

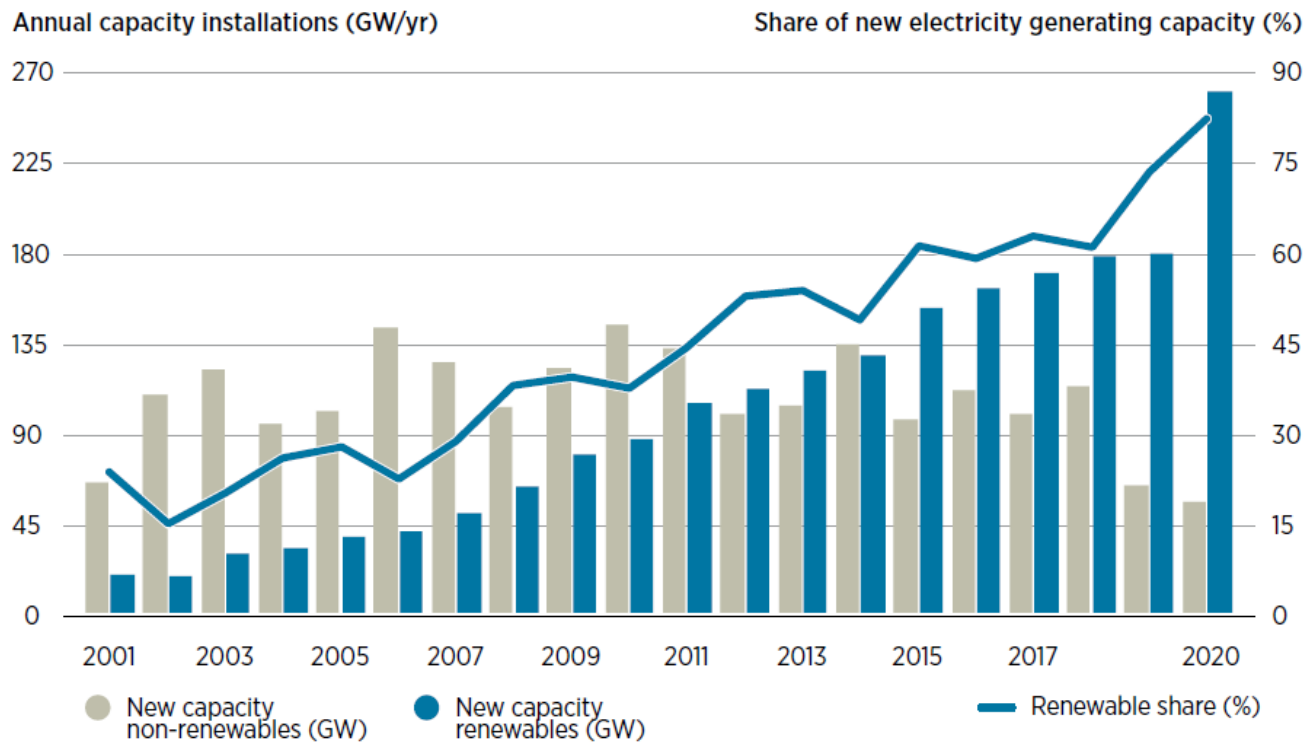


WORLD ENERGY TRANSITIONS OUTLOOK

1.5°C Pathway

Dialogues for Sustainability, 6 October 2021

Share of new electricity capacity, 2001-2020

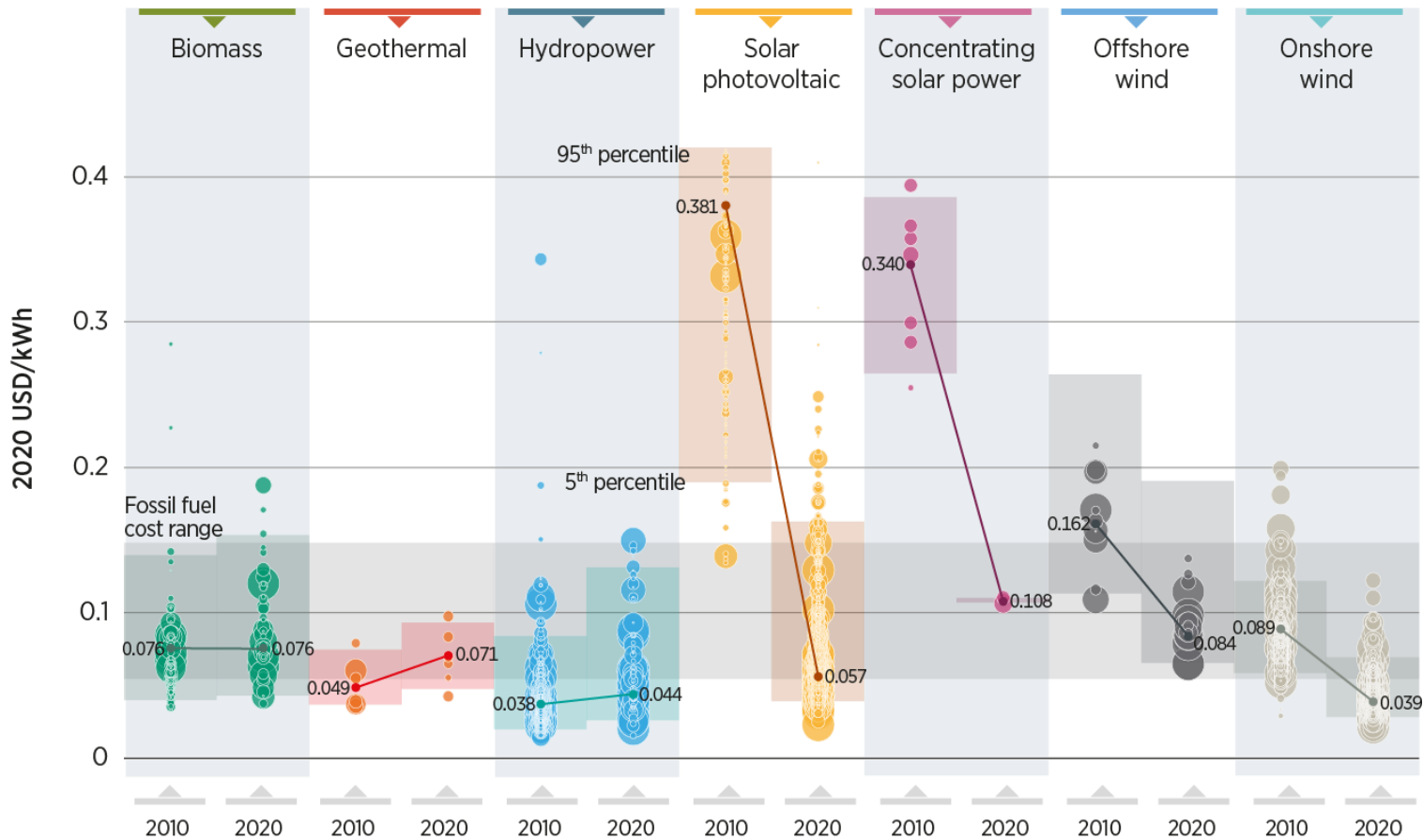


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Based on IRENA's renewable energy statistics.

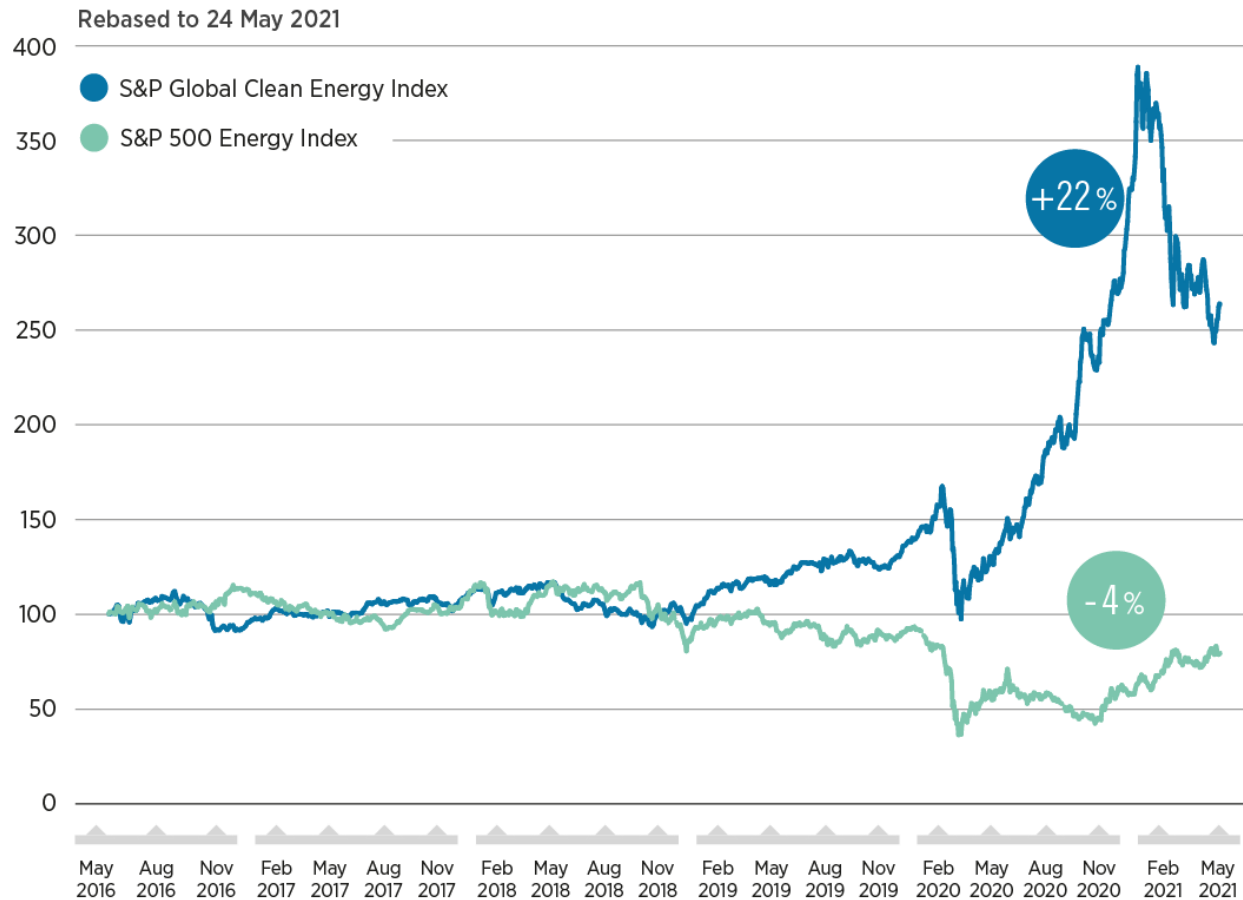
Note: GW = gigawatt.

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



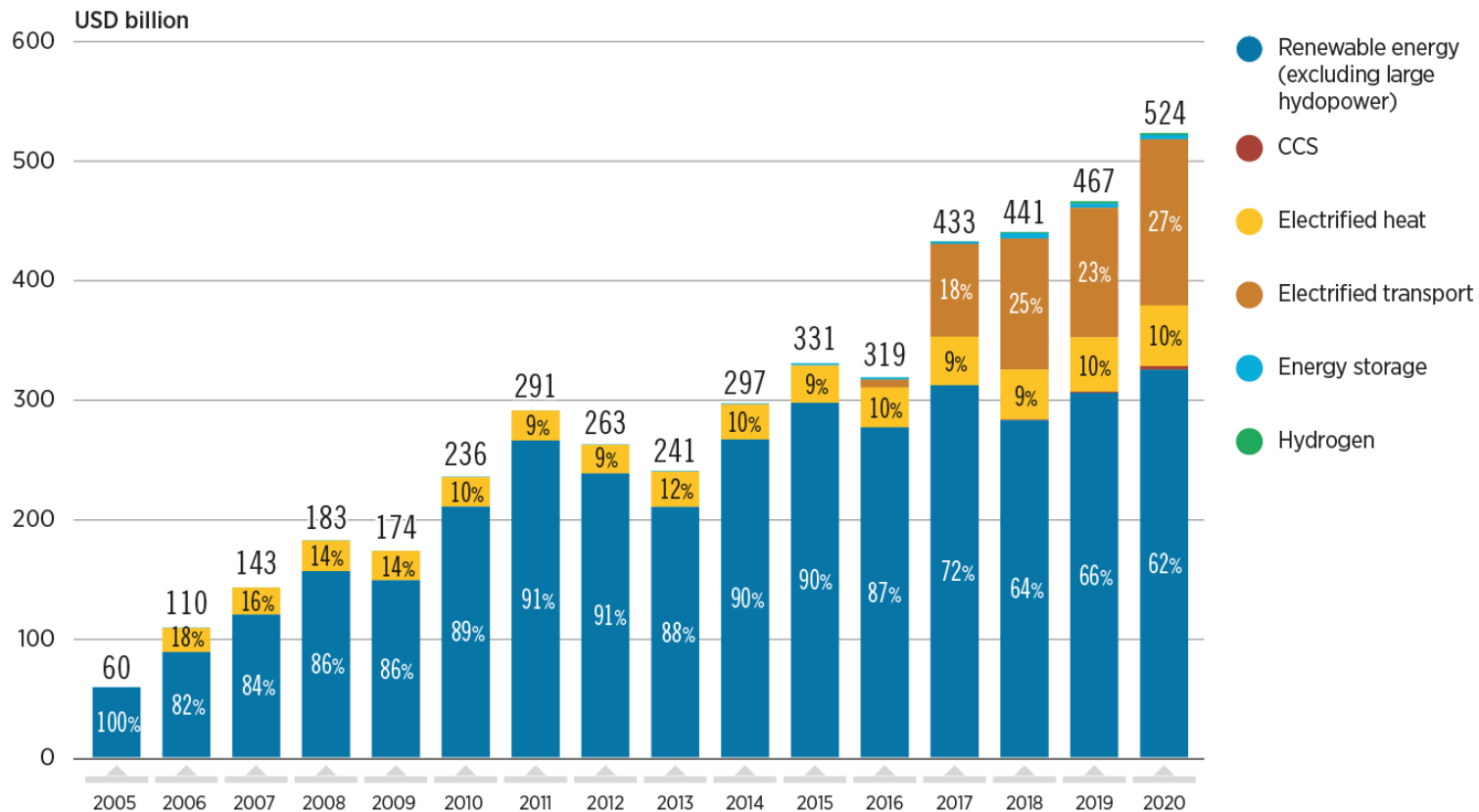
The costs of renewable energy have continued to decline. Solar PV and wind are increasingly the cheapest sources of electricity in many markets.

Recent trends in financial markets



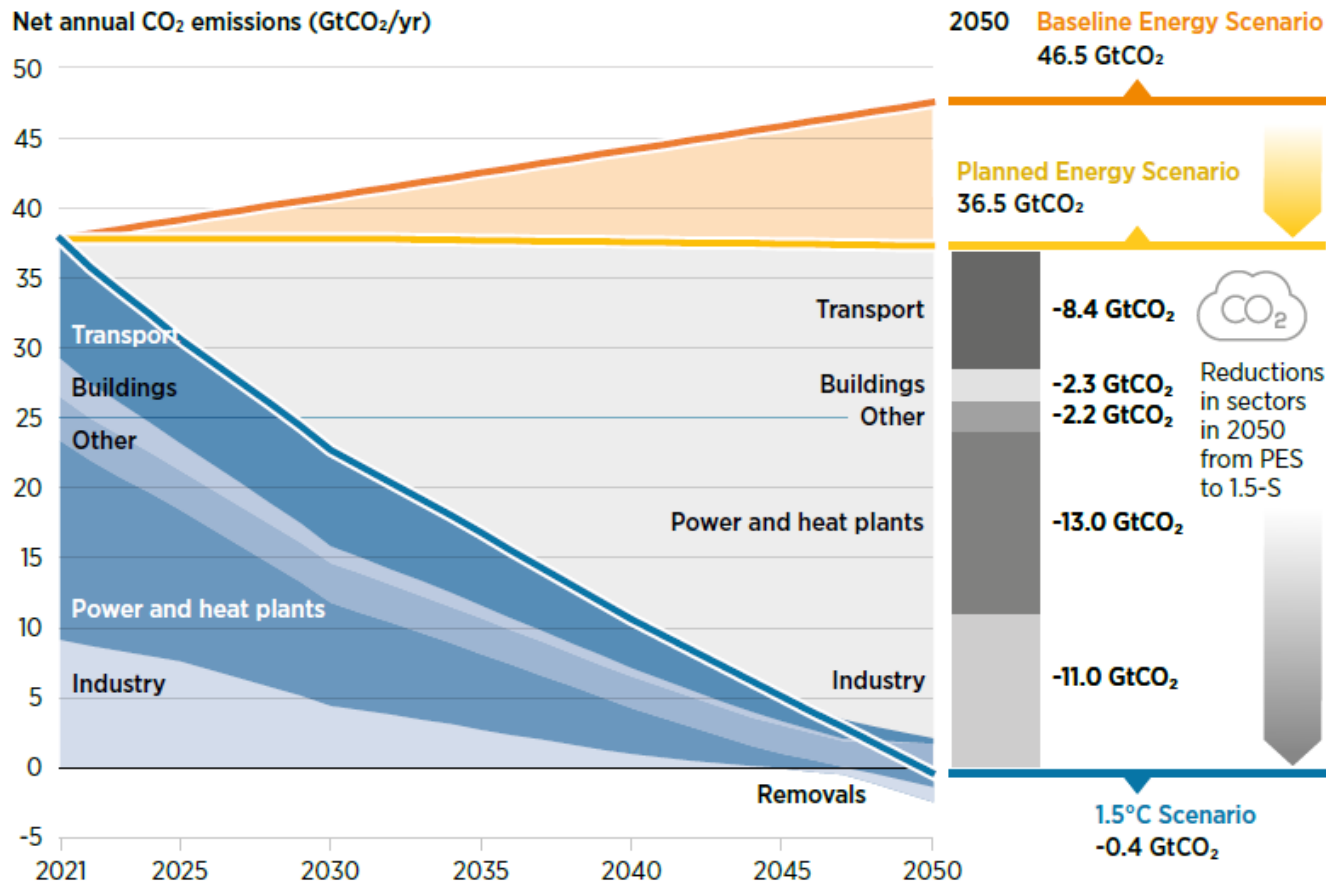
Investors and financial markets are anticipating the energy transition and already allocating capital away from fossil fuels and towards energy transition technologies, such as renewables

Investments in energy transition technologies continue to grow



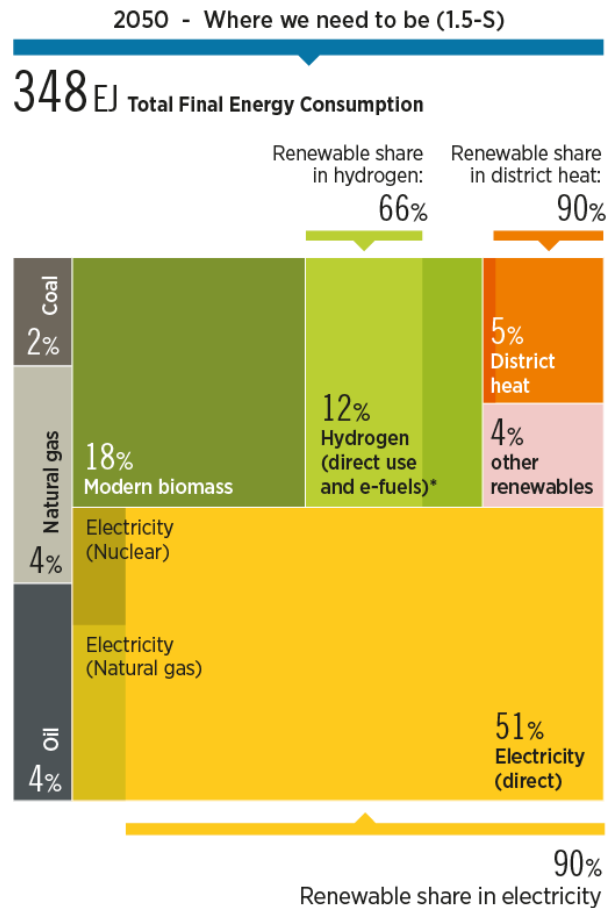
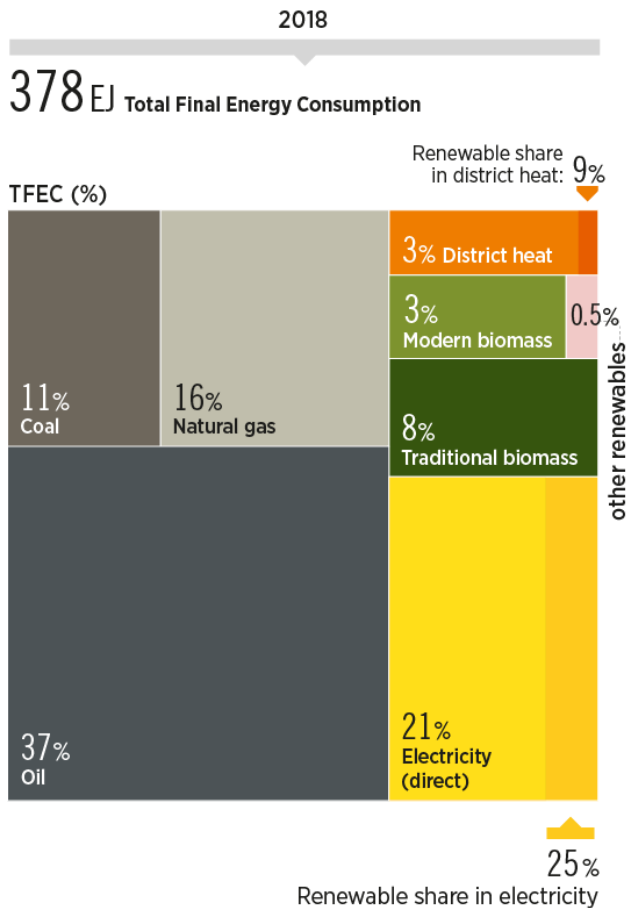
Notwithstanding the impacts of the COVID-19 pandemic, investment in energy transition technologies reached an all-time high of USD 524 billion in 2020 – and almost USD 800 billion if energy efficiency measures are considered

Net zero emissions by mid-century



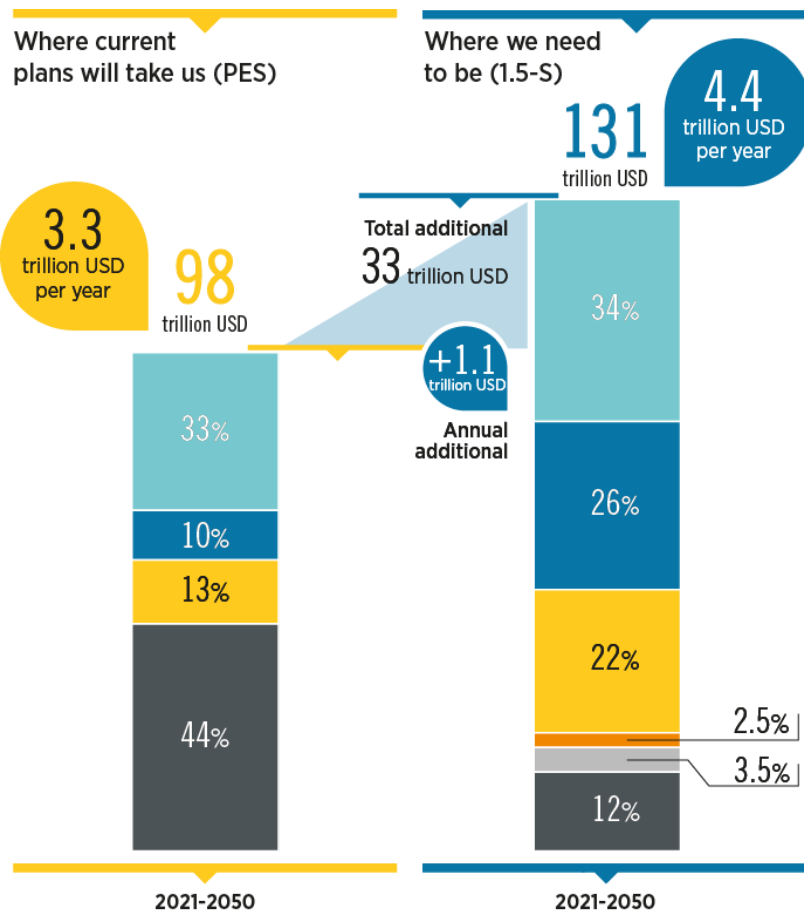
- Baseline emissions continue to rise, while the policies of governments (Planned Energy Scenario) result in flatlining of emissions
- For the 1.5°C climate target, global CO₂ emissions need to drop to net zero by 2050
- Steepest decline necessary over the next 10 years – 2020 must be the decade of action

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.

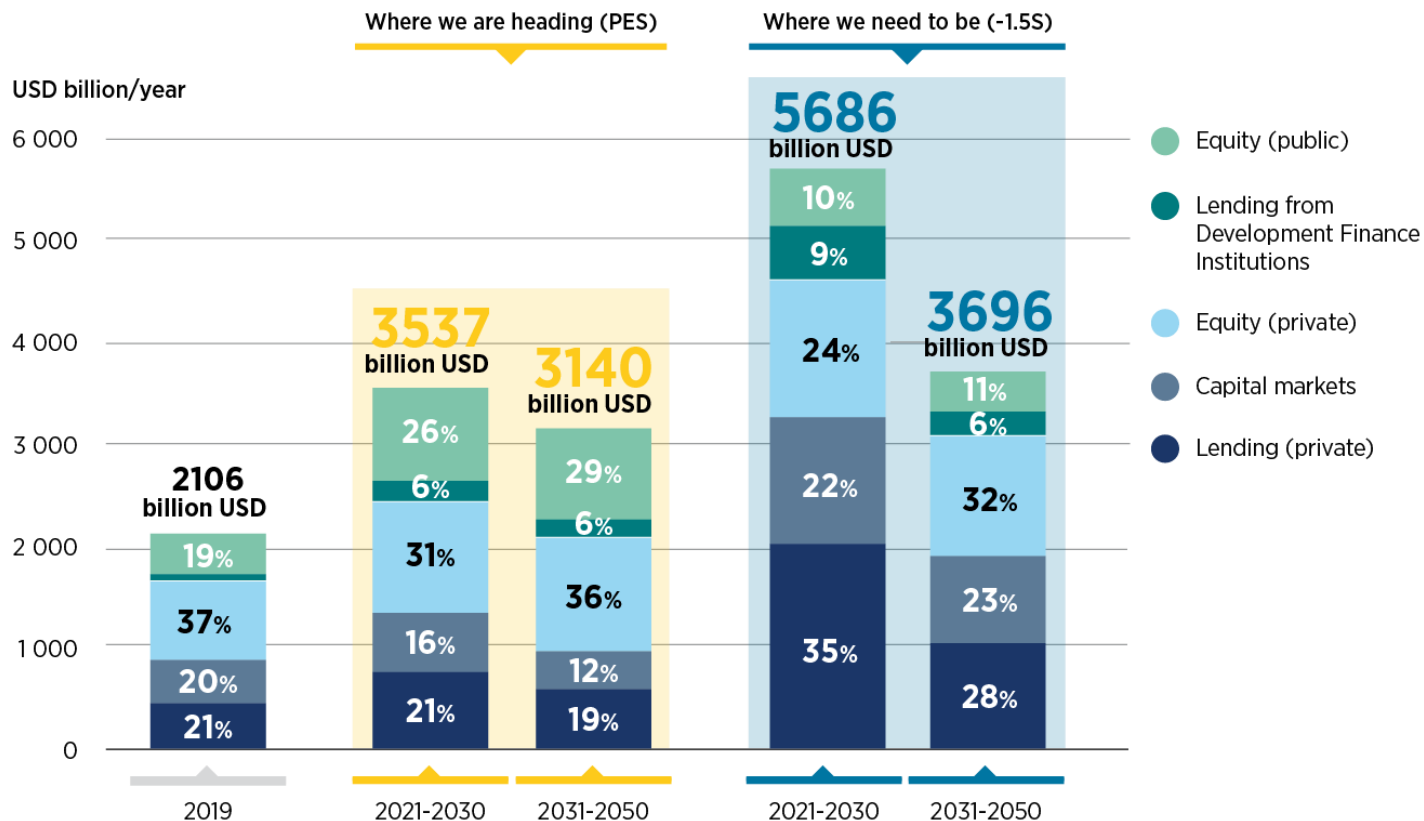
New investment priorities: renewables, efficiency and electrification



- Energy efficiency
- Renewables (power and direct use)
- Electrification of heat and transport and infrastructure
- Innovation
- Others (carbon removals and circular economy)
- Fossil fuel and nuclear

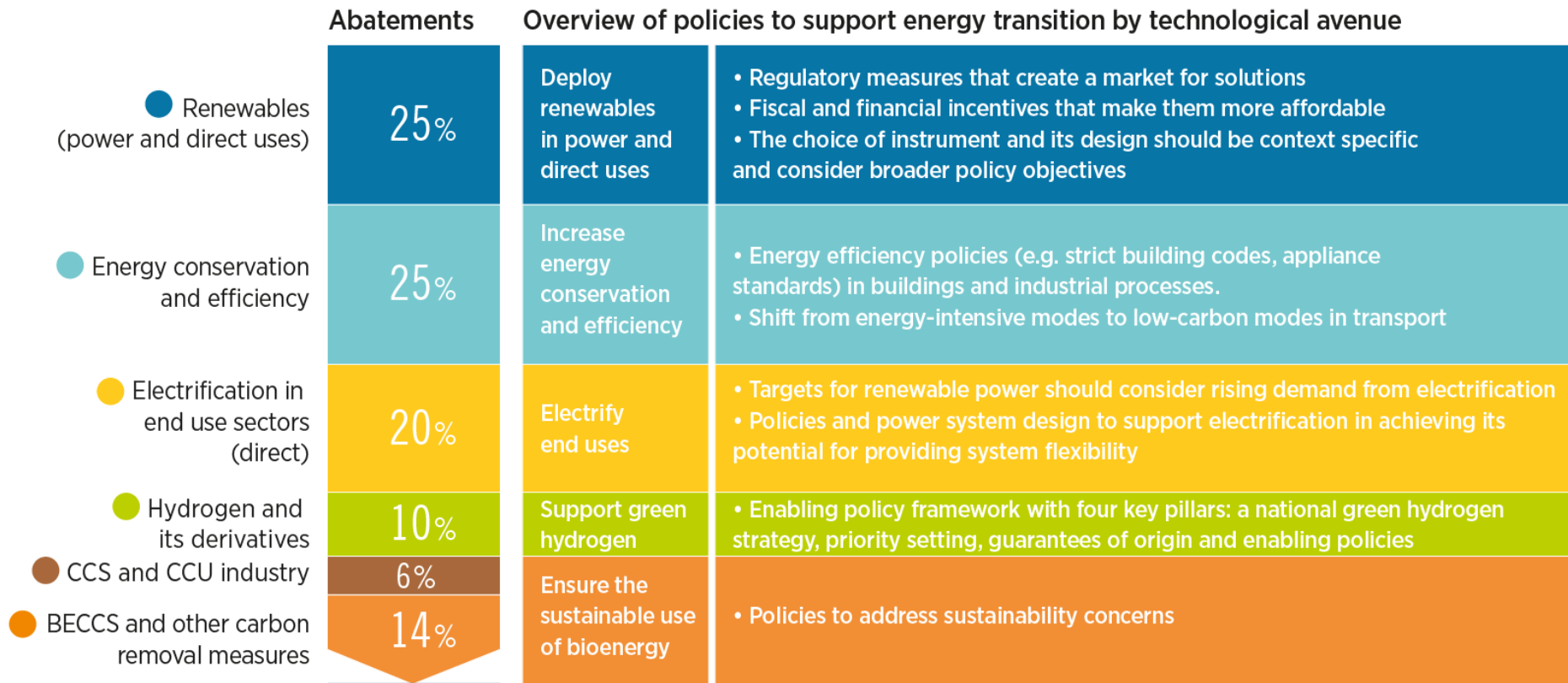
- A climate-safe future calls for the scale-up and redirection of investments towards energy transition technologies, away from fossil fuels.
- Accelerating the pace of the energy transition and scaling up investments in energy transition technologies in all sectors hinges on what the world does between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

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

Deployment policies



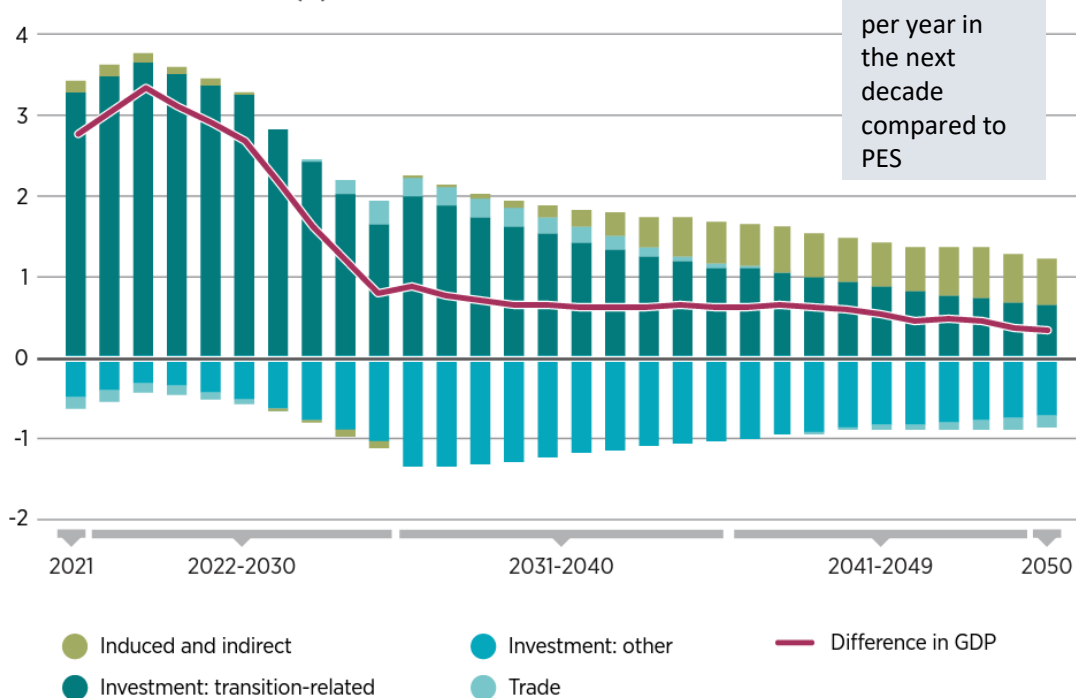
Cross-cutting enabling policies



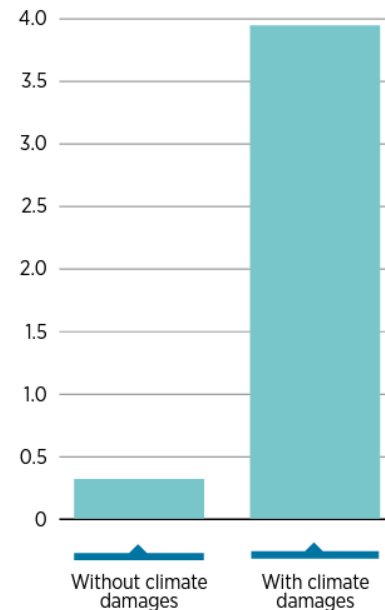
Raise ambition in commitments to the energy transition	Targets should go beyond the power sector to include heating and cooling and transport, and specific solutions such as green hydrogen
Phase out fossil fuels	A holistic policy framework is necessary to address fossil fuels as a stranded asset and its socio-economic implications
Eliminate distortions and incentivise energy transition solutions	Policies (e.g., carbon pricing) should be implemented with careful consideration of social and equity issues, particularly for low-income populations
Foster innovation	Enabling policies further innovation in technology, infrastructure, finance, business models, market design, regulations, governance, etc.
Raise awareness among consumers and citizens	Consumers and citizens influence governments and corporations to move faster and make proactive choices regarding energy consumption and sources

The energy transition boosts global GDP

Difference in GDP from PES (%)



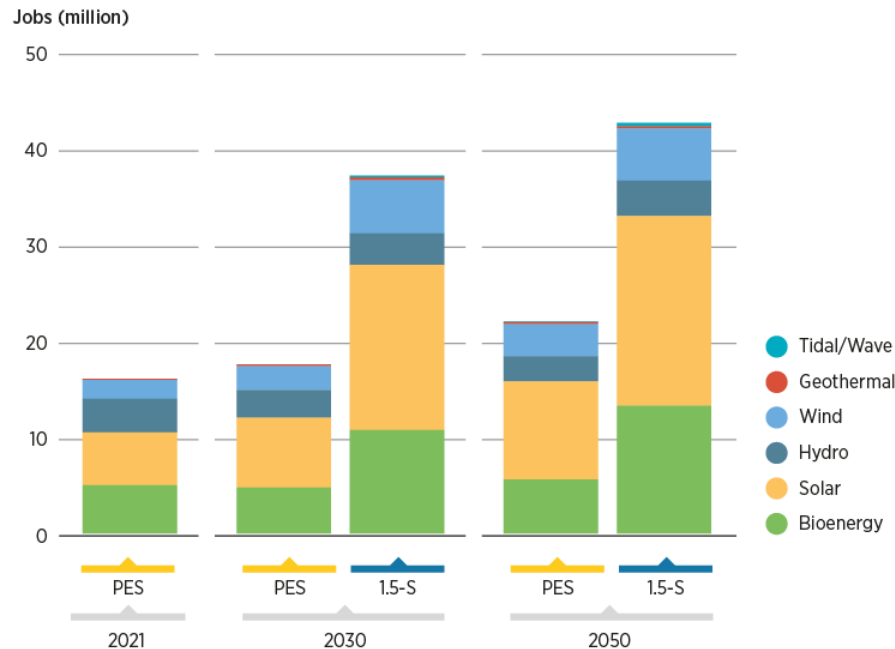
Difference in GDP between 1.5°C-S and PES by 2050 in %



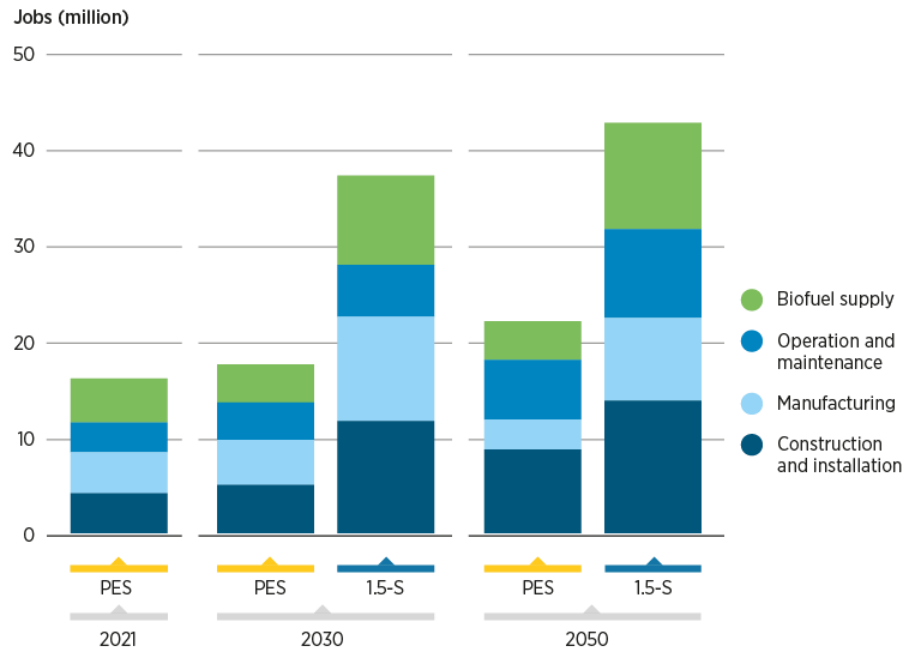
- The 1.5°C Pathway provides a boost in GDP that is 2.4% greater (on average) than that of the PES over the next decade, aligned with the needs of a post-COVID recovery. Over the transition period to 2050, the average improvement of GDP is estimated at 1.2% over the PES.
- 1.5°C Scenario implies lower impact of climate damages on GDP.

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

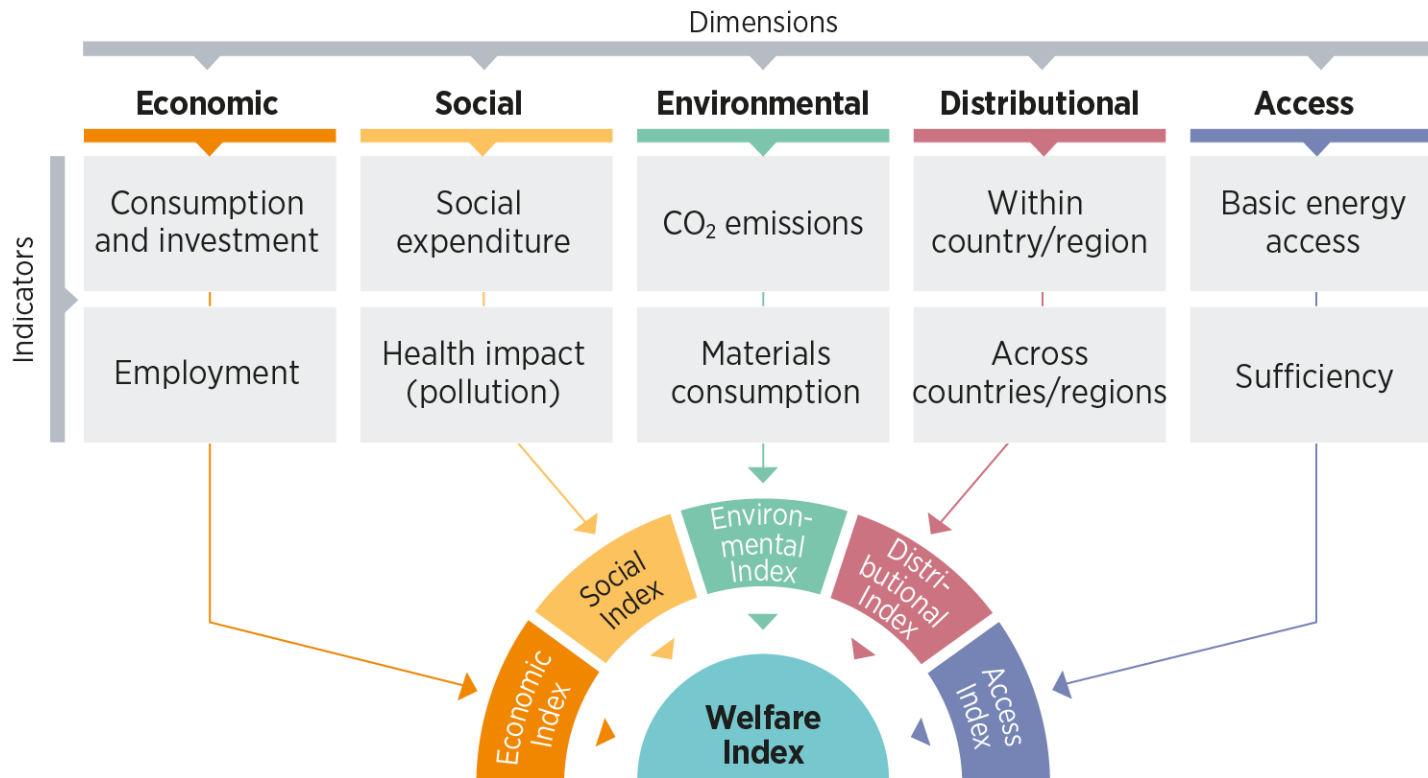


Renewable energy jobs, by segment of value chain, in the 1.5°C Scenario and PES



- 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.

IRENA's Energy Transition Welfare Index

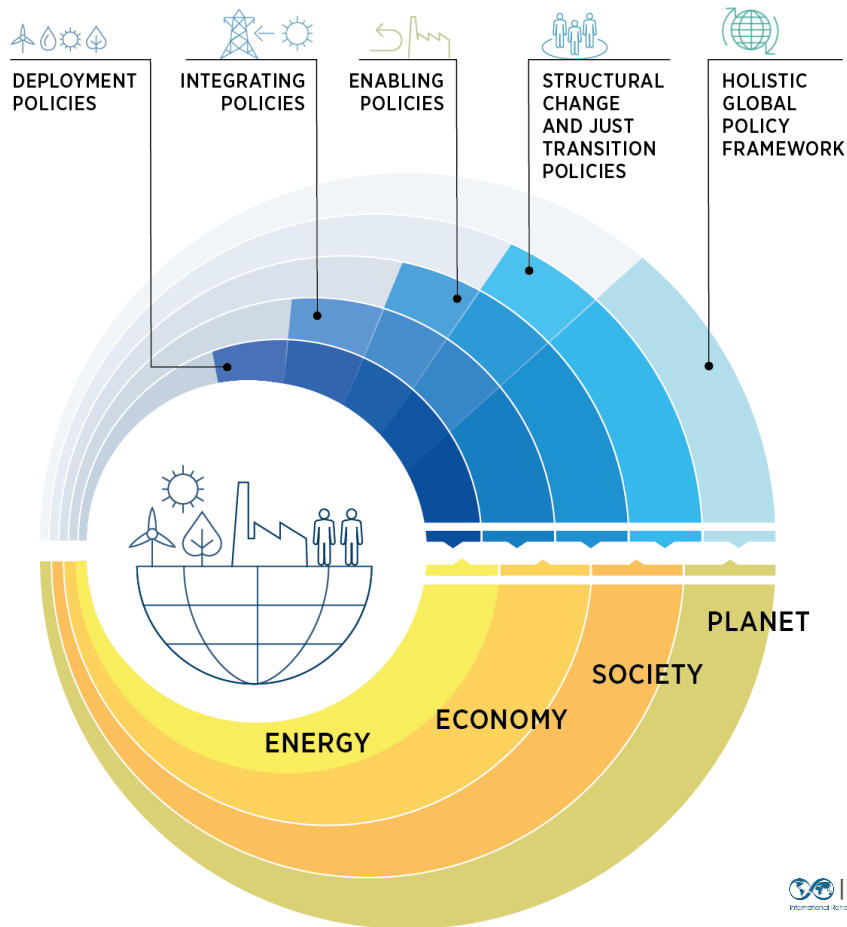


IRENA's Energy Transition Welfare Index captures economic, social, environmental, distributional and energy access dimensions. For the first time, the Index reports distributional and energy access dimensions that are often overlooked in other analyses.

Comprehensive policy framework for a just energy transition

Challenges and potential misalignments

Finance	Power system structures
Structural dependencies	Labour markets
Fossil fuels and commodities	Job misalignments
Technology	Decent jobs agenda
Supply chains	Diversity needs
Trade	





IRENA

International Renewable Energy Agency

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1.5°C Pathway

Thank you!