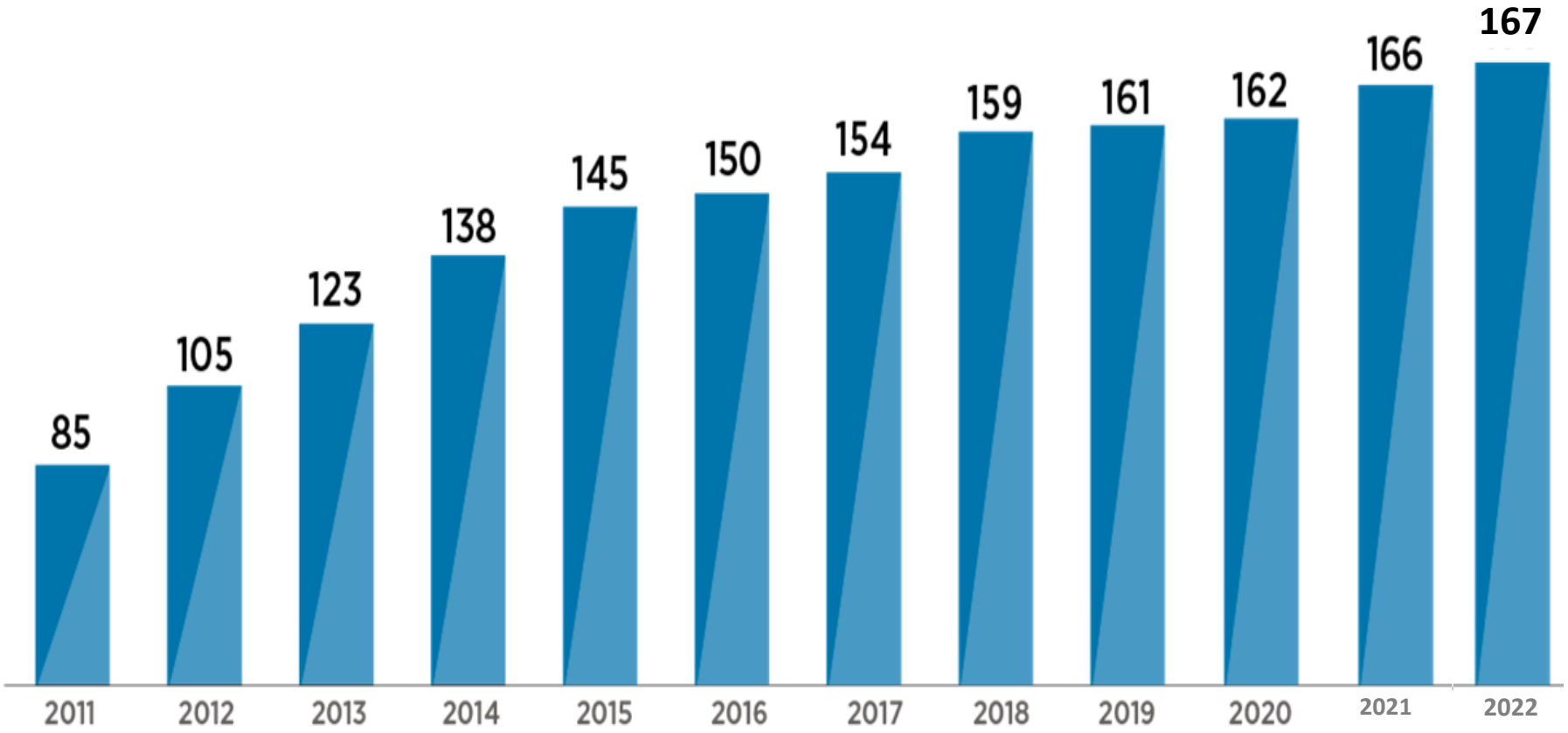
Head of Regions

SIEW Global Launch • May 2022

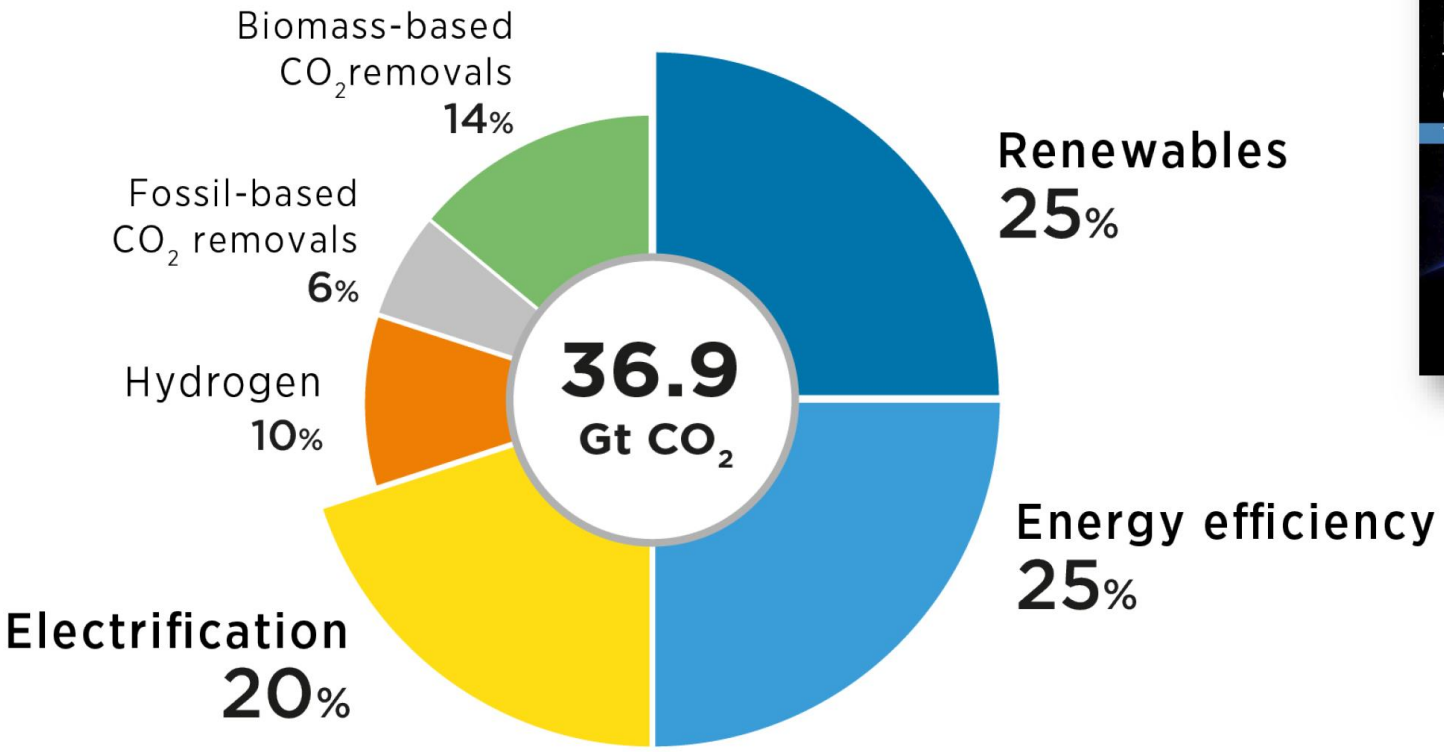
About the International Renewable Energy Agency

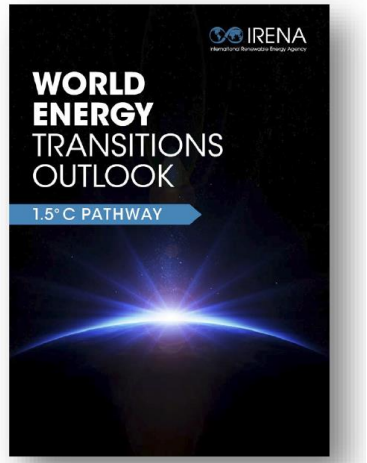
- Established in 2011. 184 Member states including 17 States in accession
- Headquarters in Masdar City, Abu Dhabi, UAE, IITC Bonn, Germany, UN Permanent Observer, NY, USA



Renewables, efficiency and electrification dominate energy transition

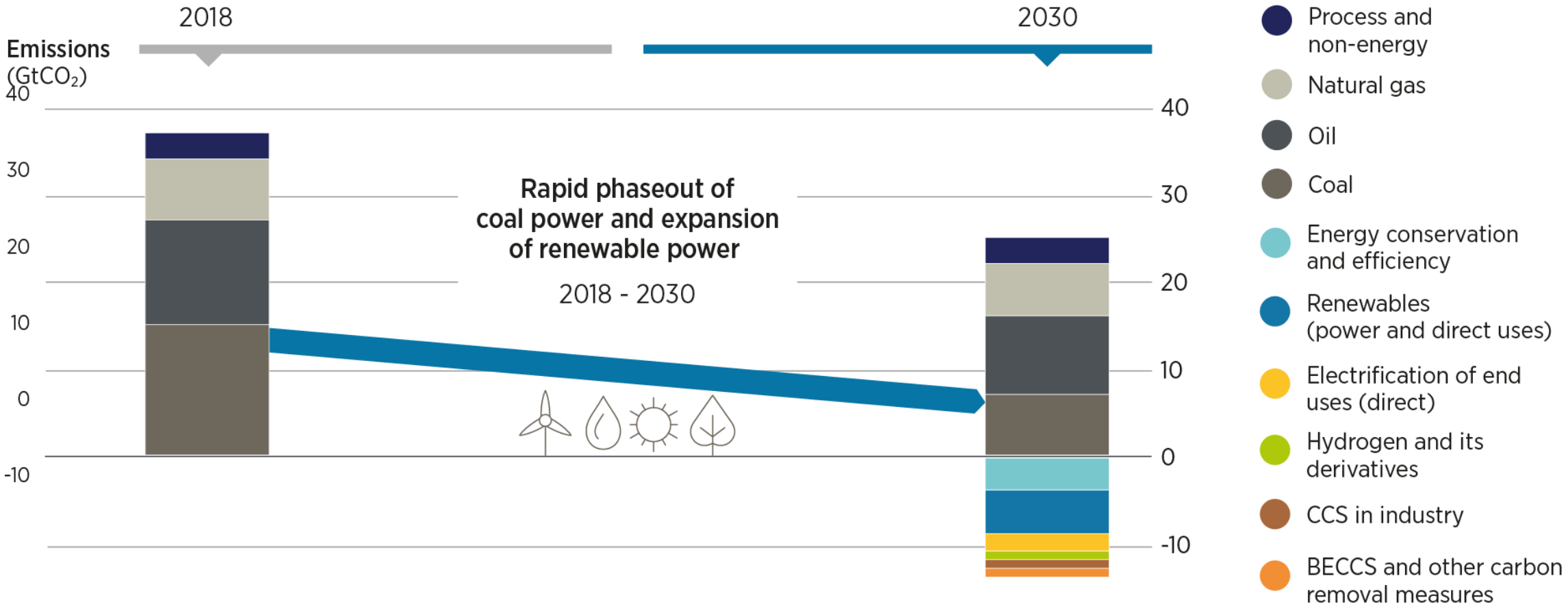
Reducing emissions by 2050 through six technological avenues





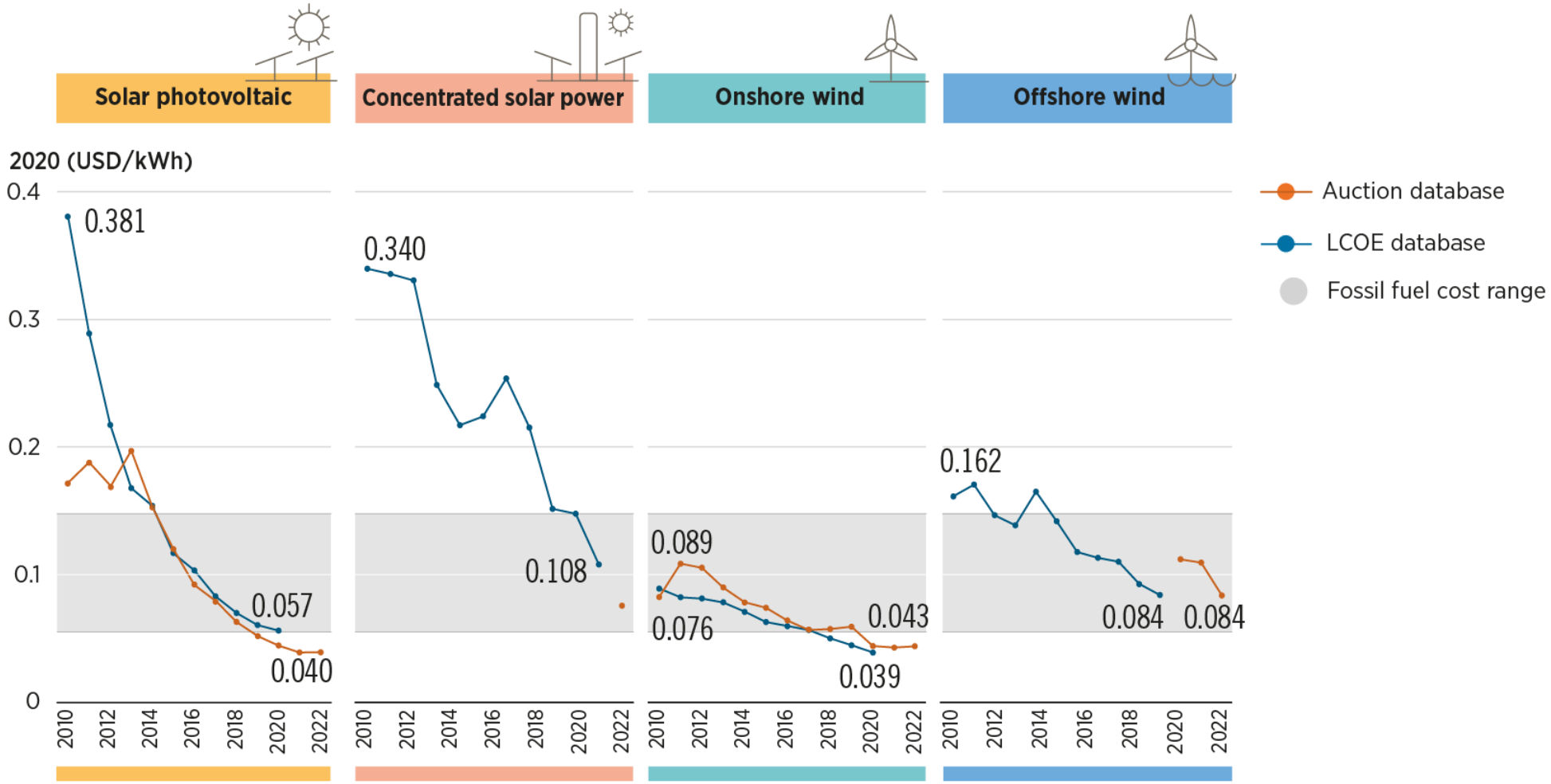
90% of all decarbonisation in 2050 will involve renewable energy through direct supply of low-cost power, efficiency, electrification, bioenergy with CCS and green hydrogen.

Key milestones and actions for rapid emission reductions



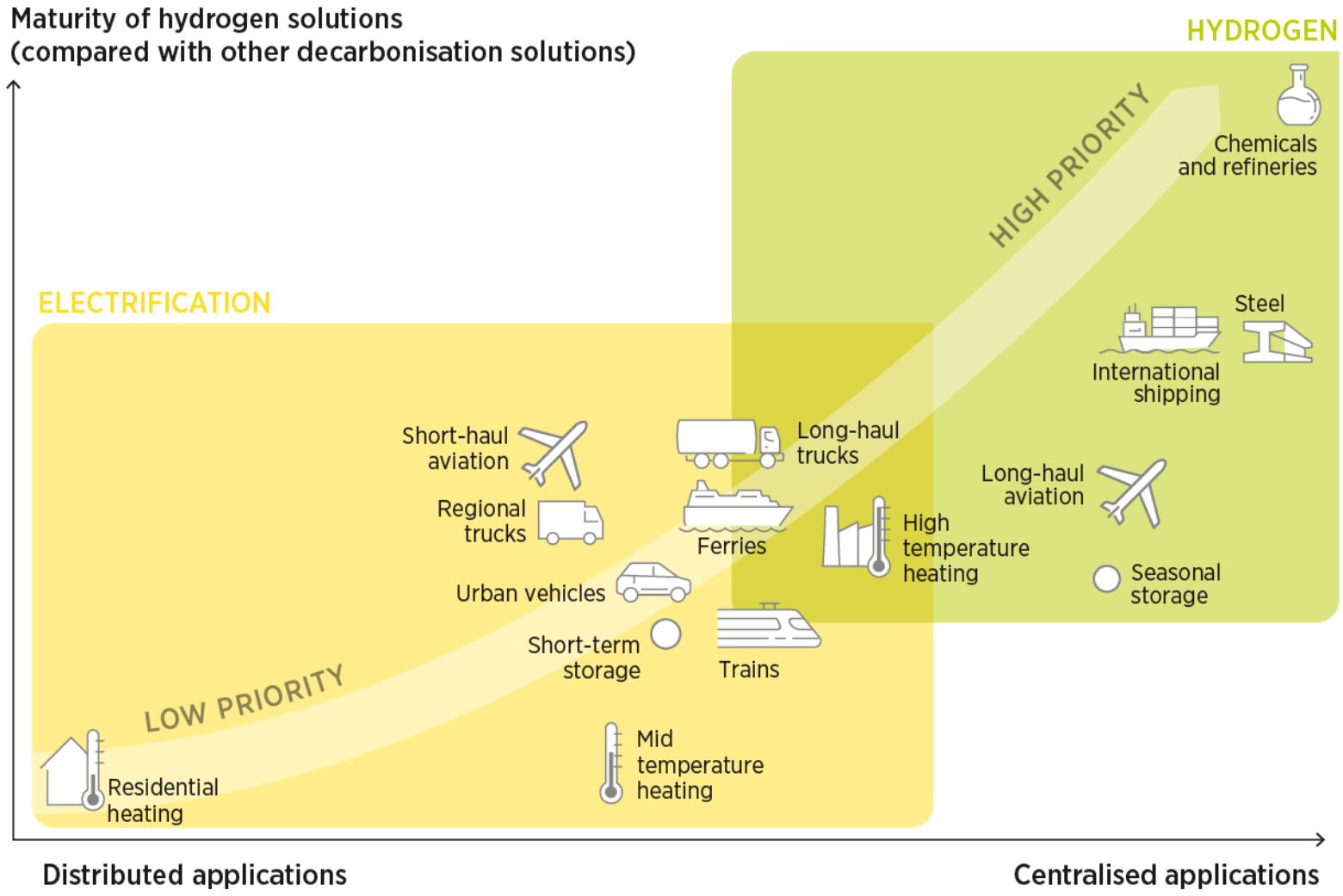
Ramping up renewables, together with an aggressive **energy efficiency** strategy, is the most realistic path toward halving of emissions by 2030.

Renewables-based electricity is already the cheapest power option in most regions



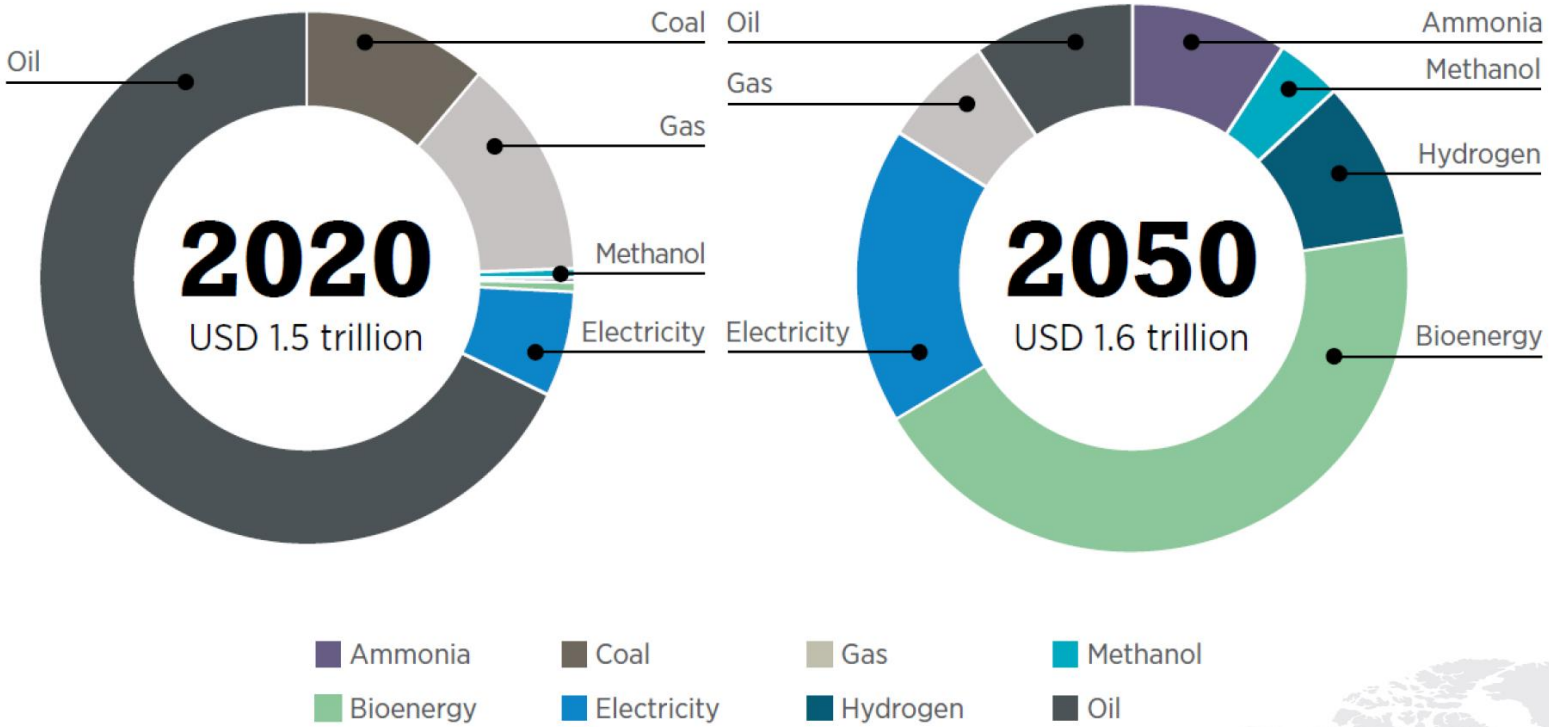
The global weighted average levelised cost of electricity from utility-scale solar photovoltaic (PV) projects fell by 85% between 2010 and 2020, concentrating solar power (CSP) by 68%; on-shore wind by 56%, and off-shore wind by 48%.

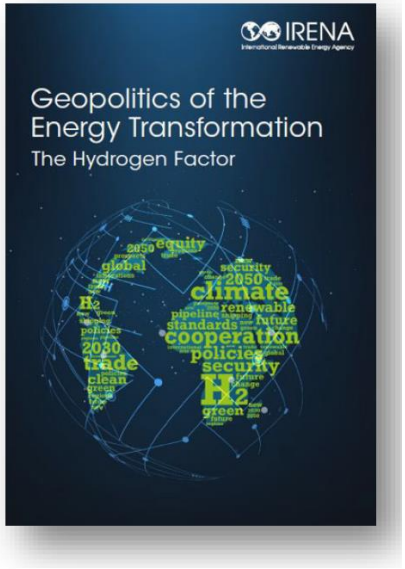
Green hydrogen needs to move from niche to mainstream by 2030



Policymakers should identify priorities for indirect electrification using green hydrogen with a focus on hard-to-abate sectors and devise strategies for its deployment.

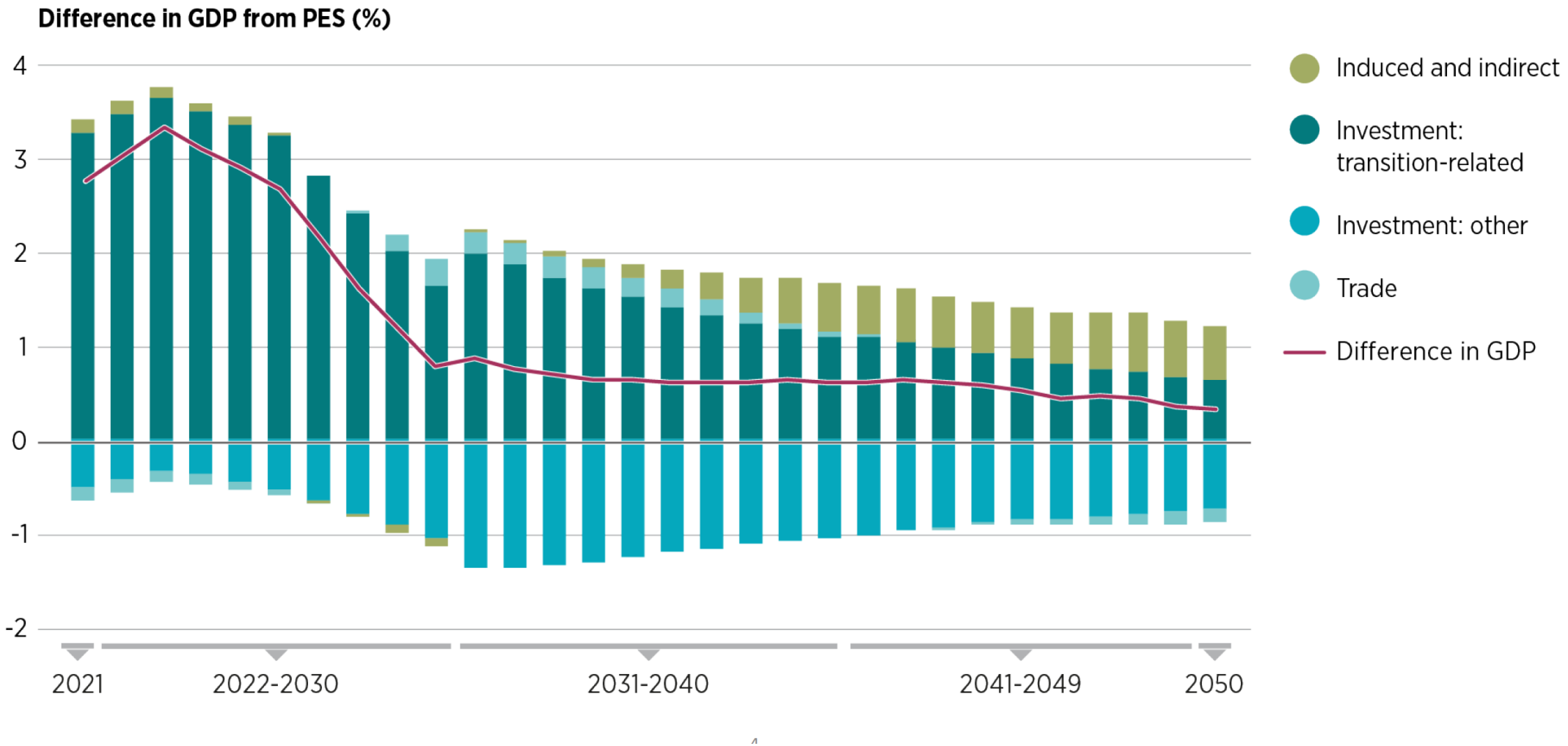
Geopolitics of the energy transformation: the hydrogen factor



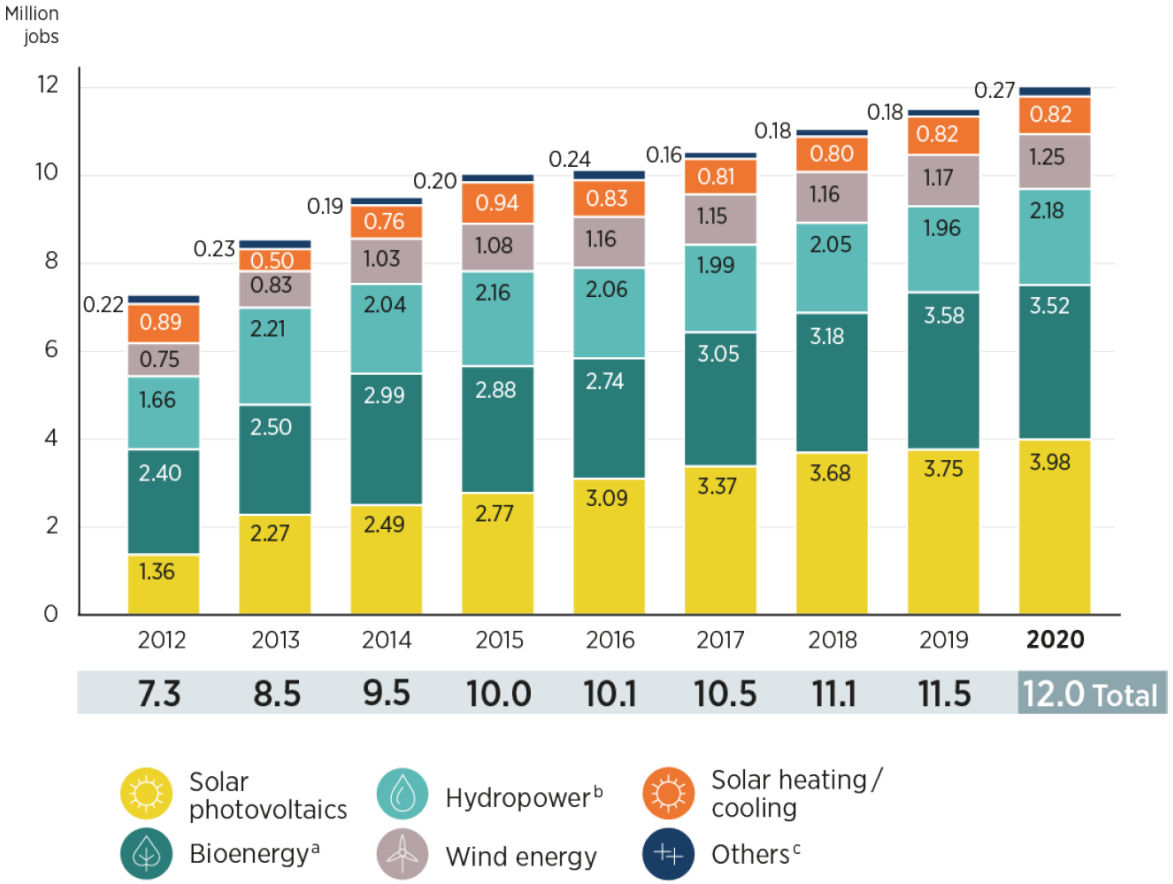


The 1.5ºC Pathway Provides a Boost in Global GDP

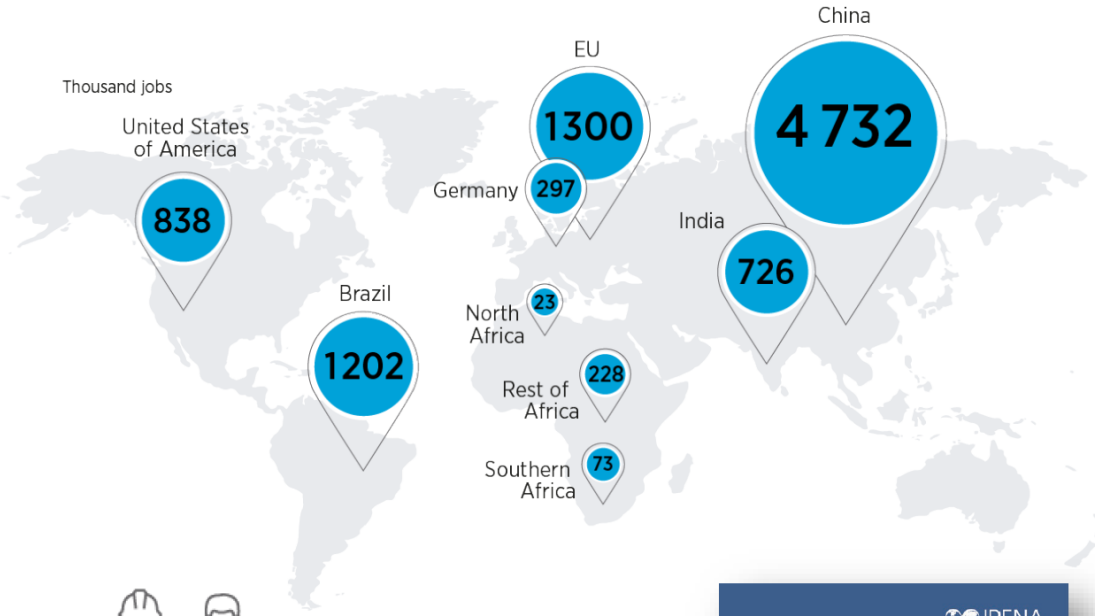
GDP difference between the 1.5°C Scenario and PES, with GDP drivers



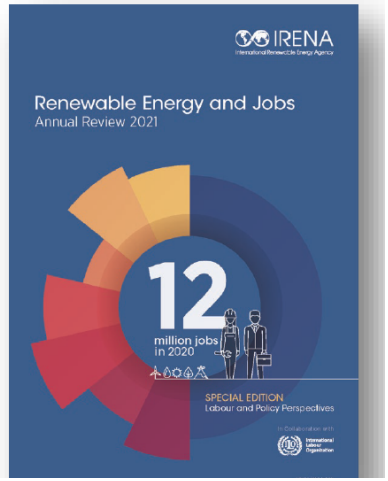
Jobs in renewable energy – by year and selected countries



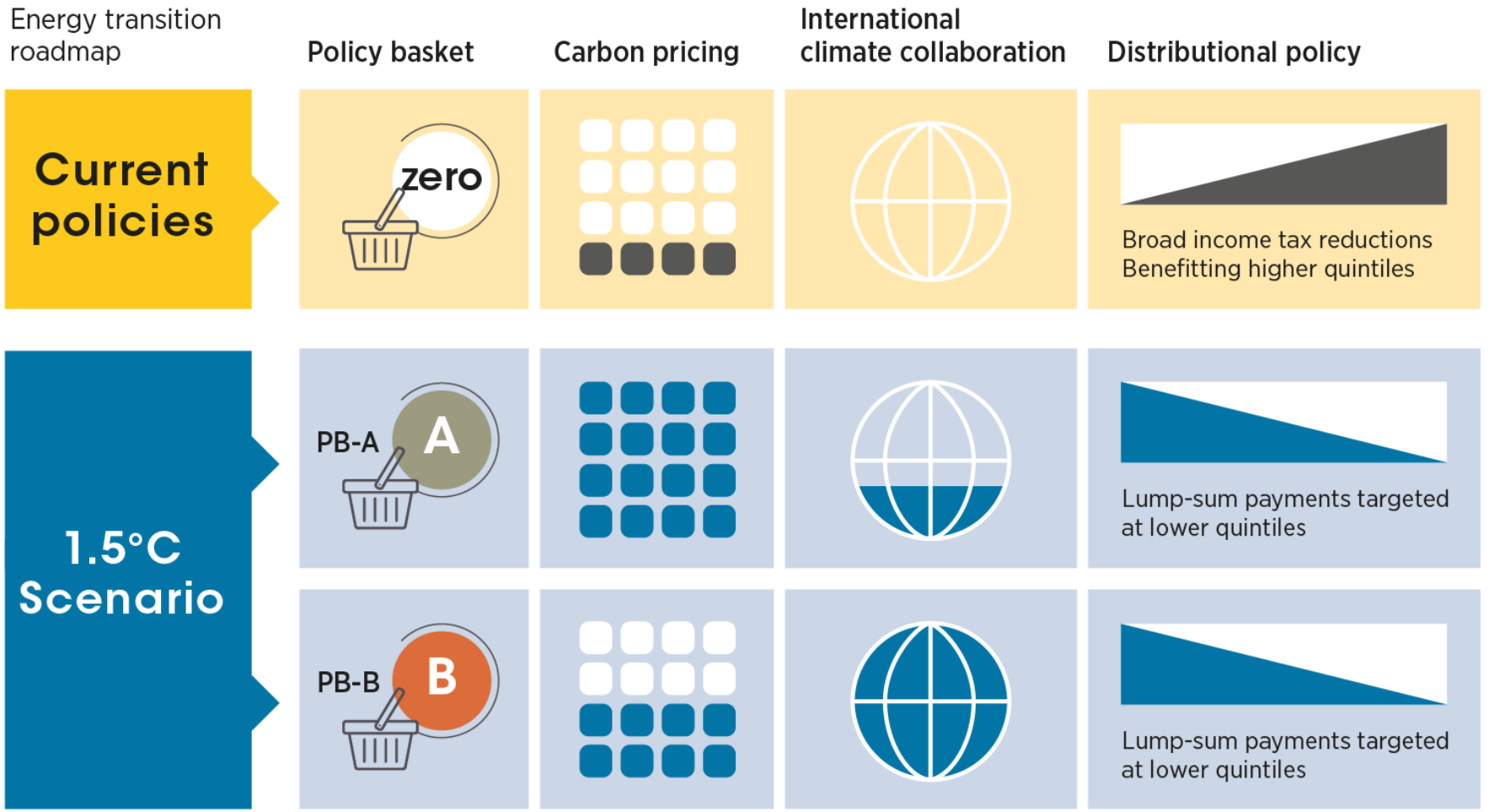
a Includes liquid biofuels, solid biomass and biogas.
b Direct jobs only.
c "Others" includes geothermal energy, concentrated solar power, heat pumps (ground based), municipal and industrial waste, and ocean energy.



12 million jobs in 2020

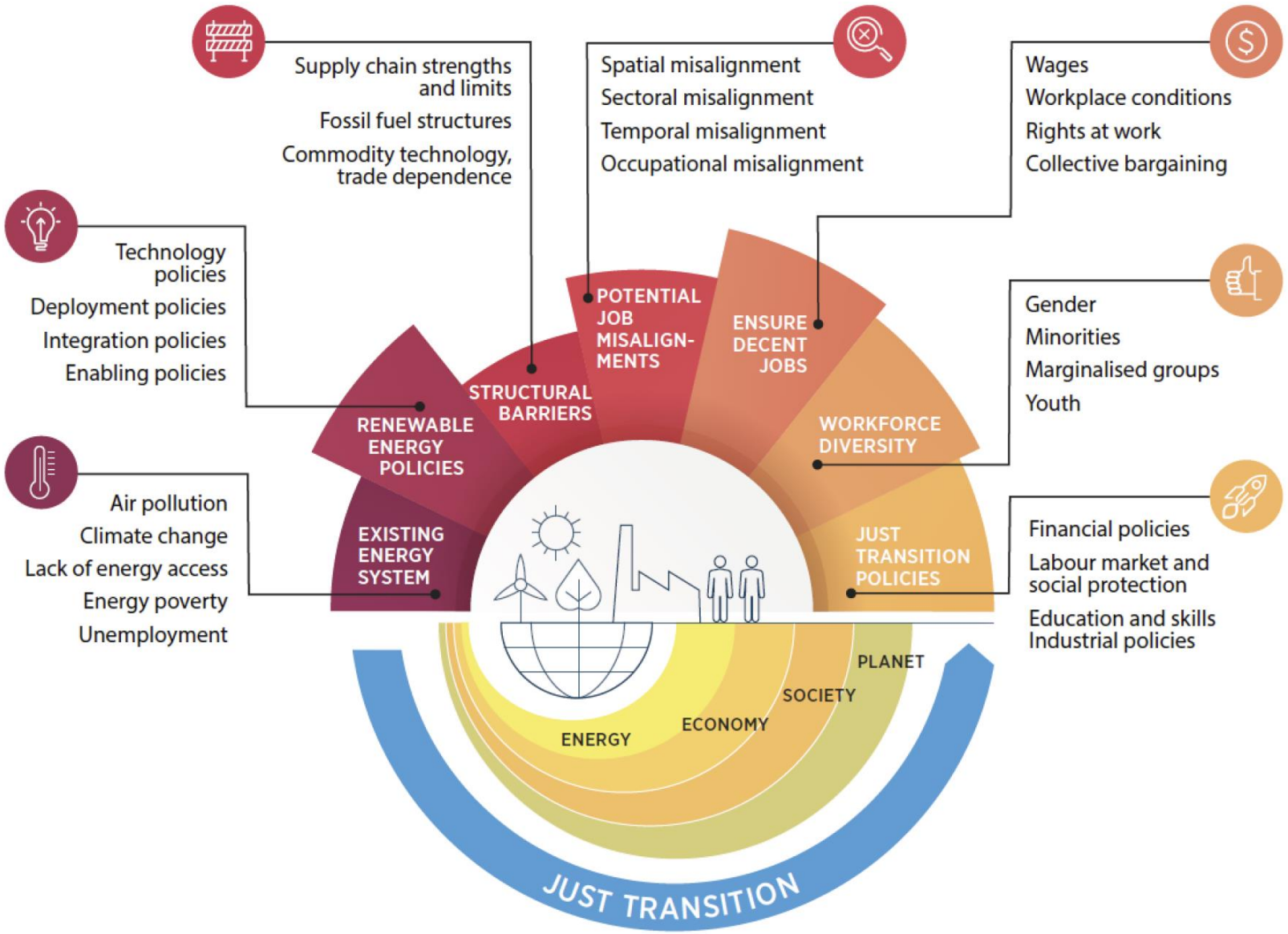


Policy as a cornerstone of a sustainable energy transition



An ambitious, sustainable and resilient energy transition depends on triggering a global collaborative effort and deep social engagement

Just transition – a comprehensive policy framework



IRENA's Energy Transition Support

82 countries

168 work-packages

1.9 bn population

4 bn tons of CO2

27 Input to NDC provided

22 Implementation of Support

15 Work plan development

18 Scoping/on hold

Europe (6)

North Macedonia (1)

Albania, Bosnia and Herzegovina, Turkey (3)

Belarus, Georgia (2)

Asia and the Pacific (28)

Bhutan, Fiji, Jordan, Kyrgyzstan, Lebanon, Nepal, Myanmar, Papua New Guinea, United Arab Emirates (9)

Cook Islands, Kiribati, Micronesia (Federal State of), Mongolia, Niue (12)

Palau, Iraq, Samoa, Solomon Islands, Tonga, Tuvalu, Uzbekistan

Afghanistan, Cambodia, Indonesia, Lao PDR, Pakistan, Thailand, Kazakstan (7)

Latin America and the Caribbean (21)

Antigua and Barbuda, Belize, Dominican Republic, El Salvador, Grenada, Paraguay, Saint Kitts and Nevis (7)

Colombia, Dominica, Ecuador, Nicaragua, Saint Lucia, Saint Vincent and the Grenadines (6)

Trinidad and Tobago (1)

Barbados, Bahamas, Cuba, Guyana, Panama, Peru, Uruguay (7)

Africa (27)

Eswatini, Gabon, The Gambia, Liberia, Mali, Niger, Nigeria, Seychelles, Sudan, Zambia, Zimbabwe (11)

Benin, Botswana, Burkina Faso, Cameroon, Mauritius, Mozambique, São Tomé and Príncipe, Uganda (8)

Chad, Egypt, Ethiopia, Morocco, Rwanda (5)

Ghana, Lesotho, South Africa (3)

Disclaimer: This map is provided for illustration purposes only. Boundaries and names shown on this map do not imply any official endorsement or acceptance by IRENA.

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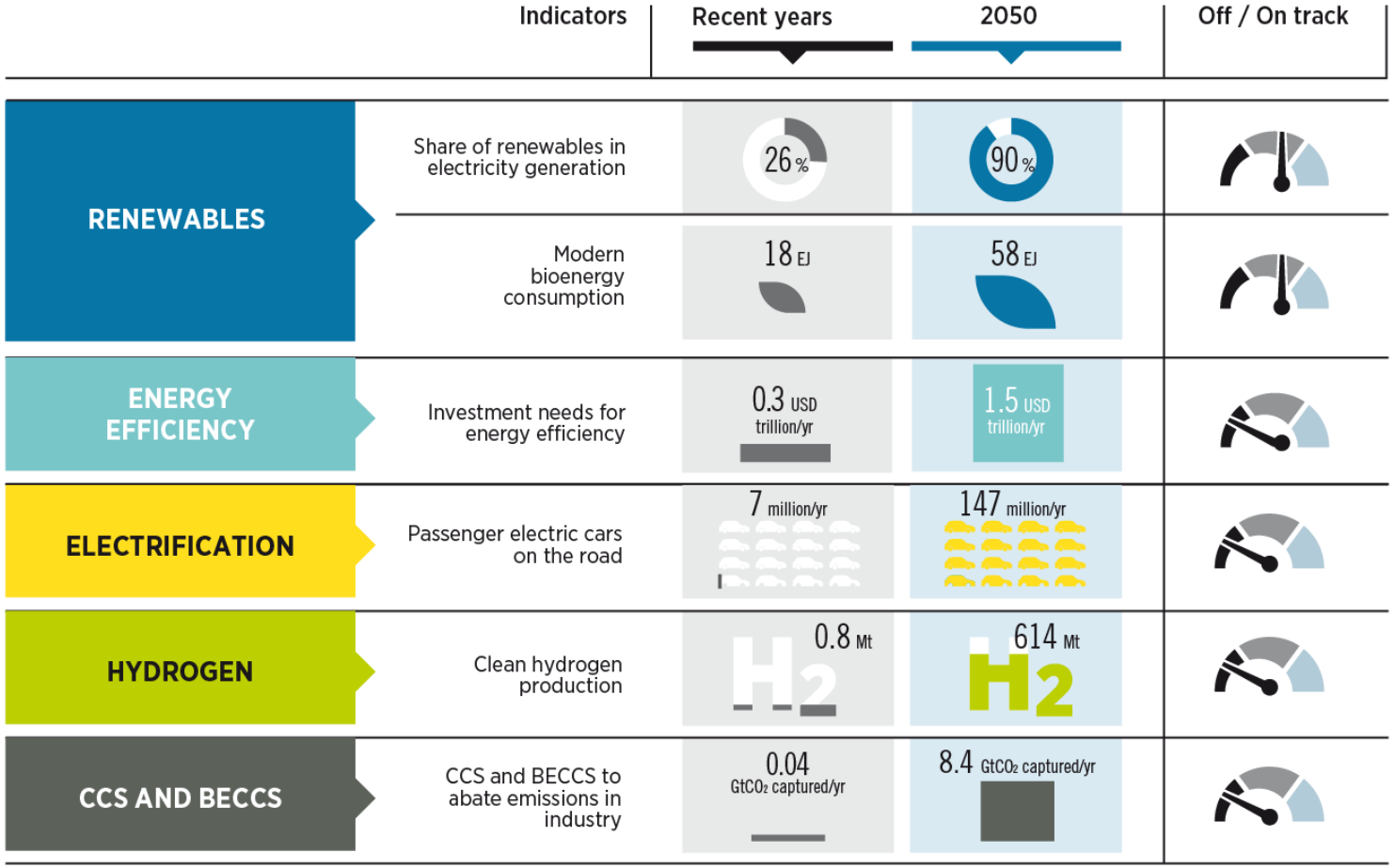
1.5°C PATHWAY

Thank you!

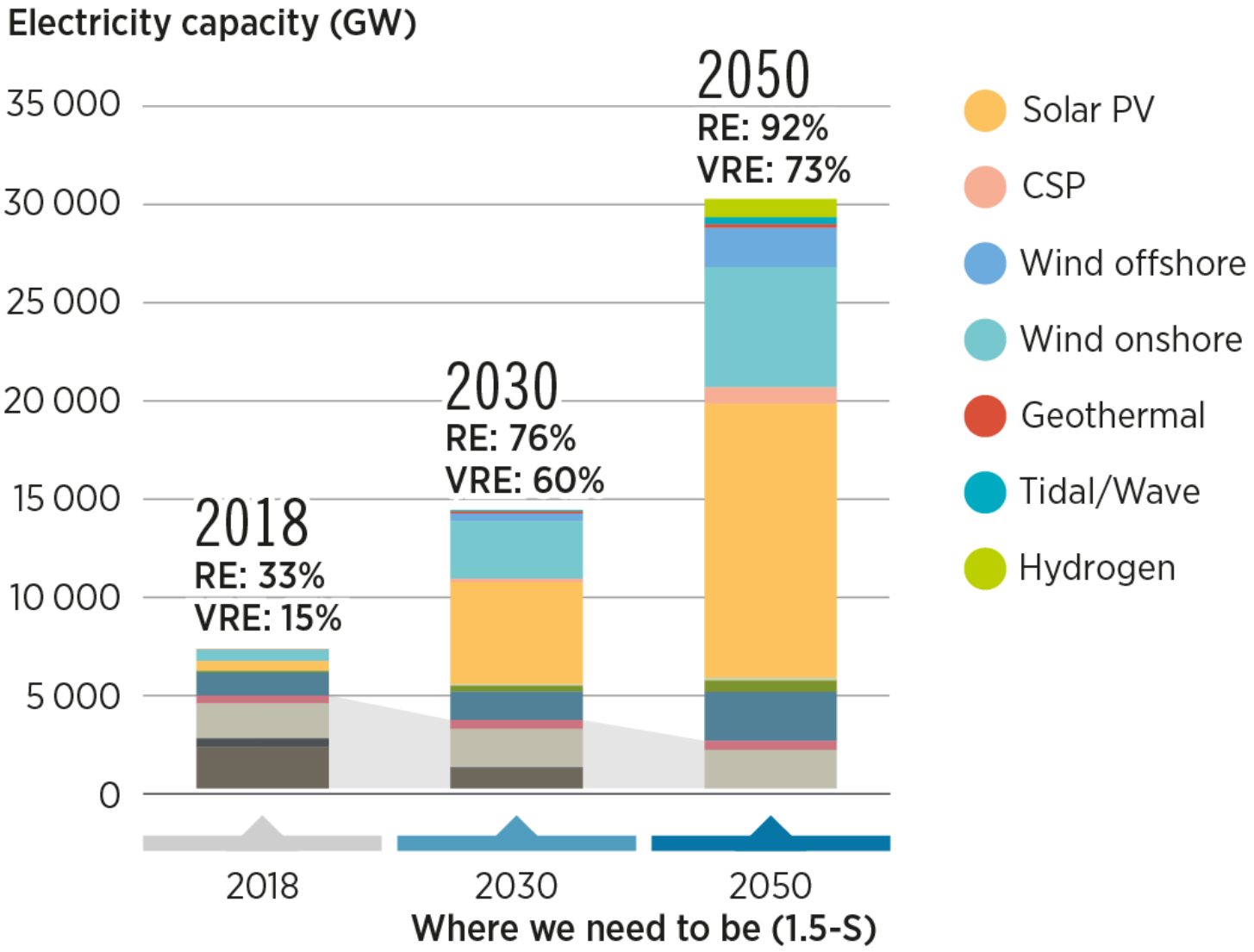
Despite some progress, the energy transition is far from being on track to 1.5°C

Tracking progress of key energy system components



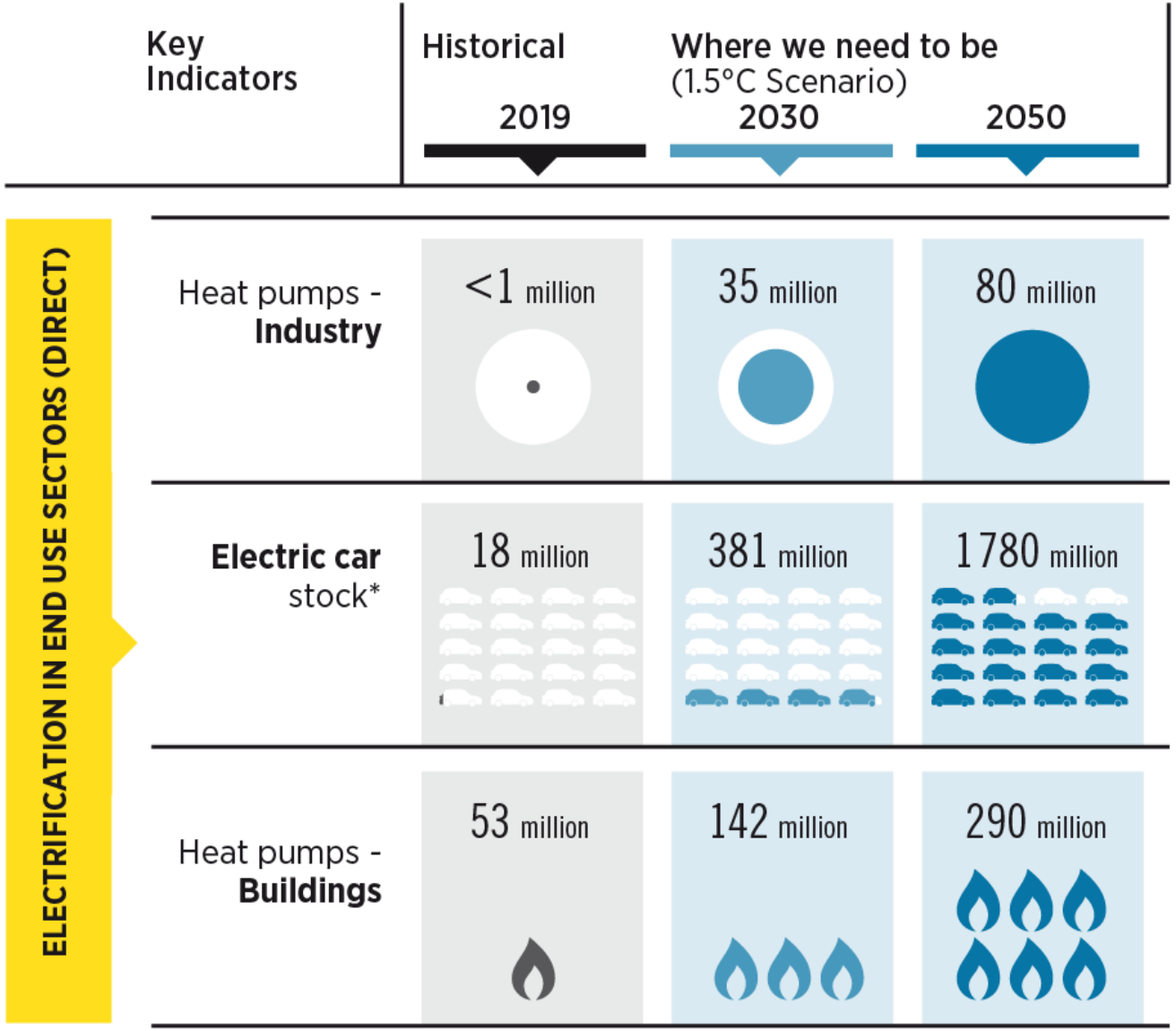
Achieving the 2050 target depends on sufficient action by 2030. Radical action is needed to change the current trajectory. This will require **political will** and well-targeted **policy packages**.

Renewables could decarbonize 90% of the power sector by 2050



- Renewables will provide **65%** of the **total electricity supply** by **2030** respectively from over 25% in 2018
- Specific policies and measures such as **RE targets, tax incentives, pricing mechanisms**, among others are needed to increase the deployment of renewables
- Renewables will necessitate an annual investment of more than **USD 1 trillion** till 2030.

Electricity becomes the main energy carrier in future energy systems



- **Global electricity demand** in end-use sectors will **rise 1.3 times** the 2019 levels to reach **Ca.31 000 TWh** by 2030.
- The share of electrification in end-use sectors like **industry**, **buildings**, **transport** to reach **28%**, **56%**, and **9%** in 2030, respectively.
- Policymakers should identify priorities for **electrification** with a focus on **hard-to-abate sectors** and devise strategies for its deployment.

New investment priorities: renewables, efficiency and electrification