



WORLD ENERGY TRANSITIONS OUTLOOK

1.5°C Pathway

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Dr. Ulrike Lehr, IRENA

About IRENA - Overview

- » Established in 2011
- » Headquarters in Masdar City, Abu Dhabi, UAE
- » IRENA Innovation and Technology Centre – Bonn, Germany
- » Permanent Observer to the United Nations – New York, USA

Mandate

To promote the widespread adoption and sustainable use of **all forms of renewable energy** worldwide



Bioenergy



Geothermal
Energy



Hydropower



Ocean
Energy



Solar
Energy

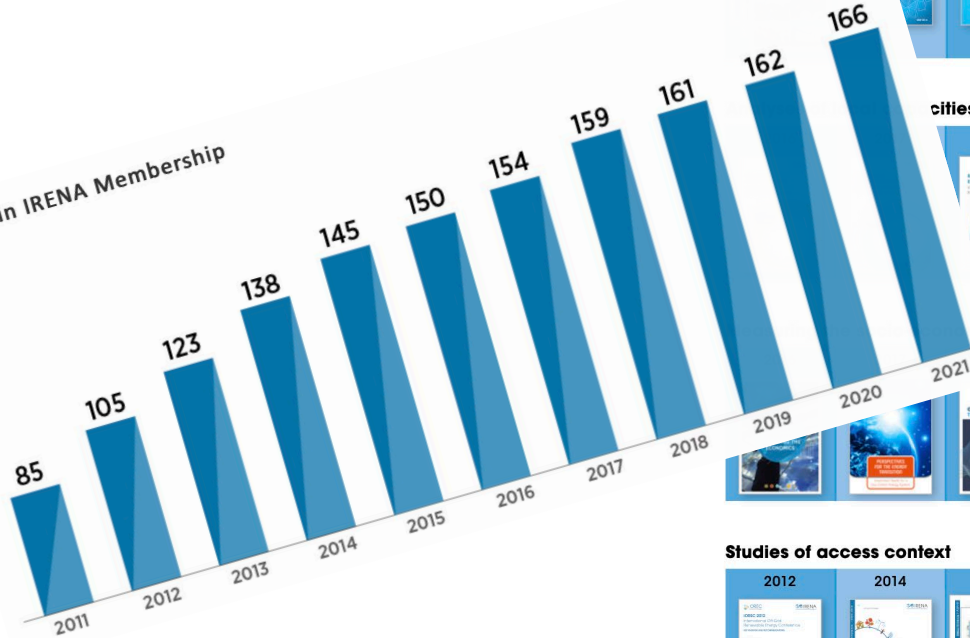


Wind
Energy



Members and work on the socioeconomics of renewables

Growth in IRENA Membership



Annual reviews of employment in renewables



cities



Assessing gender equity in renewable energy



Impact of renewables



Studies of access context

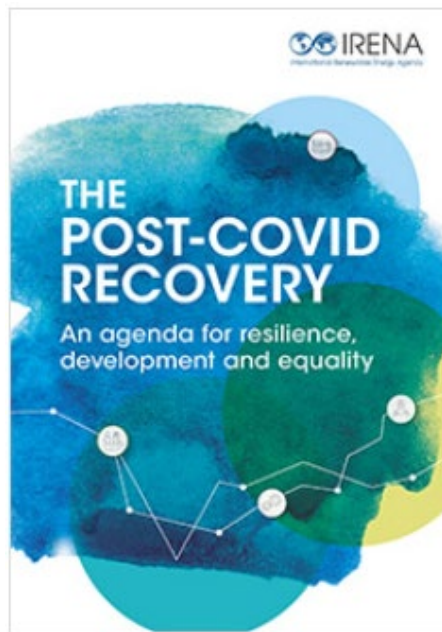


IRENA's Global scenario family



Roadmap that shows under 2 degree pathway

Presents regional roadmap



Aligns short-term pathway with long term goals

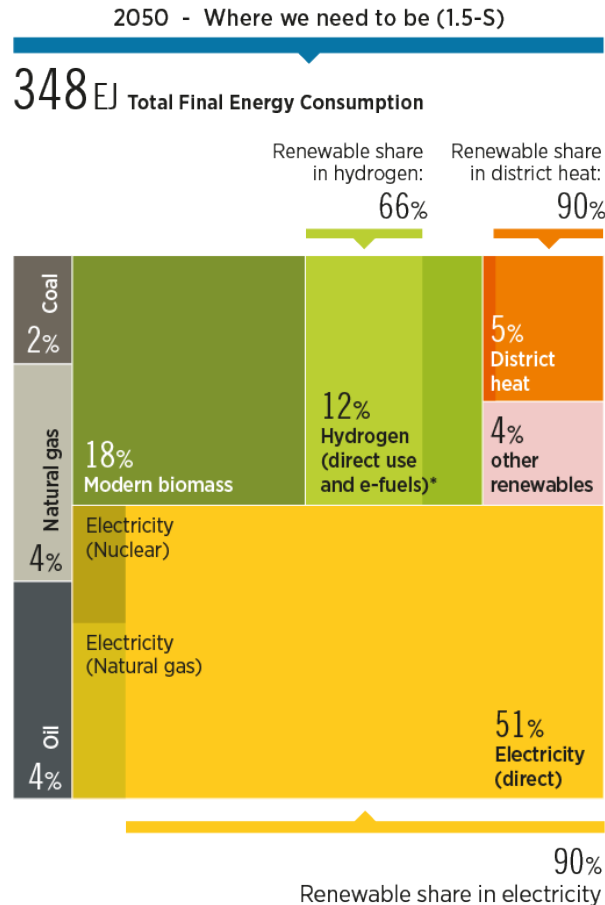
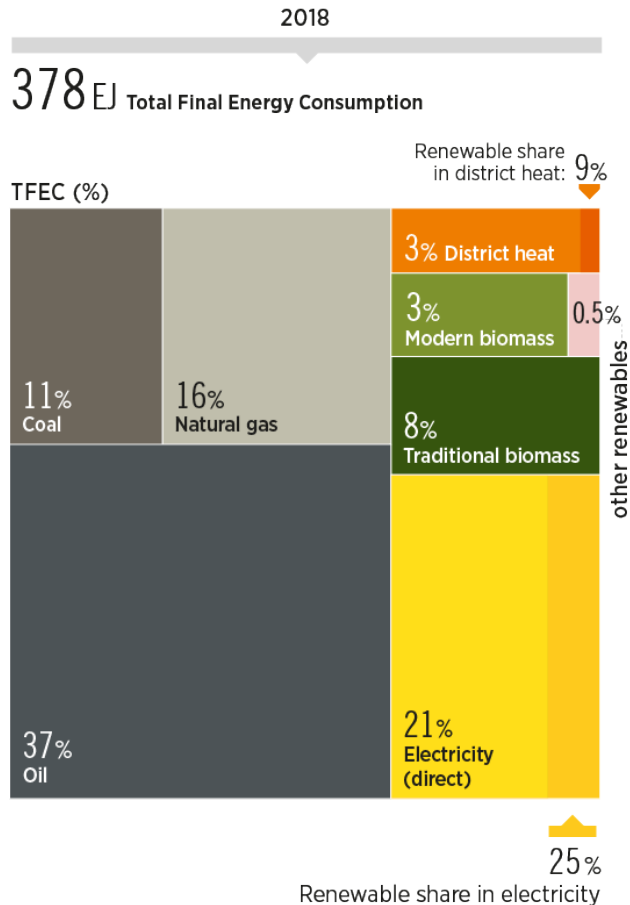
Incorporates COVID impacts



Latest report that shows pathway to achieve 1.5 C

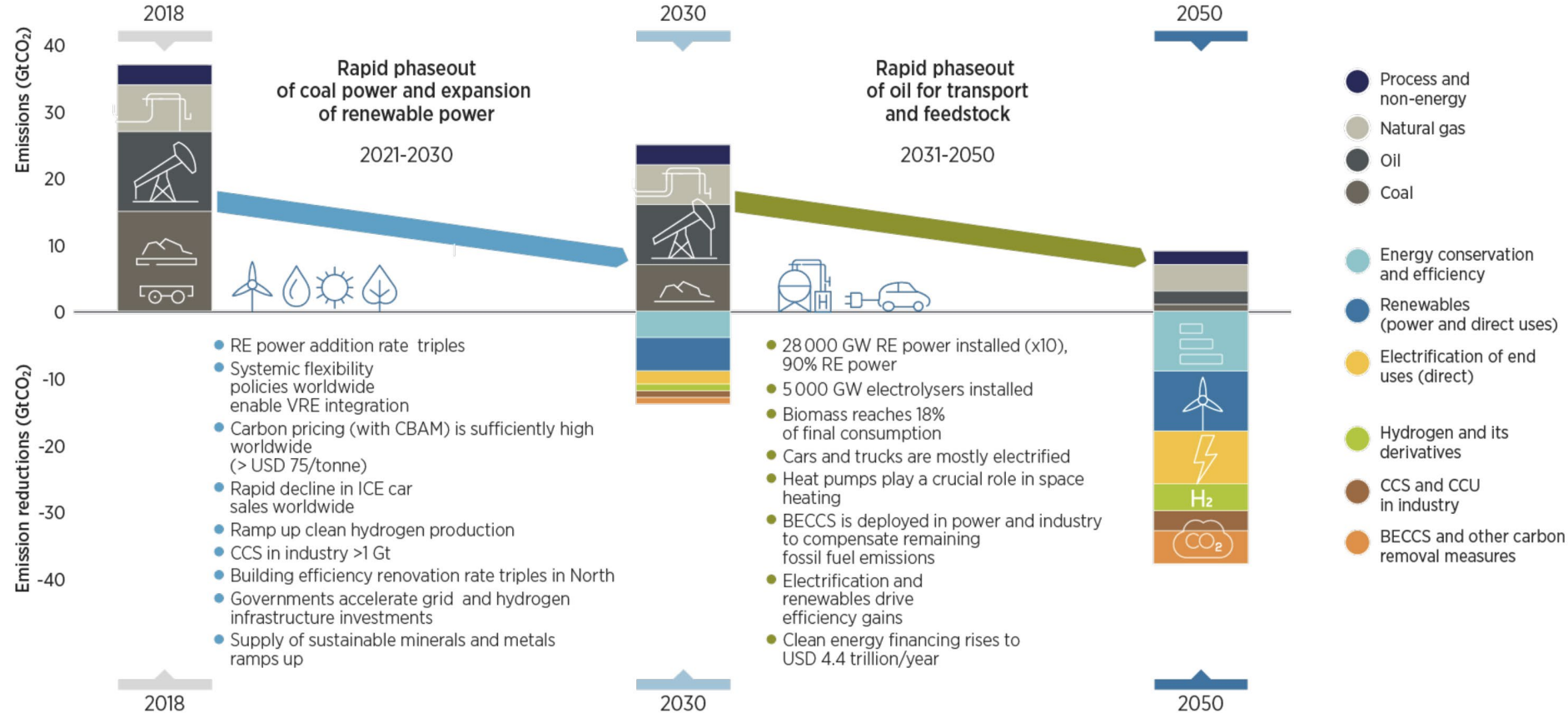
Presents global results

Where we are (2018) and where we need to be (2050)

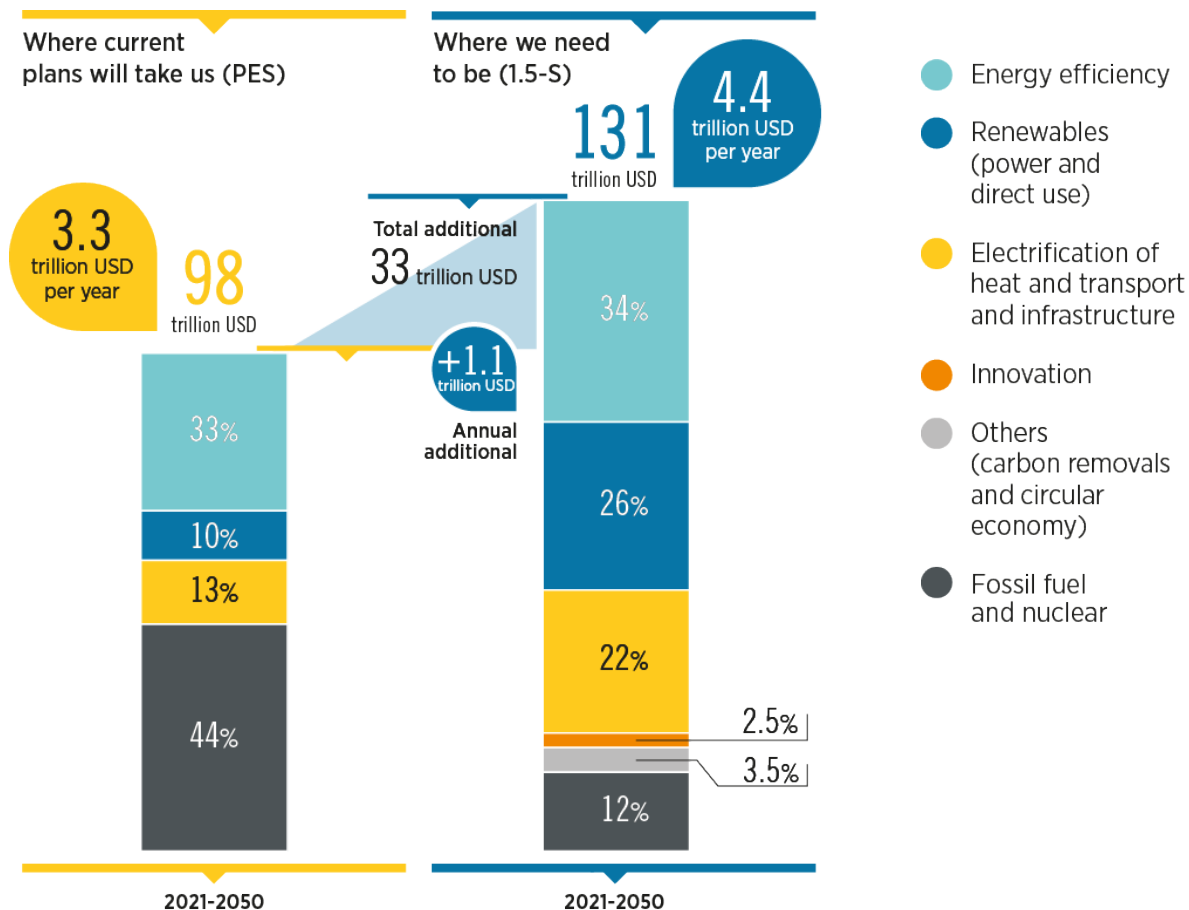


- By 2050, electricity would be the main energy carrier with more than a 50% direct share of total final energy consumption – up from 21% in 2018.
- By 2050, 90% of total electricity needs would be supplied by renewables followed by 6% from natural gas and the remainder from nuclear.
- Another 8% of final energy would come as indirect electricity in the form of e-fuels and hydrogen.

Pathway towards net zero – phasing out of fossil fuels

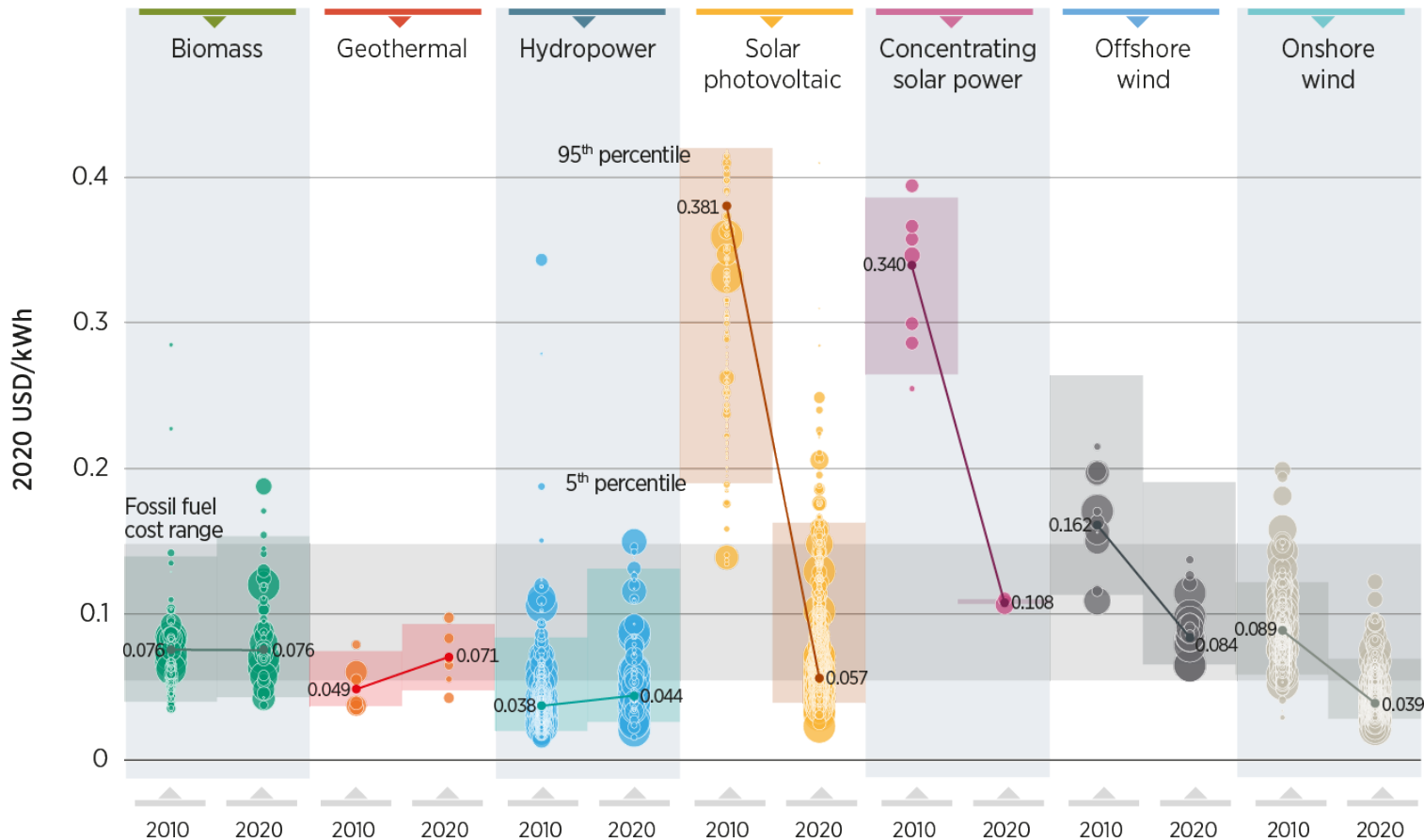


New investment priorities: renewables, efficiency and electrification



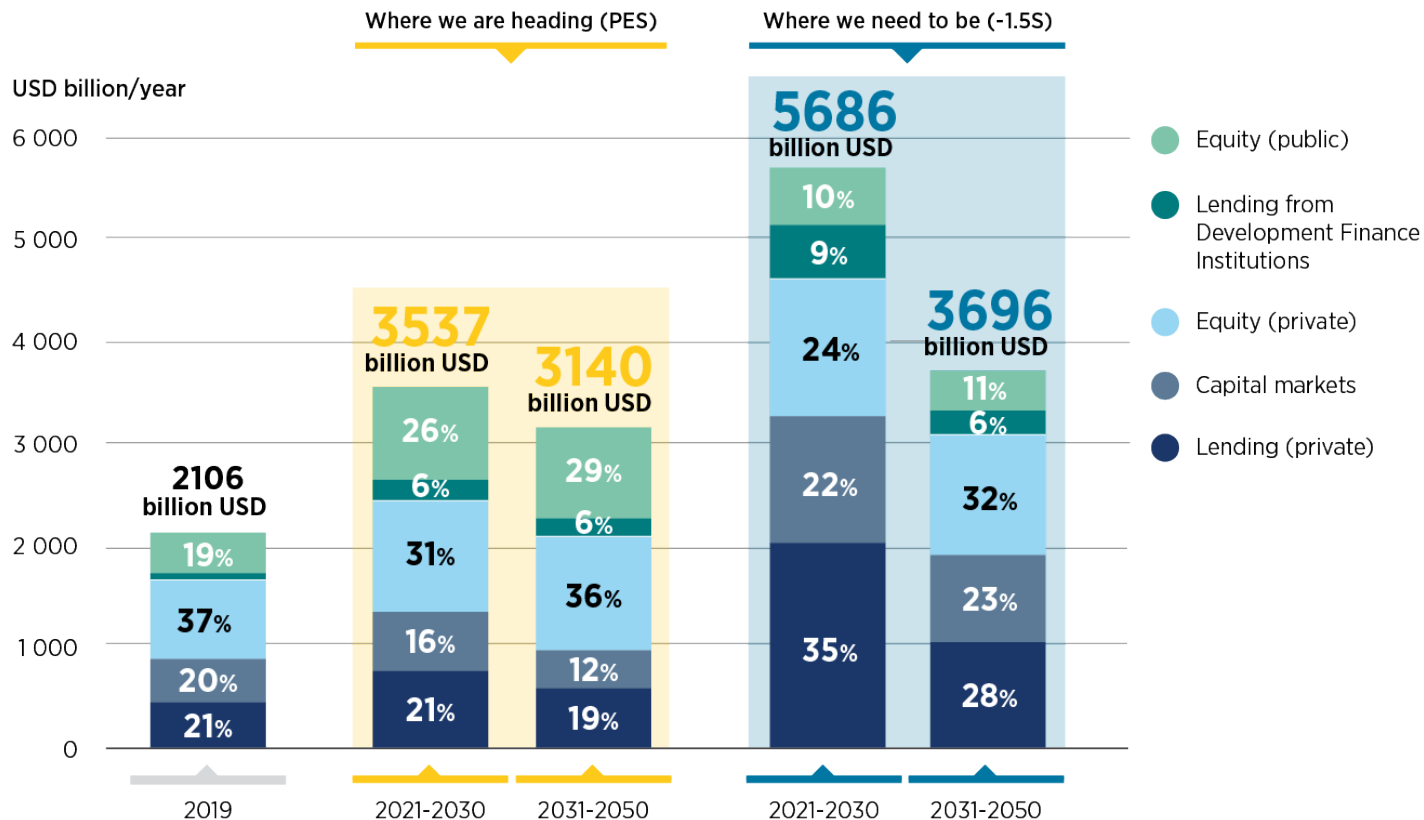
- A climate-safe future calls for the scale-up and redirection of investments towards energy transition technologies, away from fossil fuels.
- Accelerating the pace of the energy transition and scaling up investments in energy transition technologies in all sectors hinges on what the world does between 2021 and 2030. Setting the right investment priorities is key.

Renewables are increasingly the lowest-cost sources of electricity in many markets



The costs of renewable energy have continued to decline. Solar PV and wind are increasingly the cheapest sources of electricity in many markets.

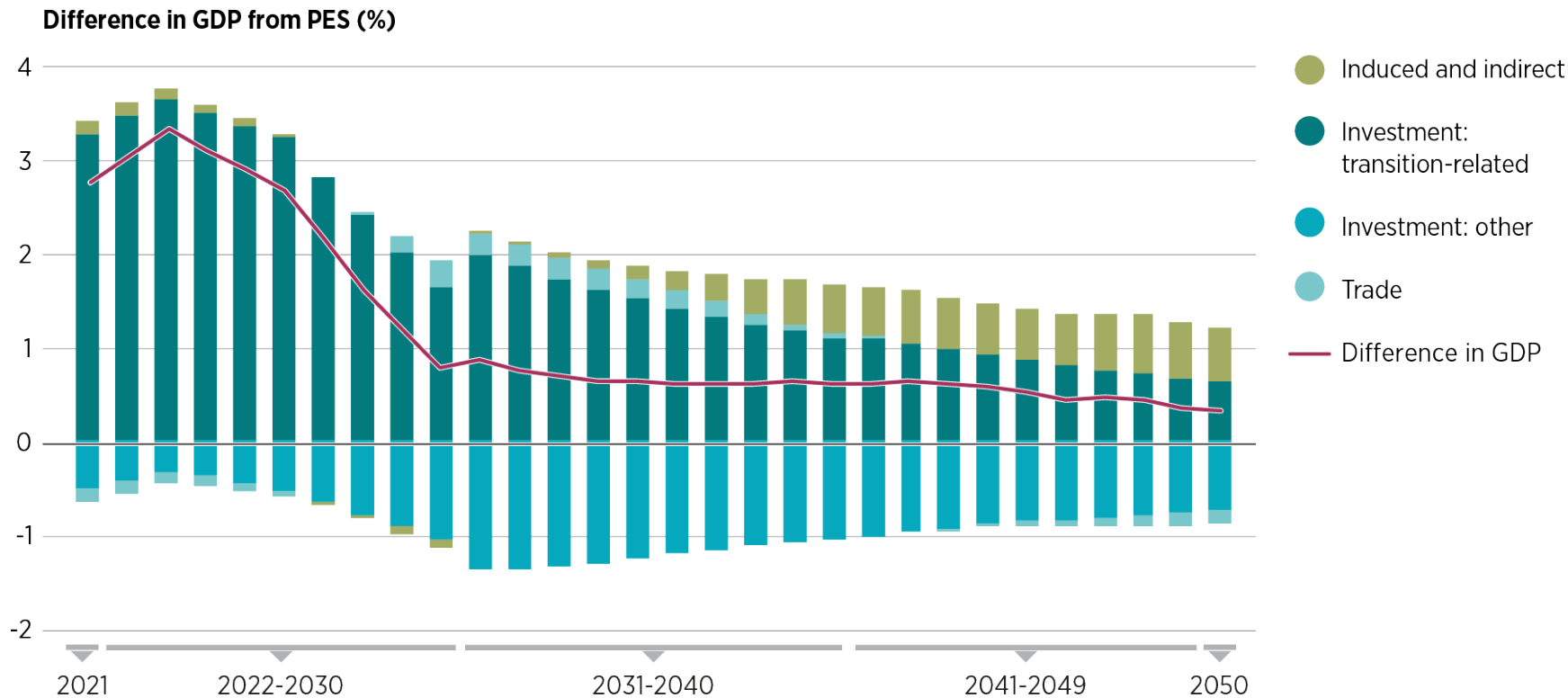
New investment priorities: renewables, efficiency and electrification



The additional capital needed for the 1.5°C Pathway would be largely covered by the private sector, while public resources would continue to be key to lower the risk perception for investors and ensure a just and inclusive energy transition

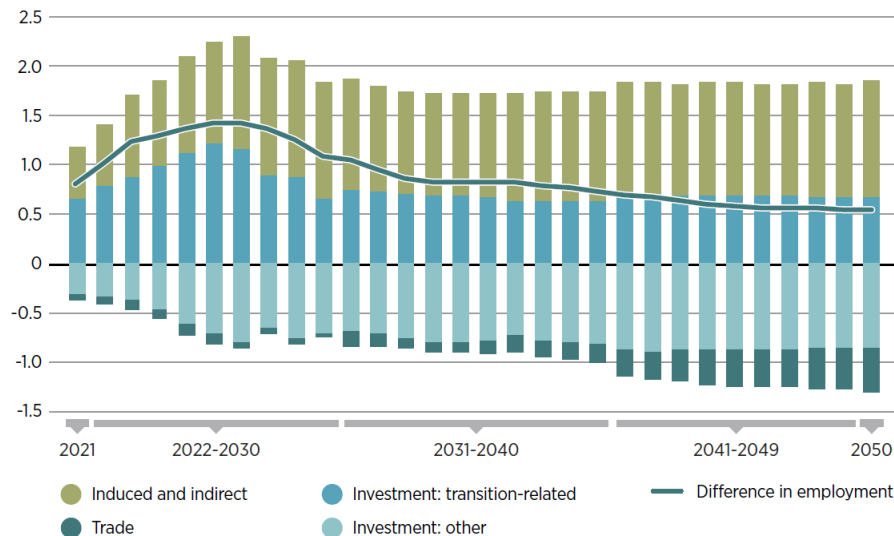


The 1.5°C Pathway provides a boost in global GDP- with impacts from different drivers



Globally, more employment

Difference in Employment from PES (%), by driver



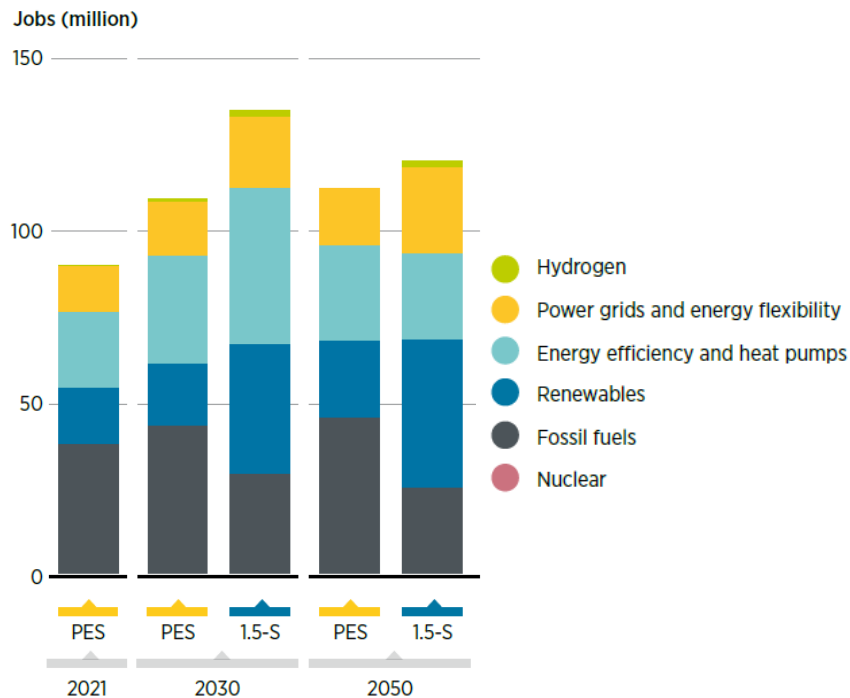
Note: **Transition-related investment** includes the effects of changes in investments on transition-related categories such as renewables for power generation and end uses, energy efficiency, power grids and flexibility, electrification and hydrogen and electric vehicle infrastructure. Government transition-related spending is also included here. **Other investment** includes fossil fuel supply, crowding out and any endogenous responses in investment (for example, to changes in prices of production). **Trade** includes net trade in fuels and any endogenous responses to other trade (for instance, as a response to price and wage changes). **Induced and indirect** effects include the effects of changes in taxes (income, value added tax) such as those due to oil rent losses, revenue recirculation through lump-sum payments, aggregate prices and other changes in consumer expenditure (including reallocations and indirect effects).

- The overall economic effect is positive
- “More” is determined by comparing the 1.5C scenario with a reference
- In IRENA’s analysis, the reference contains all NDC pledges and current energy plans but does not suffice.
- The difference is driven by
 - Investment,
 - Trade, and
 - Indirect and induced effects

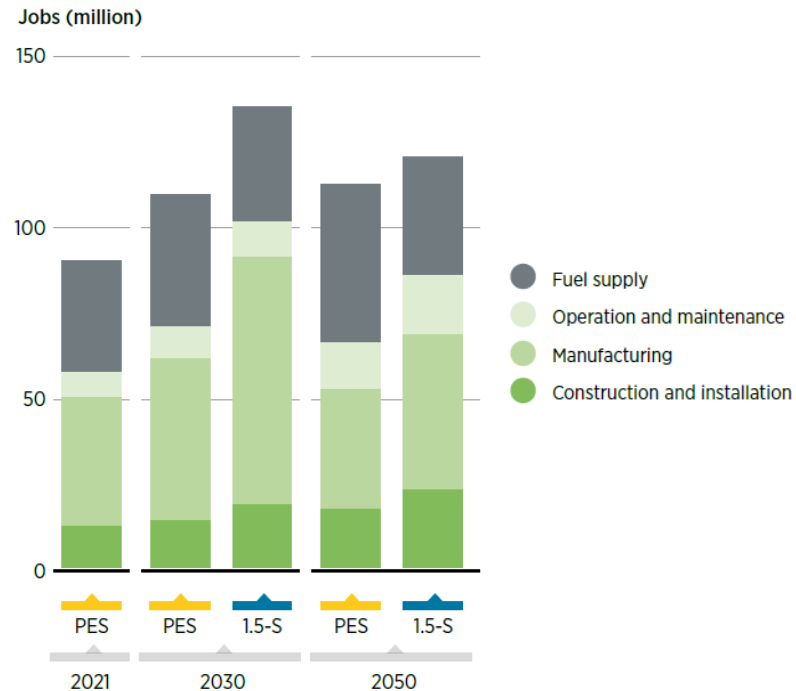


Energy sector jobs

Energy sector jobs by technology under the PES and 1.5°C Scenario (million), global results



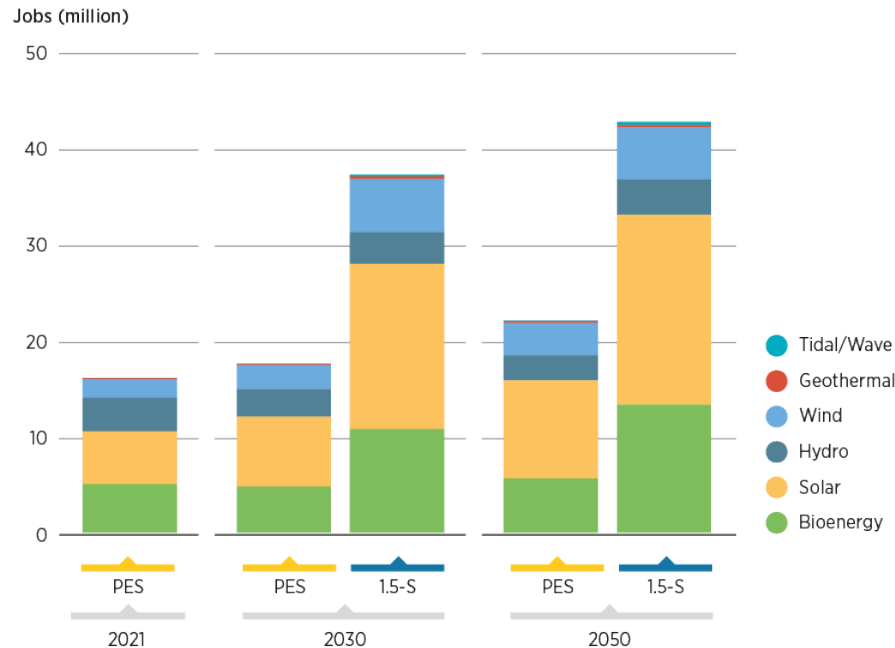
Energy sector jobs, by segment of value chain, in the 1.5°C Scenario and PES (excluding vehicles)



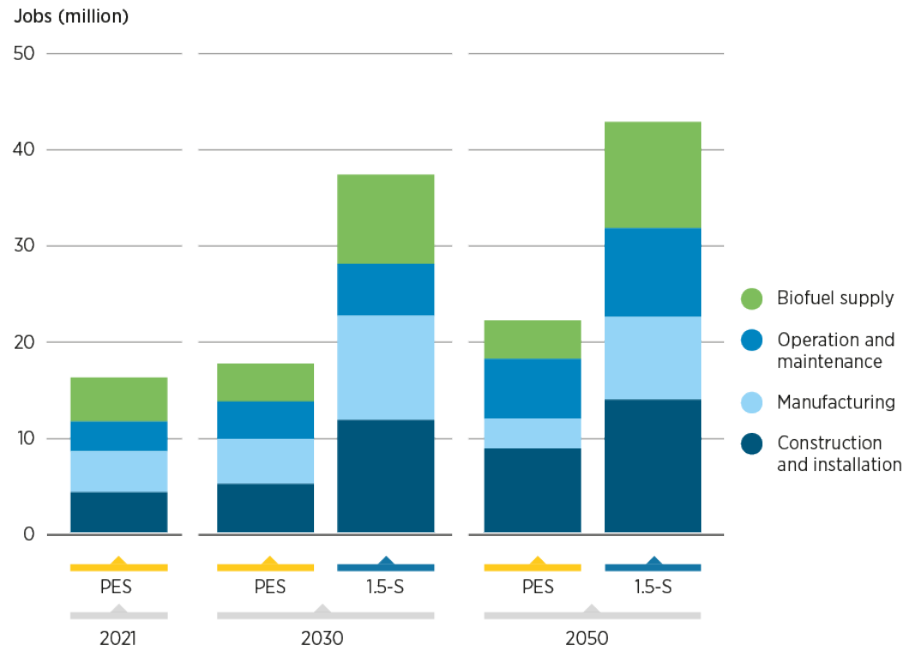


Renewable energy jobs by technology and along the segments of the value chain

Jobs in renewable energy, by technology, in the 1.5°C Scenario and PES

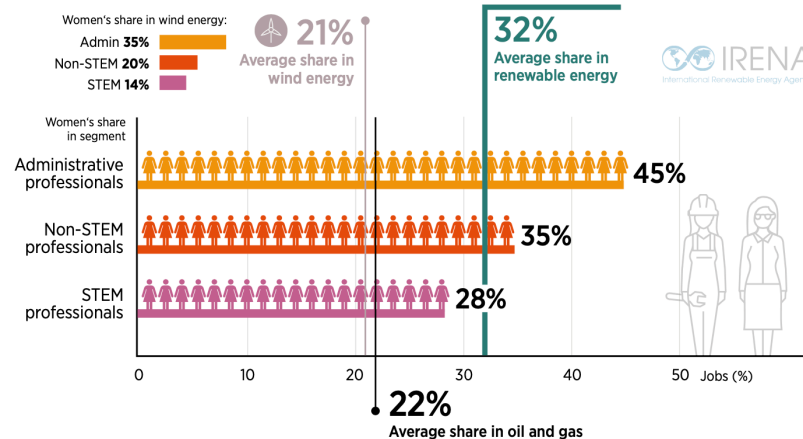
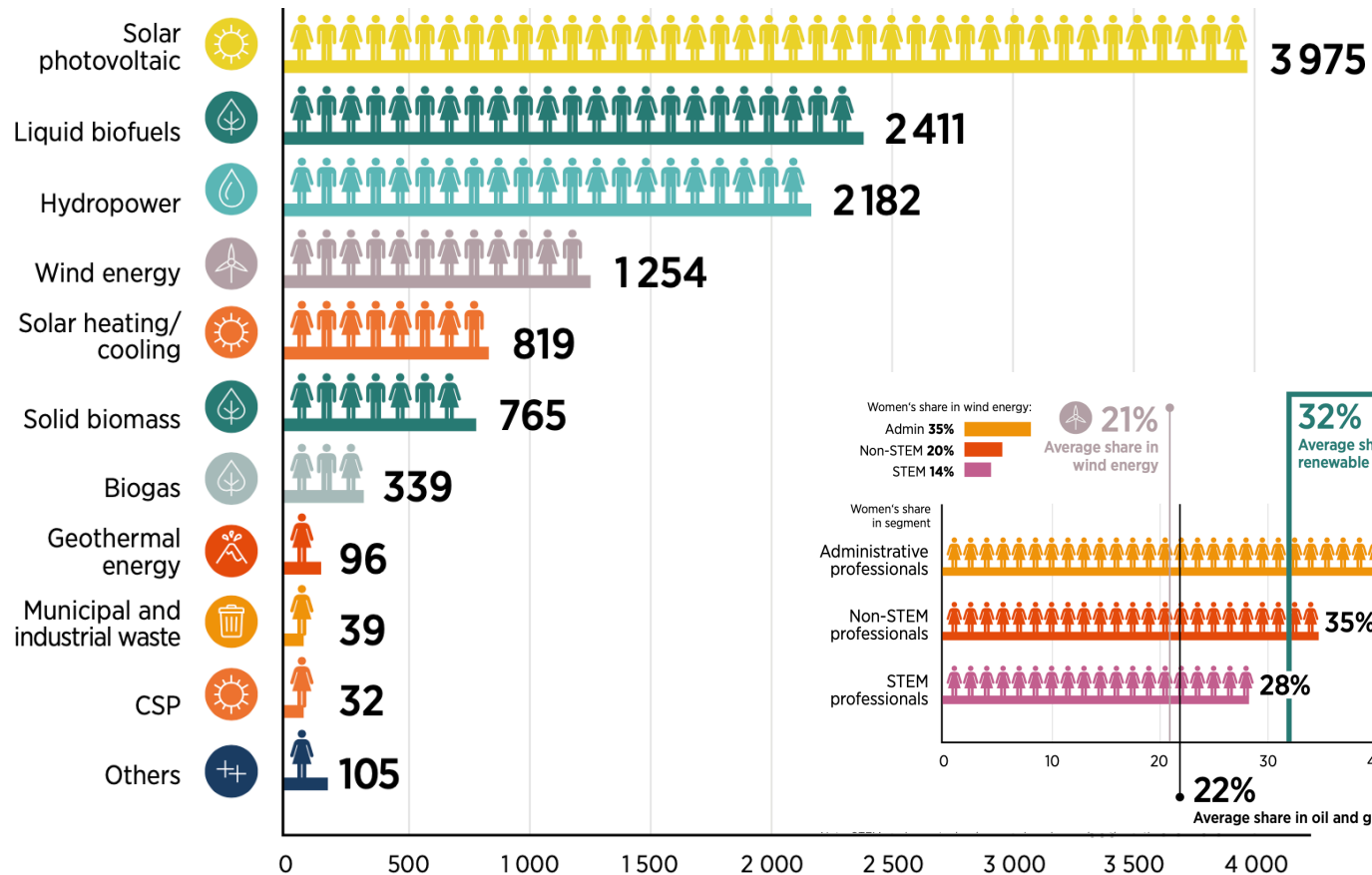


Renewable energy jobs, by segment of value chain, in the 1.5°C Scenario and PES



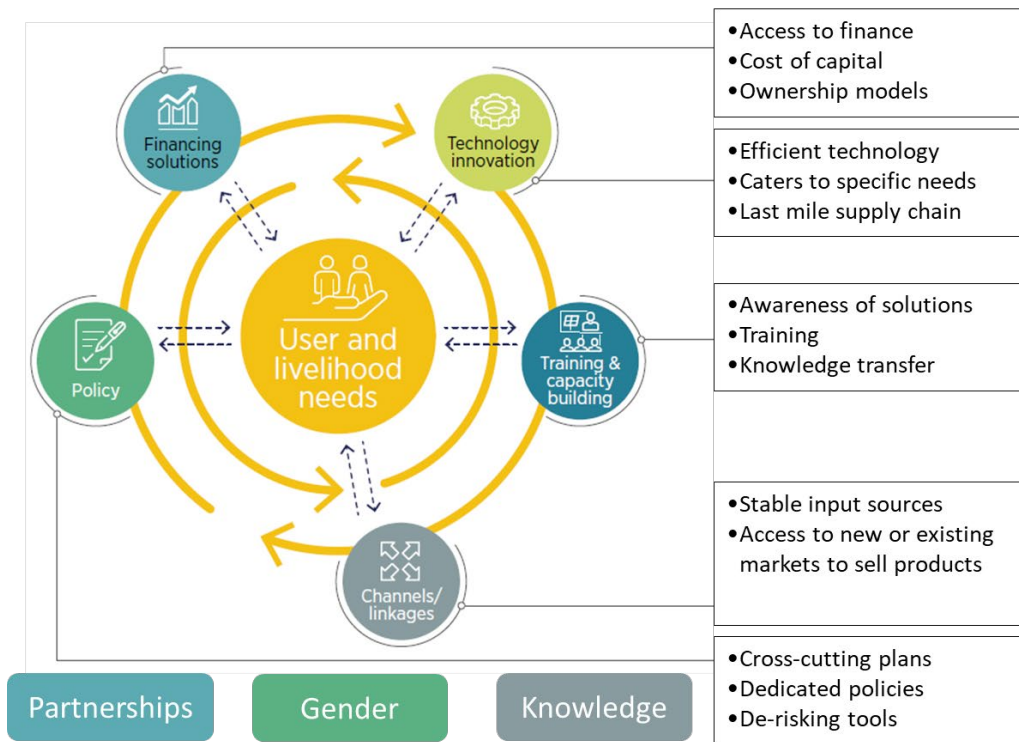
- Renewable energy jobs will increase from 11.5 million today to 43 million in 2050. Solar photovoltaic (PV) accounts for the largest share, followed by bioenergy, wind and hydropower.
- Construction, installation and manufacturing boost renewable jobs during the following decade, with operation and maintenance gaining relative weight as the transition advances under the 1.5°C Scenario.

Jobs in renewable energy in 2020, by technology



Improving access to energy for livelihood improvements in Asia and Africa

Ecosystem for linking renewables and livelihoods

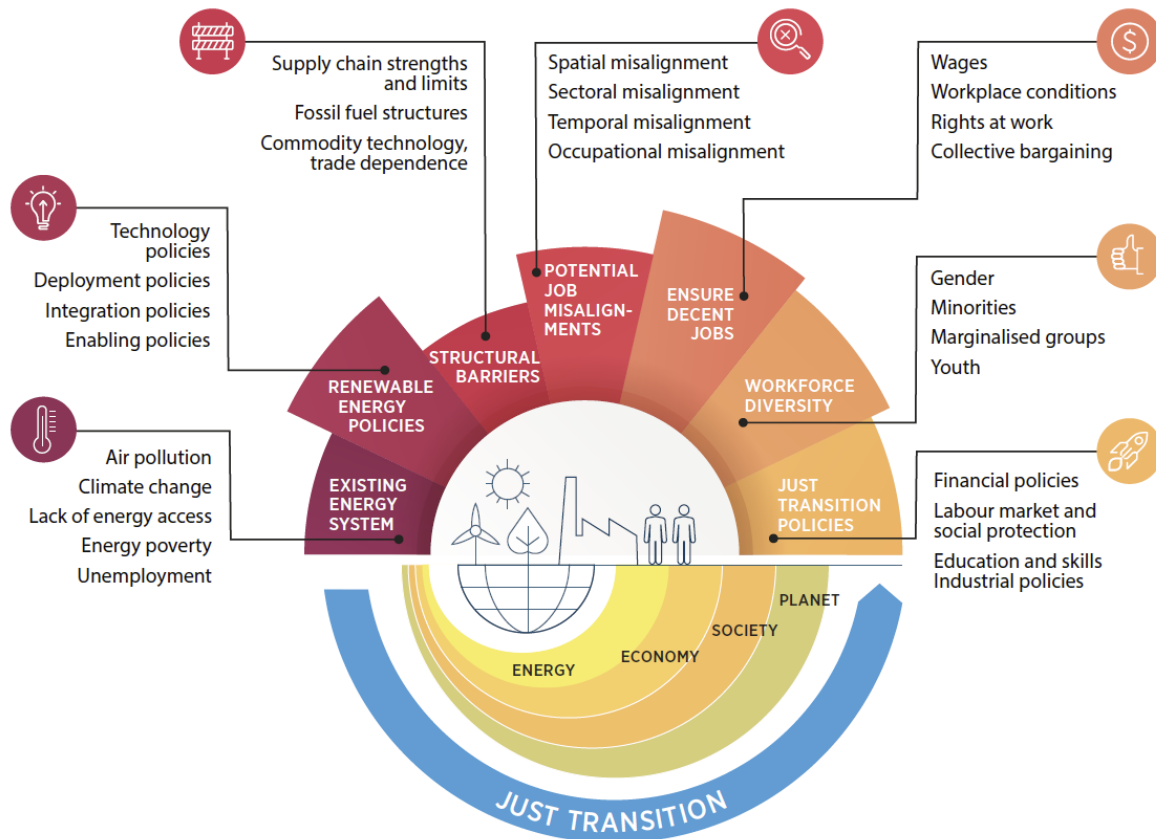
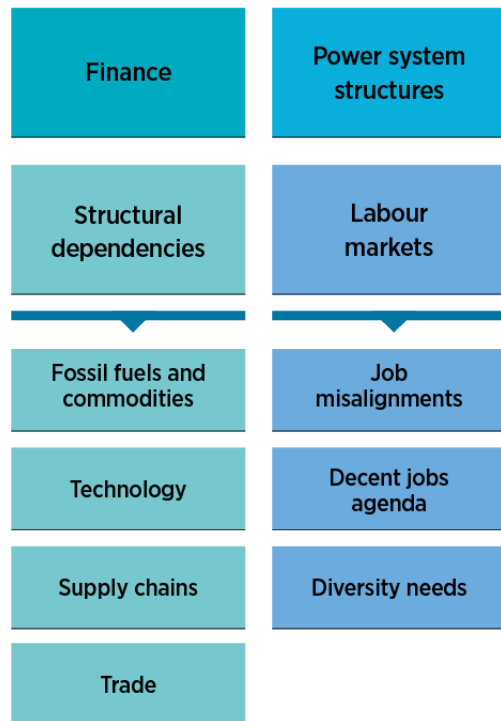


Source: SELCO Foundation and IRENA



Comprehensive policy framework for a just energy transition

Challenges and potential misalignments





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Thank you!