Heating and cooling in the energy transition: The path to 1.5°C

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7 April 2022, Graz, 2nd International Sustainable Energy Conference 2022

Heating and cooling accounts for half of total energy demand

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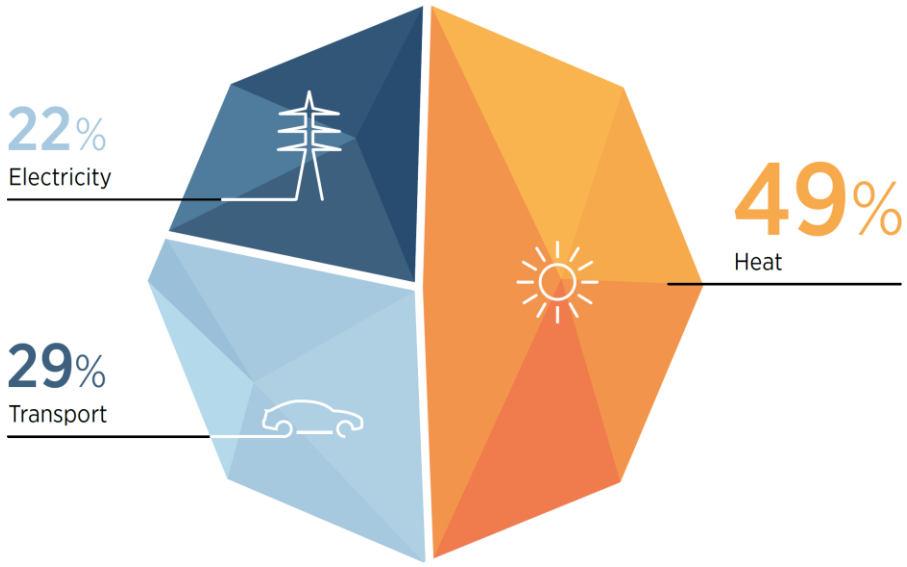
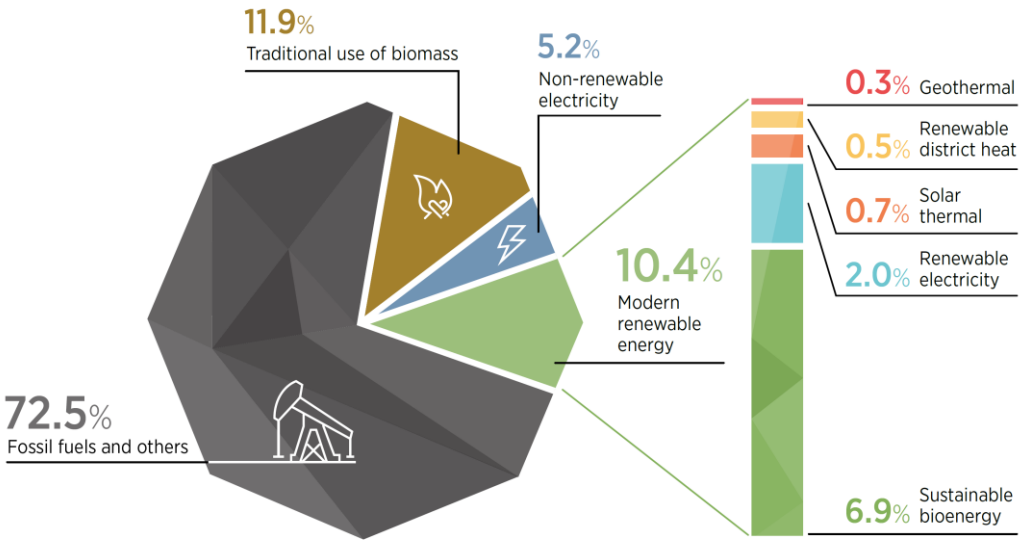
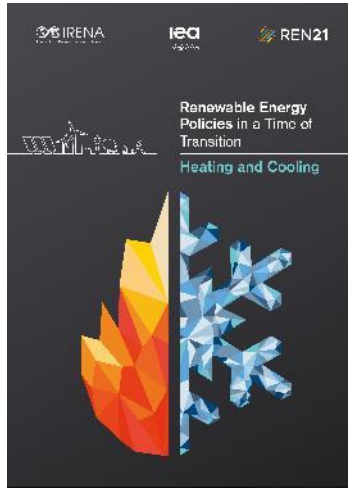
TFEC shares by end use, 2019



TFEC in heating and cooling, by source, 2019





The global energy transition requires a renewables-based decarbonisation of end uses

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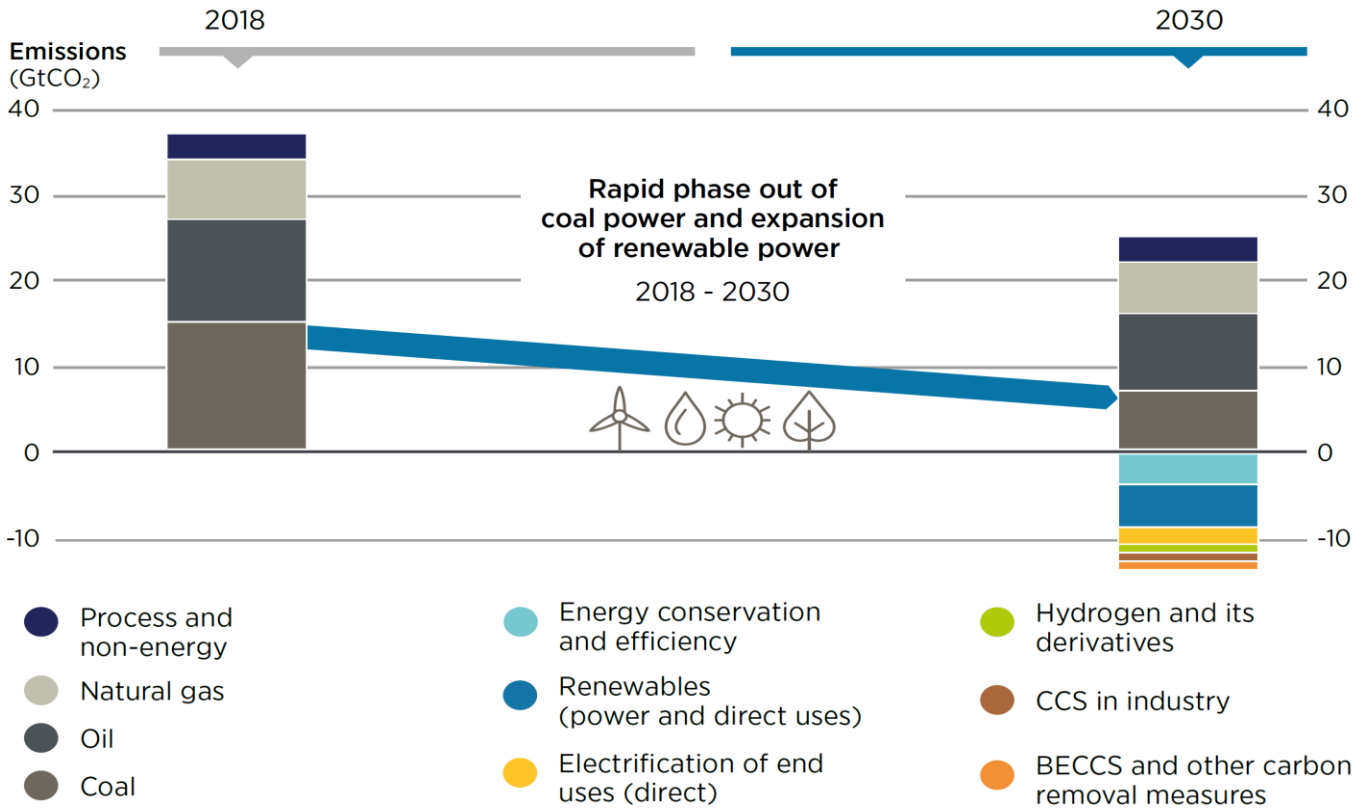
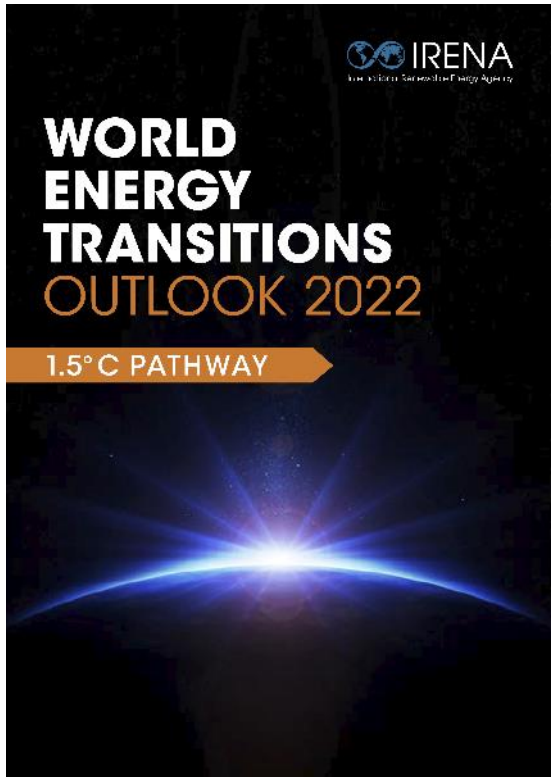
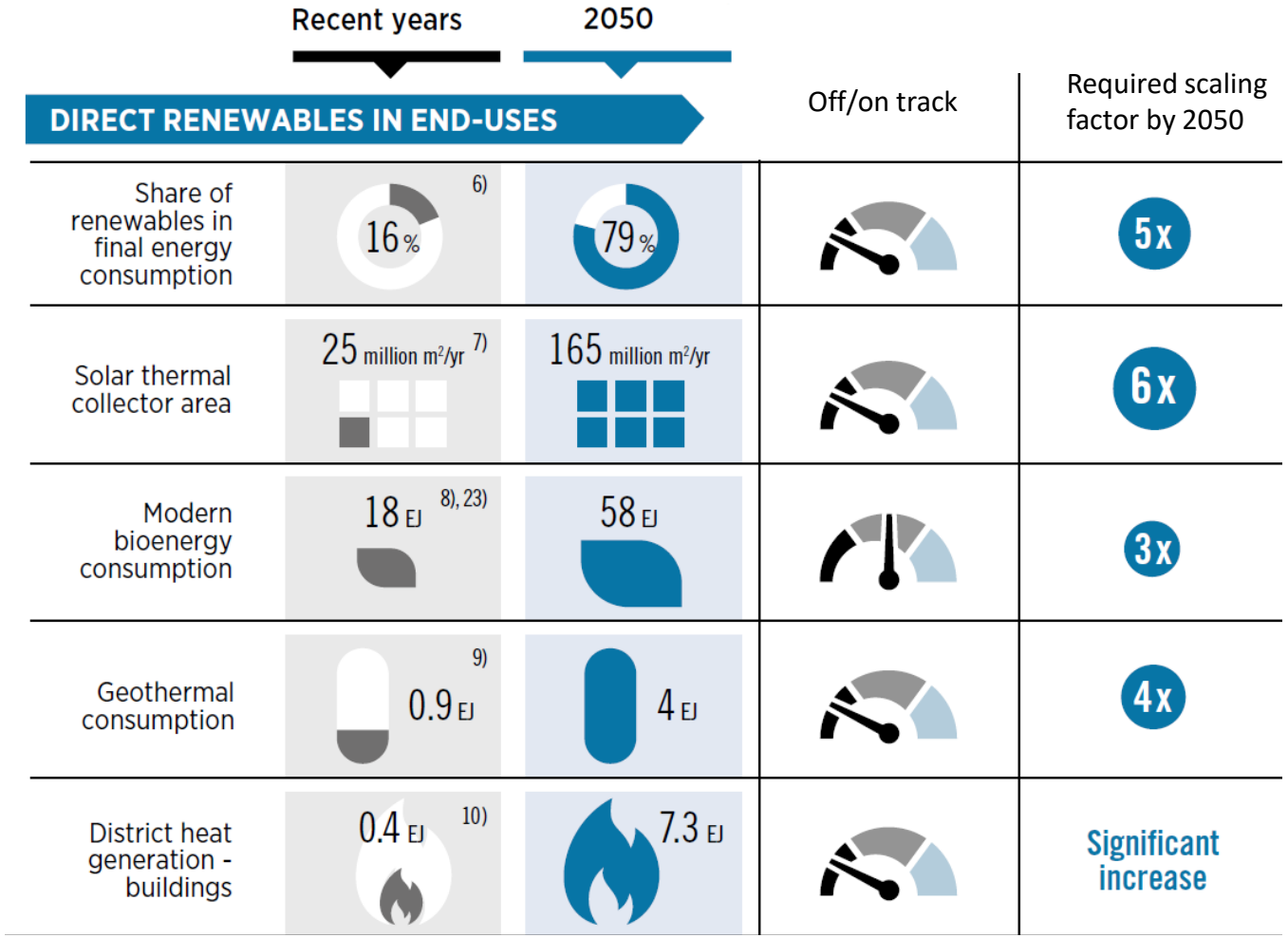
Required emission reductions 2018-2030





Current progress is not on track



Investments need to be scaled up

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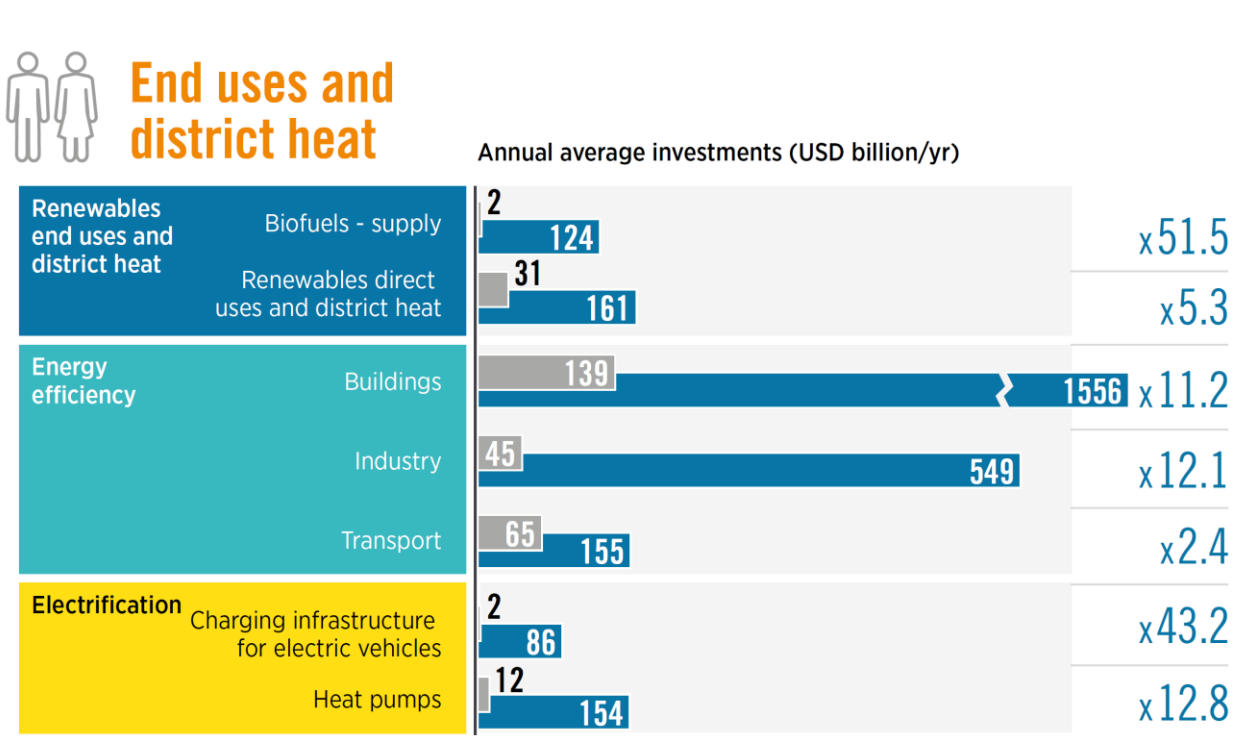
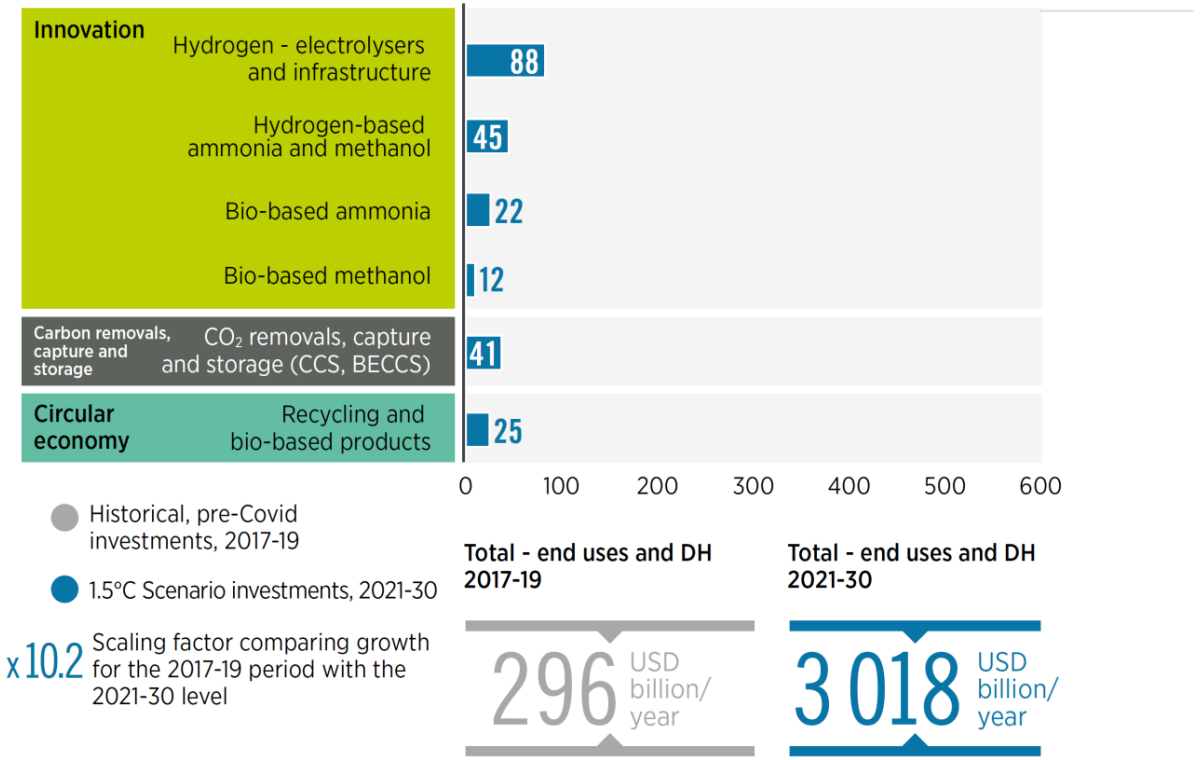
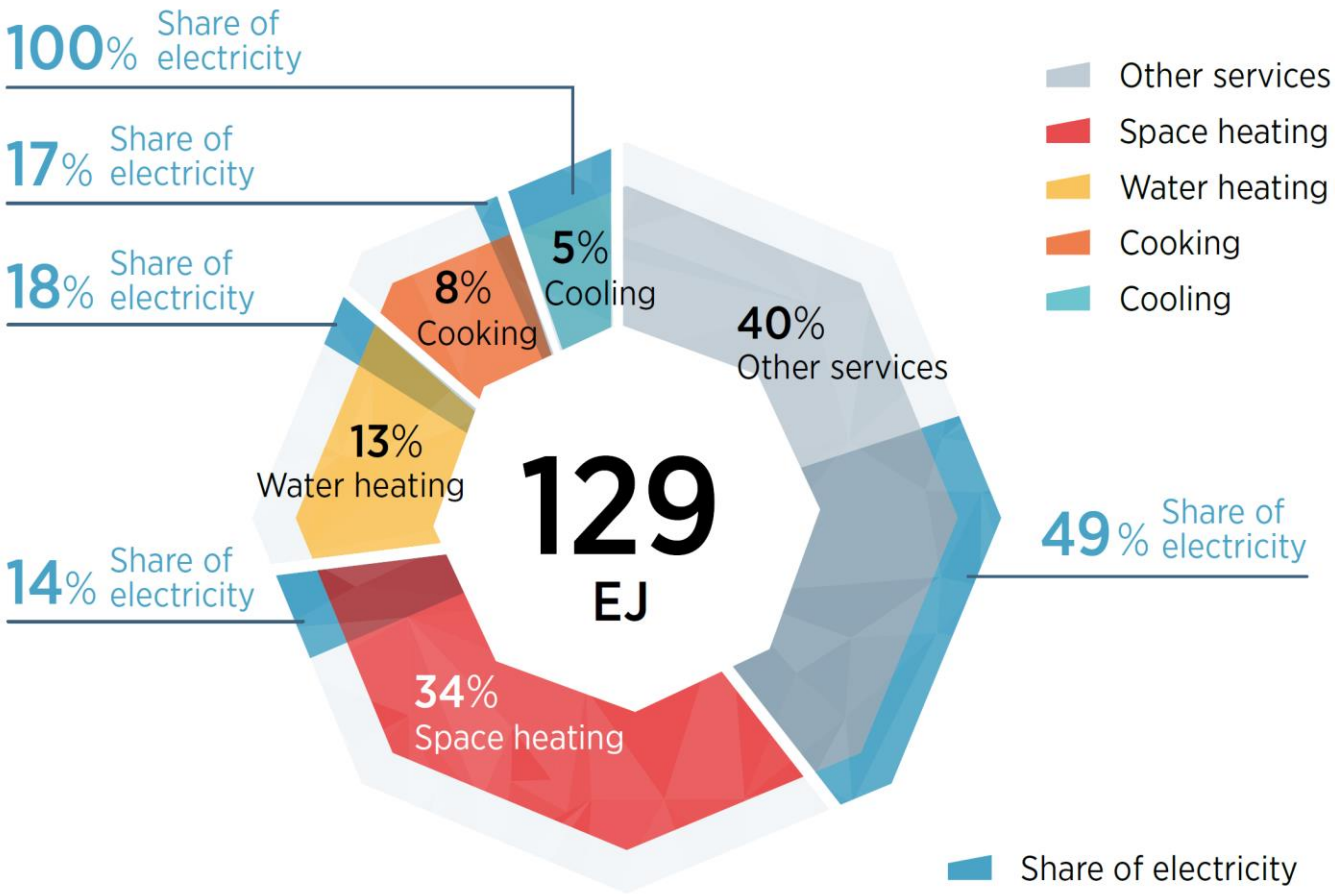
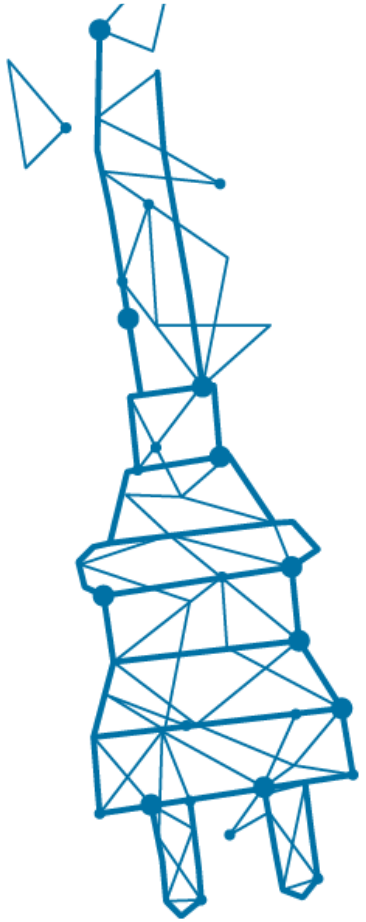
Average annual investments in USD billion per year by technology, 2021-2030



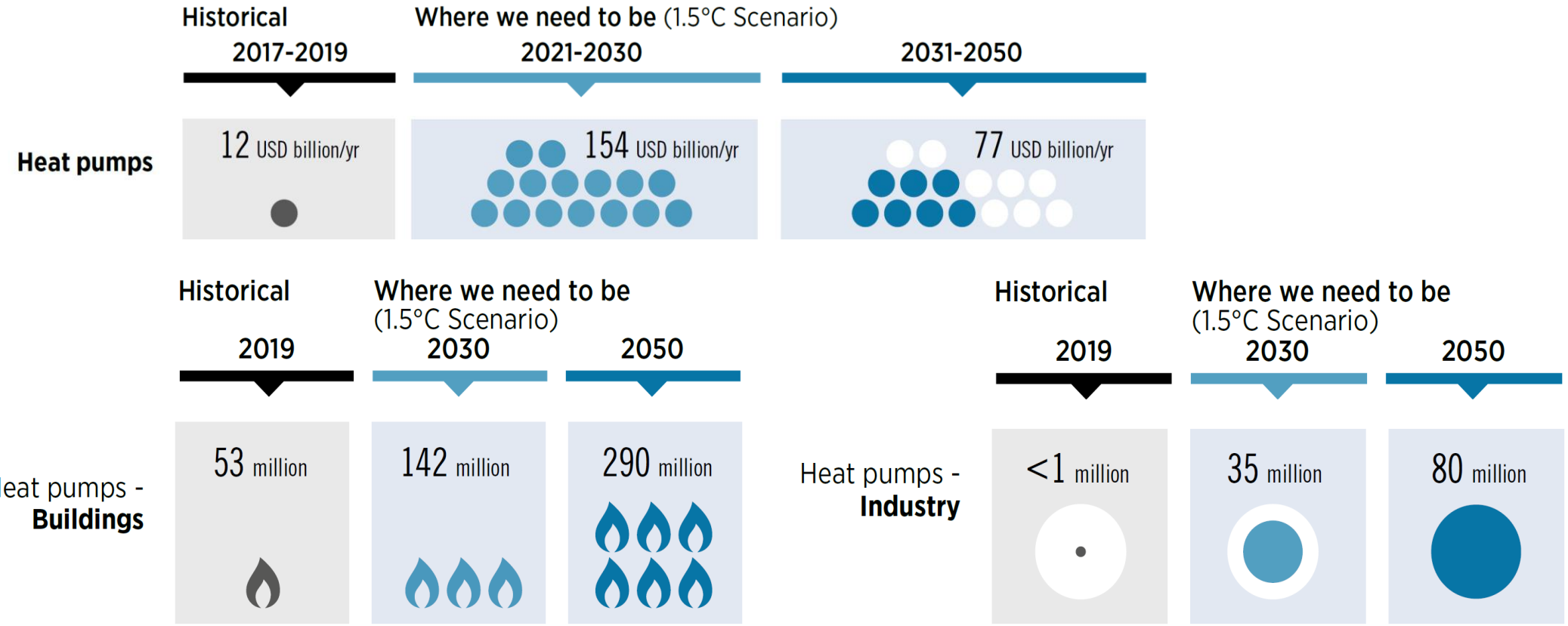


Electrification is one of the major solutions



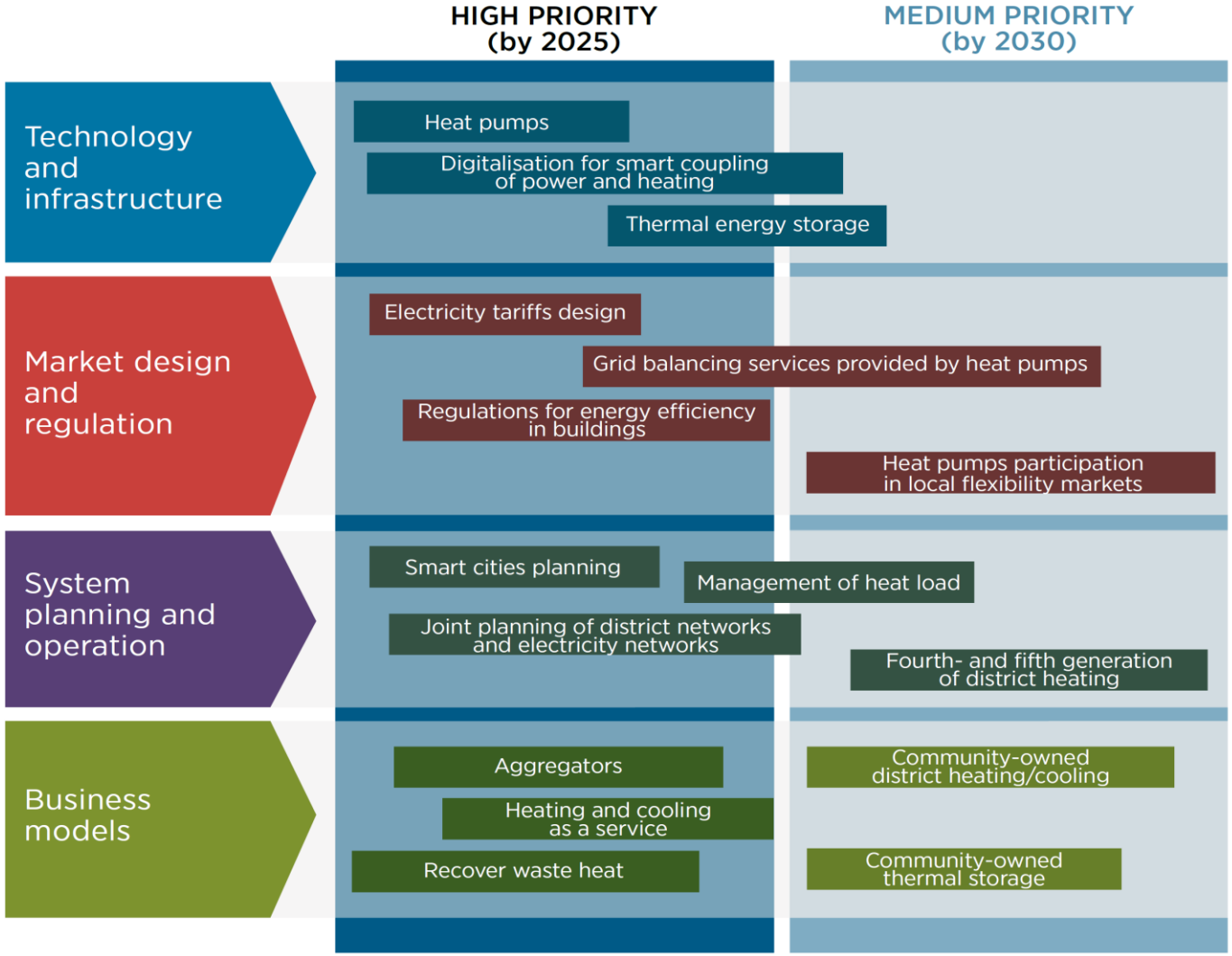


Heat pumps: progress and investments



Heat pumps: priorities for 2030

Priorities for the smart electrification of the heating and cooling sectors for 2025 and 2030



Bioenergy is the biggest contributor to renewable heat

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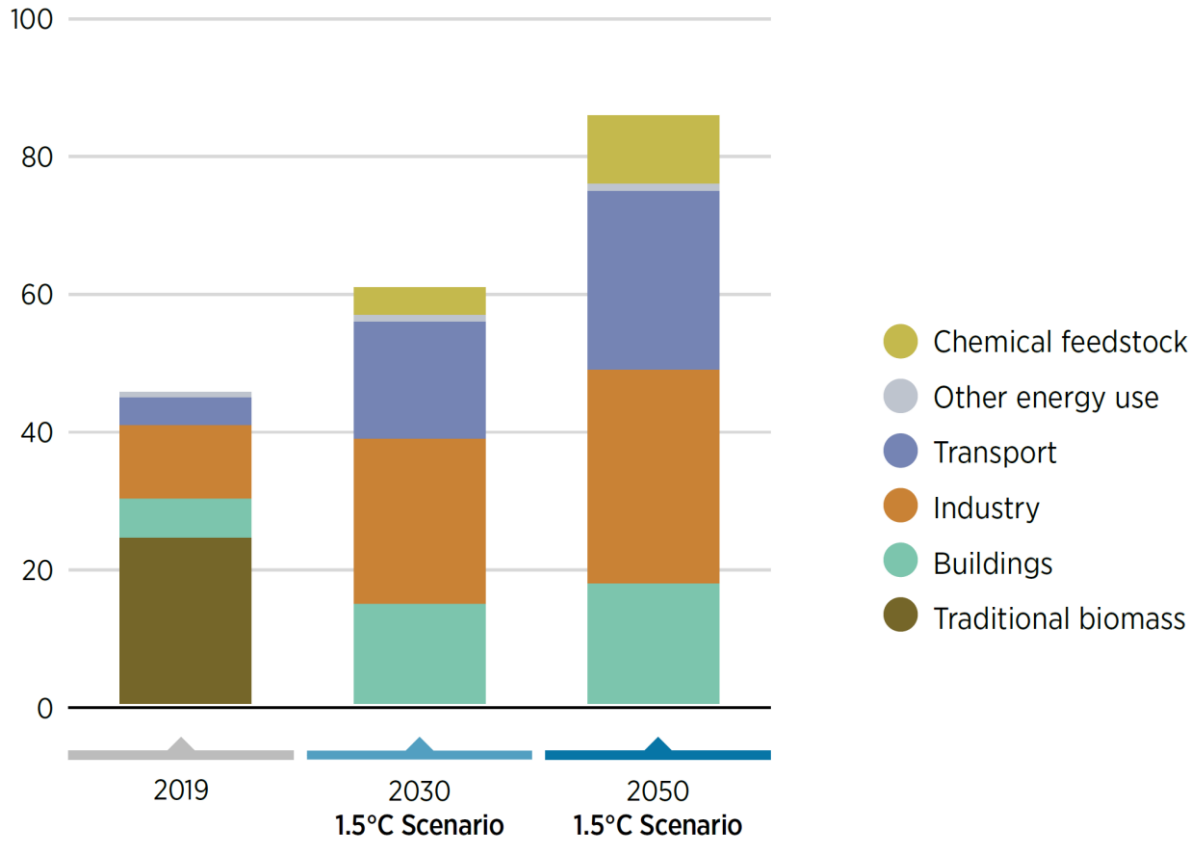
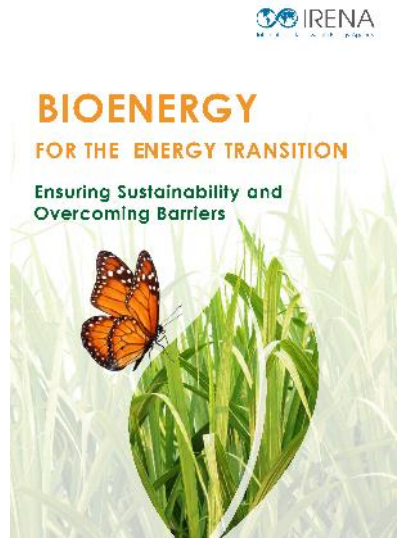
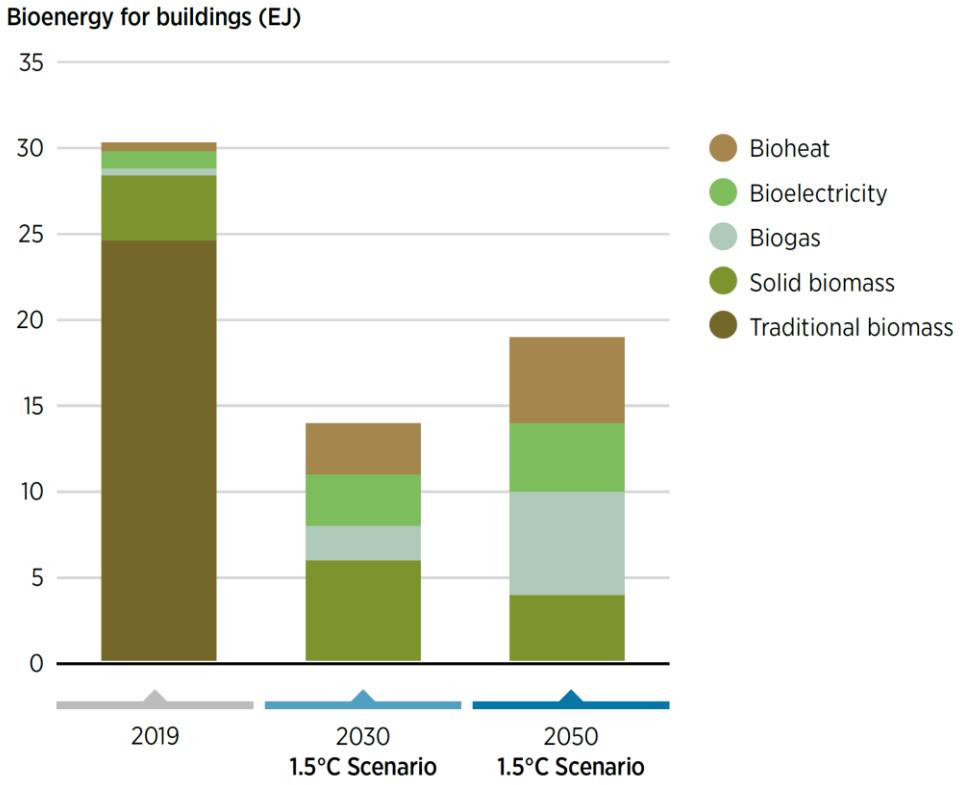
Biomass demand in the 1.5°C Scenario



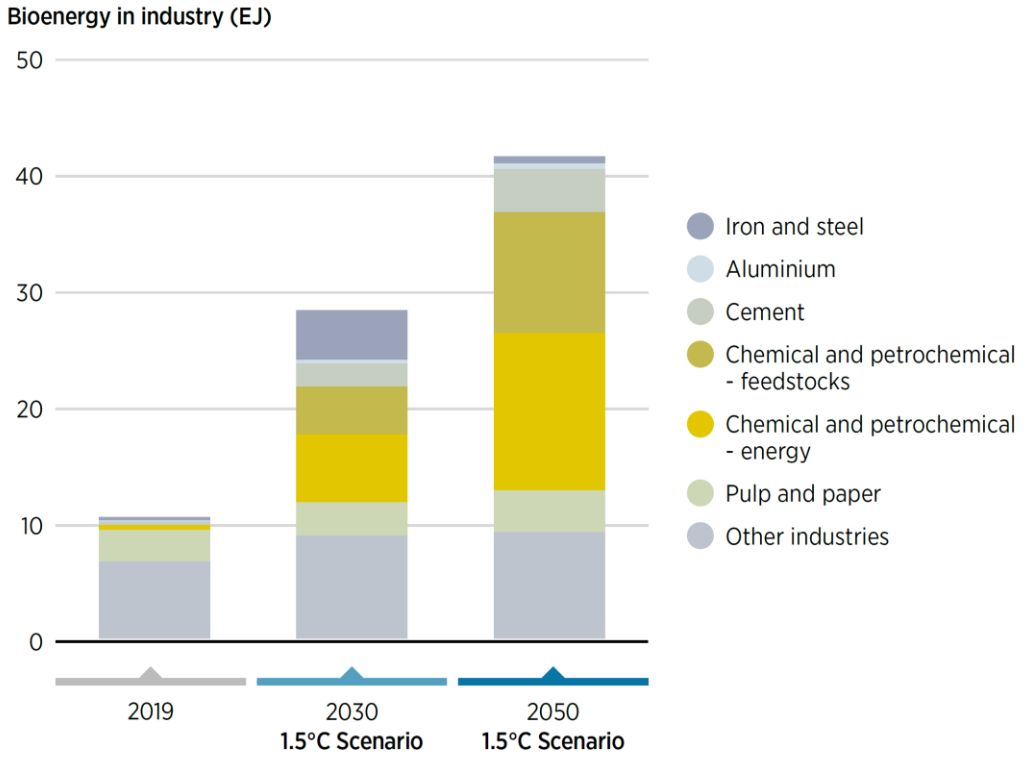


Bioenergy use in buildings and industry

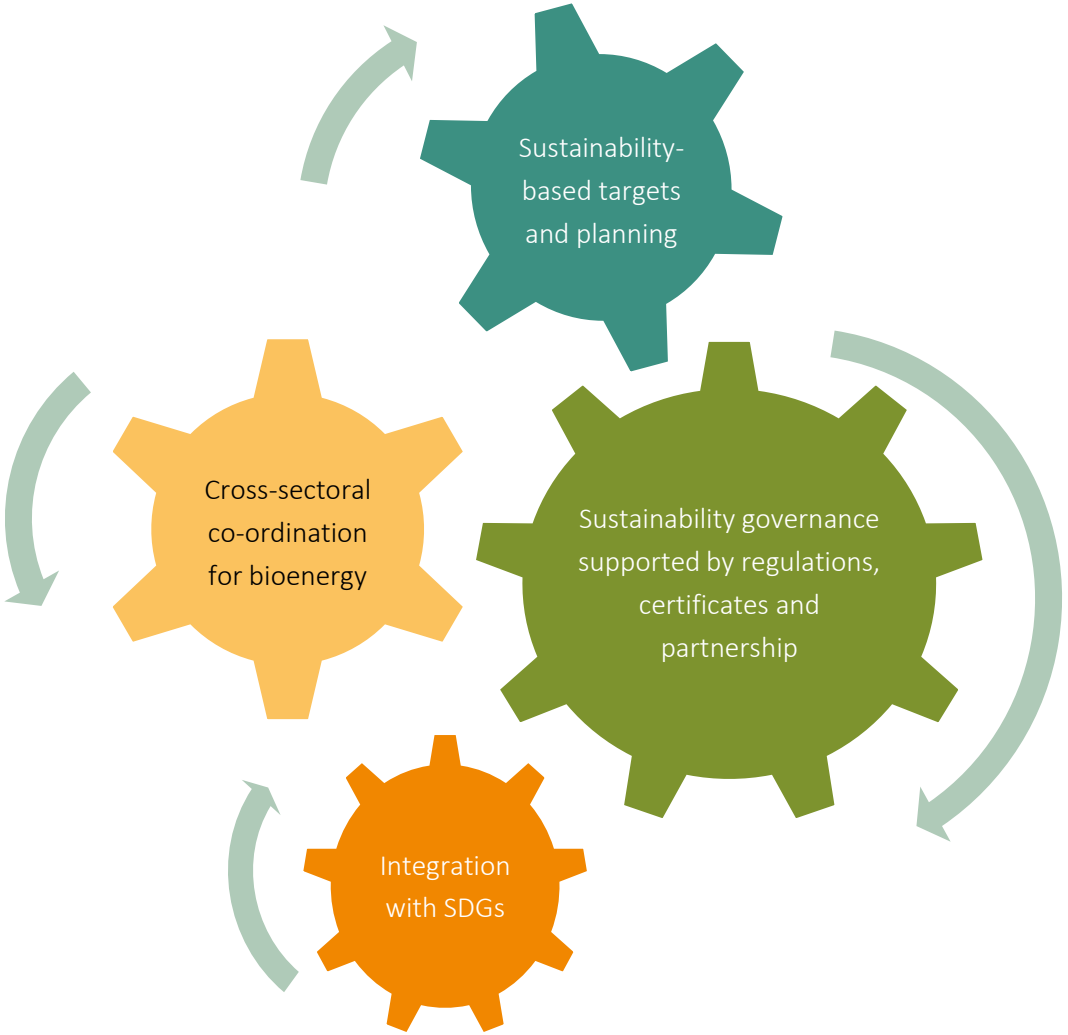
Bioenergy consumption in buildings in the 1.5°C Scenario



Bioenergy consumption in industry in the 1.5°C Scenario

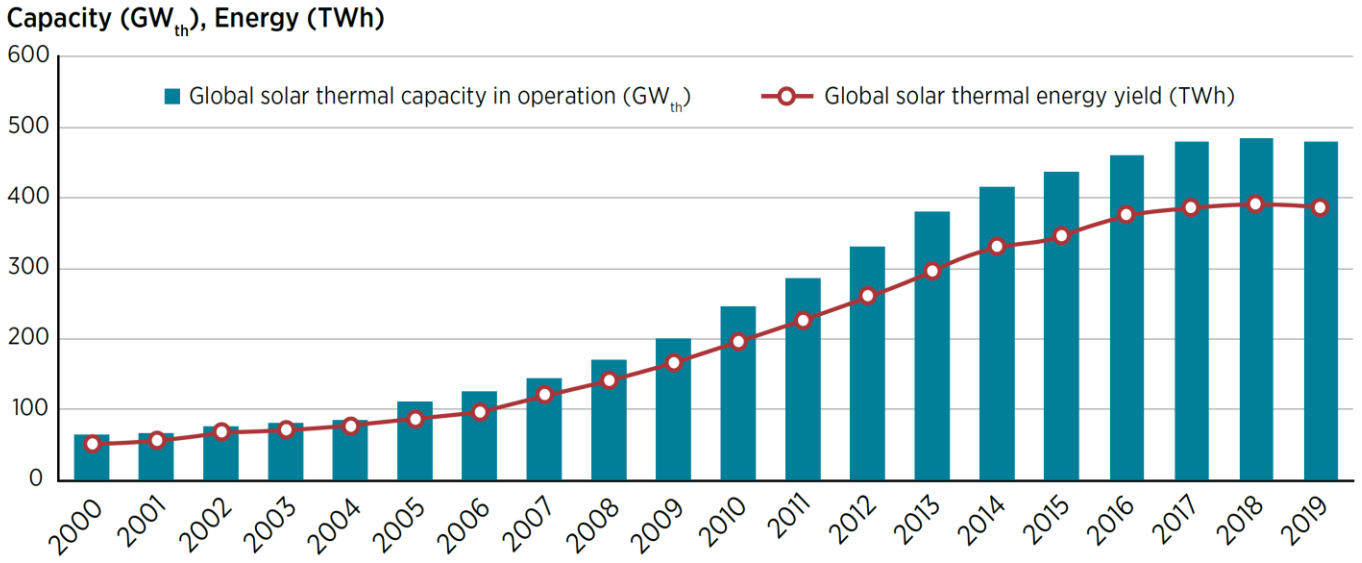


Policies are needed ensure bioenergy sustainability and minimise adverse outcomes

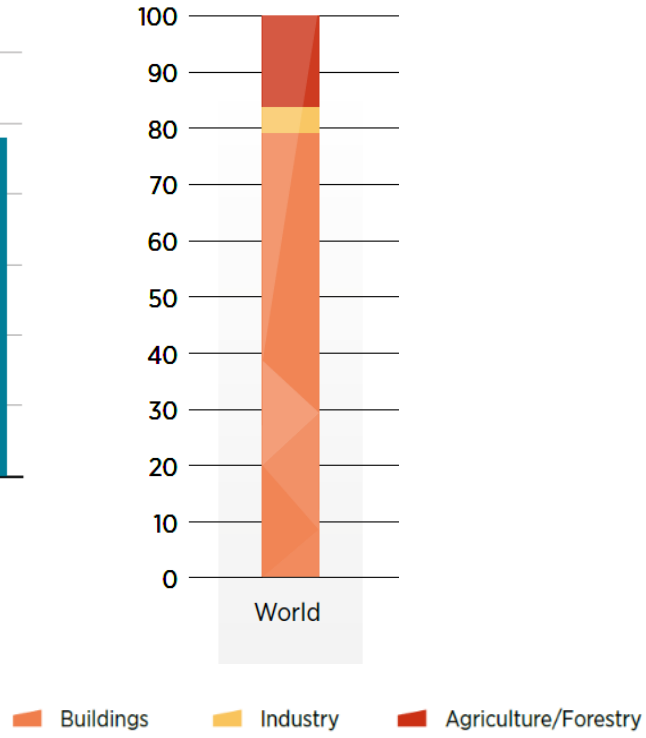


Solar thermal heat and direct use of geothermal are also key pathways for renewable heating and cooling

Global solar thermal capacity in operation, 2000-2019



Global geothermal heat use by sector, 2020 (%)



Does it make sense to focus on hydrogen for residential heating?

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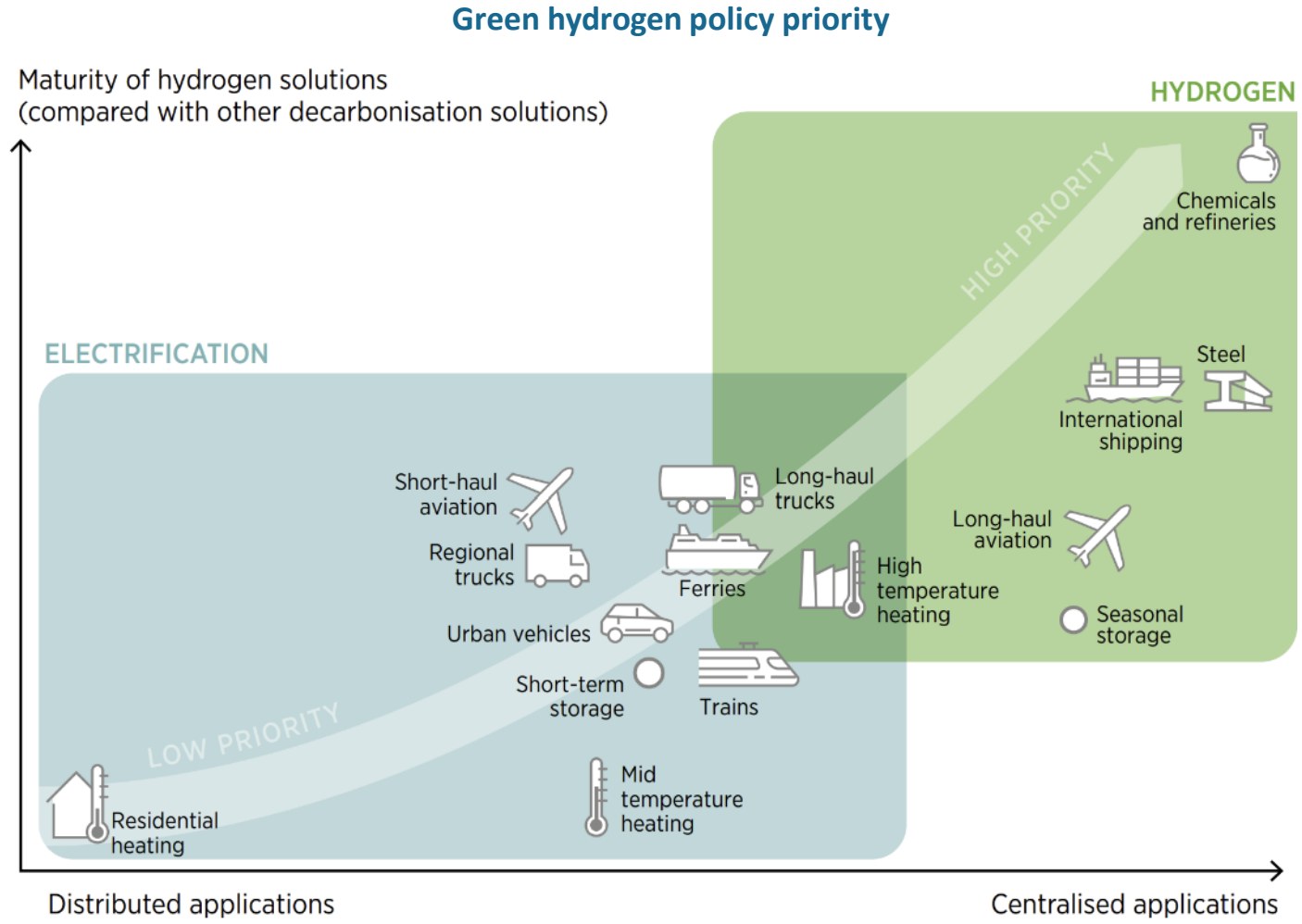
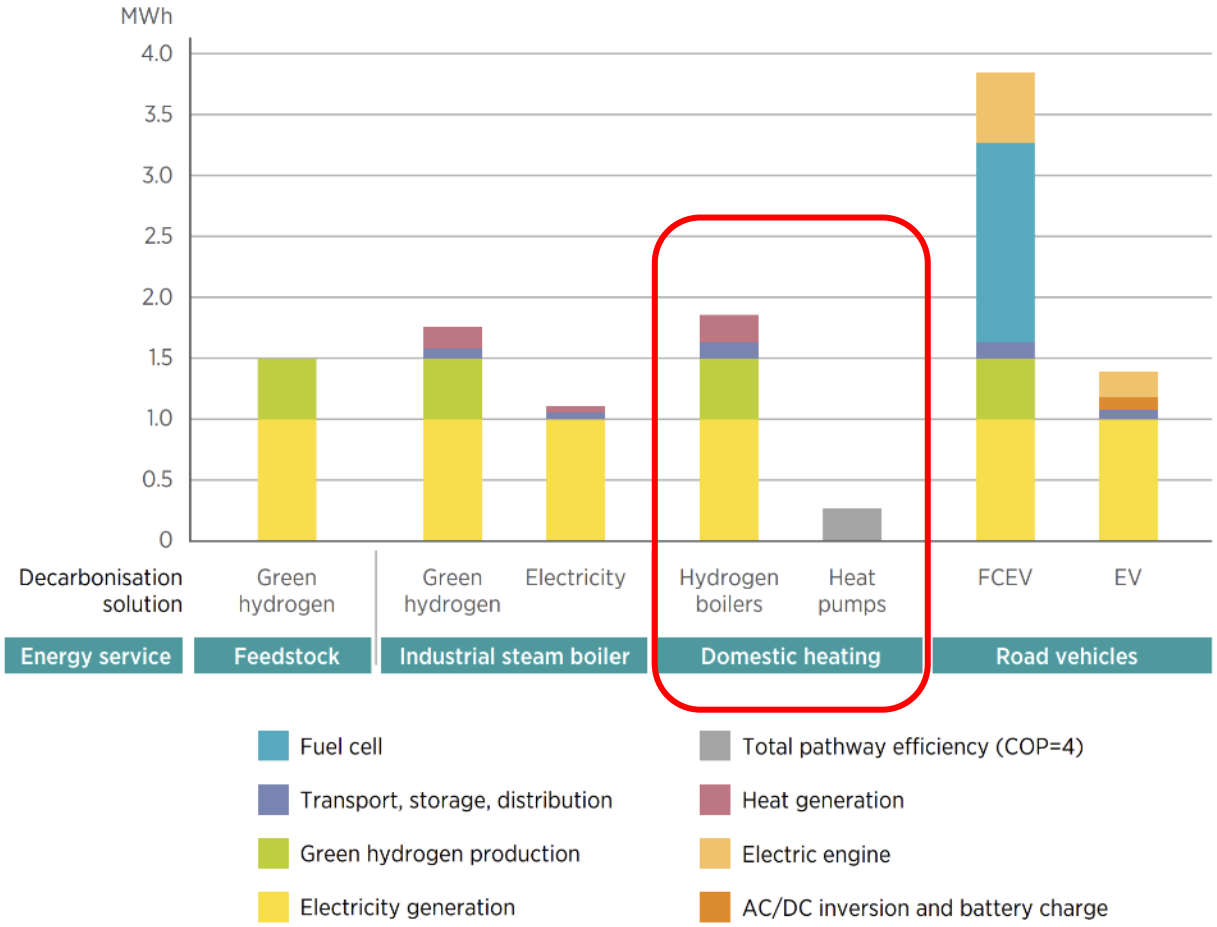


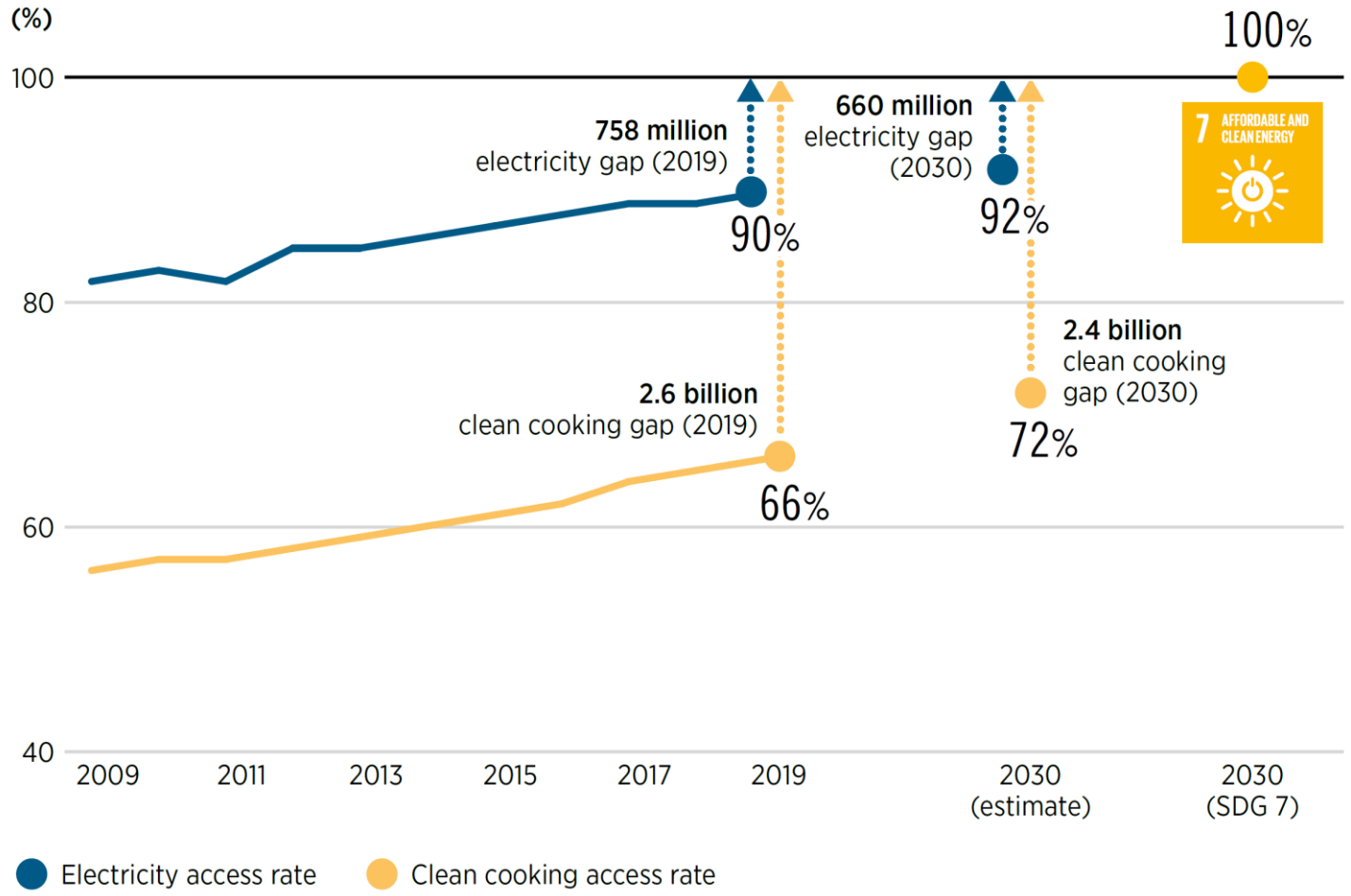
Not a lot of thermodynamic sense

Renewable electricity generation needed for 1 MWh by energy services and by transformation passage



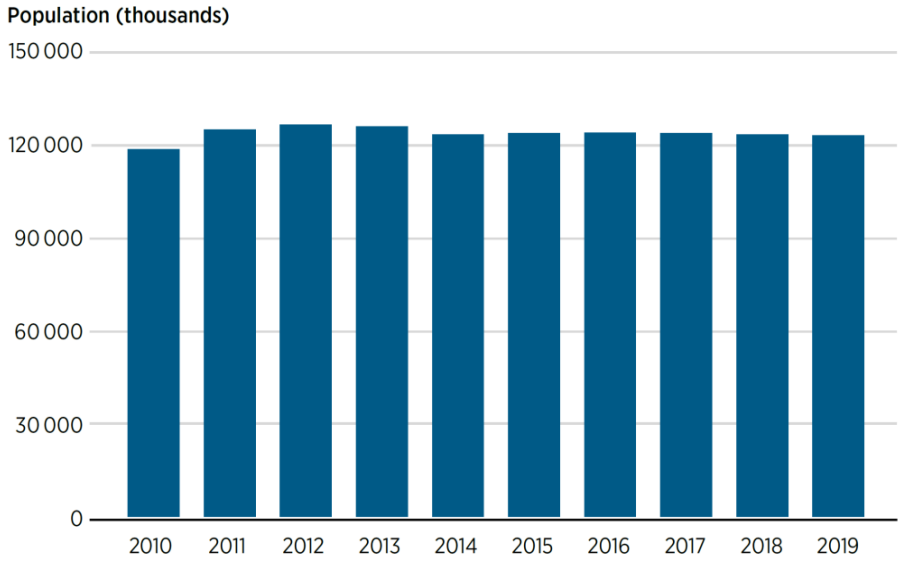
Investments in clean cooking solutions must be urgently scaled up

Electricity and clean cooking access rates, global, 2009 to 2019, and forecasted for 2030

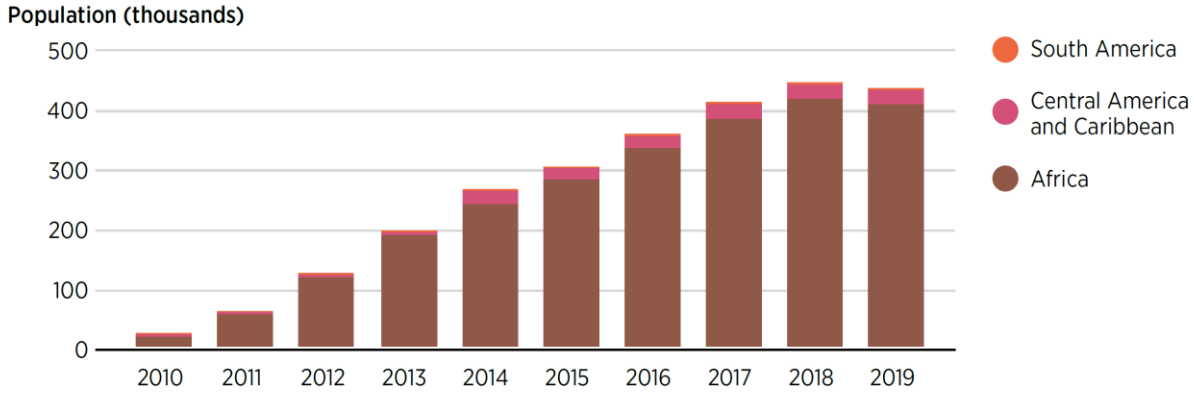


Biogas is one of the cleanest cooking options

Number of people using biogas for cooking, 2010–19, Asia



Number of people using biogas for cooking, 2010–19, Rest of Global South



Scaling up clean cooking solutions will require supportive policy and regulatory frameworks

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ADDRESS LACK OF POLICY ATTENTION

- Prioritisation of clean cooking
- Clean cooking strategies (international and national)
- Integrated energy planning, including grid, off-grid and clean cooking
- Cross-ministerial approaches (including energy, health, agriculture and forestry)

TACKLE COST AND FINANCE BARRIERS

- Financial support (*e.g.* results-based finance, direct consumer subsidies, low interest loans)
- Fiscal measures (*e.g.* reduced VAT and import duties)

BOLSTER SUSTAINABILITY AND SUPPLY CHAINS

- Regulation and equipment standards
- Licensing and certification
- Fiscal measures
- Training (*e.g.* business skills, installation and maintenance)
- Enable access to early stage/growth capital

CREATE AWARENESS ABOUT IMPACTS AND SOLUTIONS

- Data collection
- Education, information and awareness programmes
- Gender-inclusive policies and programmes

Renewable heating and cooling brings socio-economic benefits, including jobs

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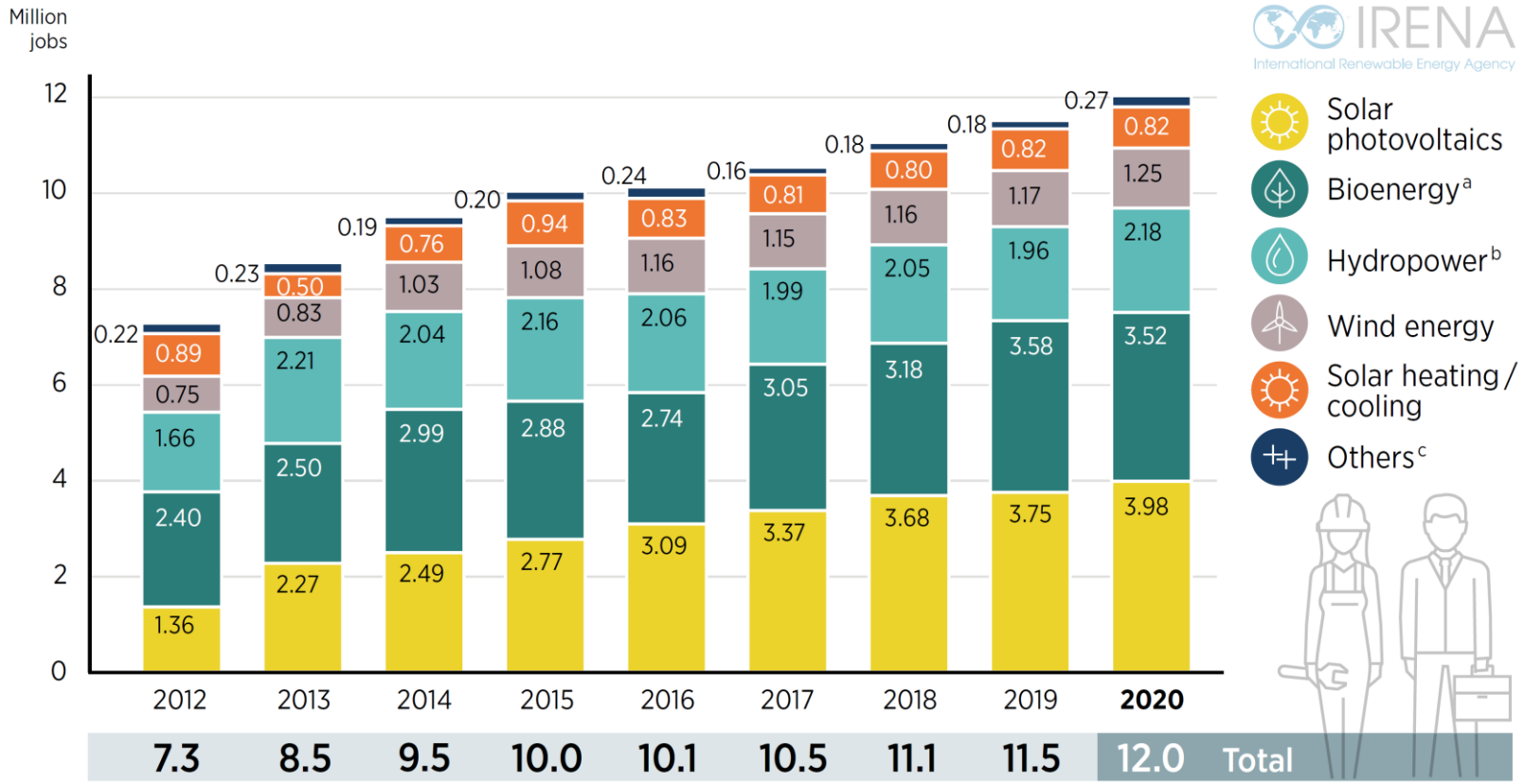
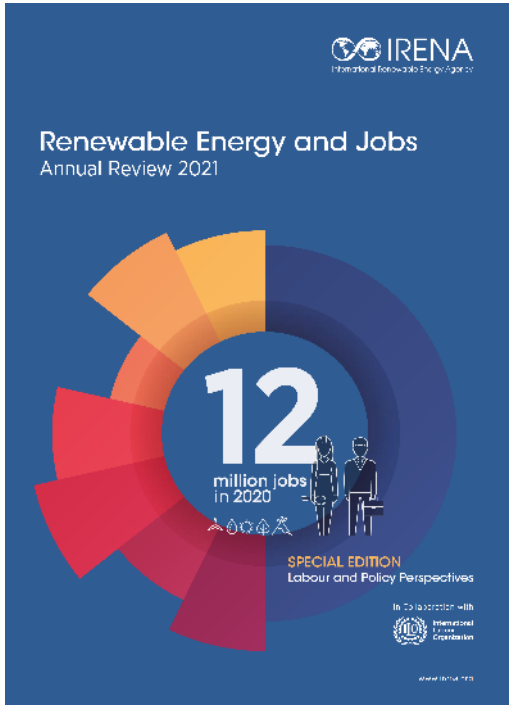
Global renewable energy employment by technology, 2012-20





Globally, heating and cooling continues to lag far behind the power sector in terms of targets & policies

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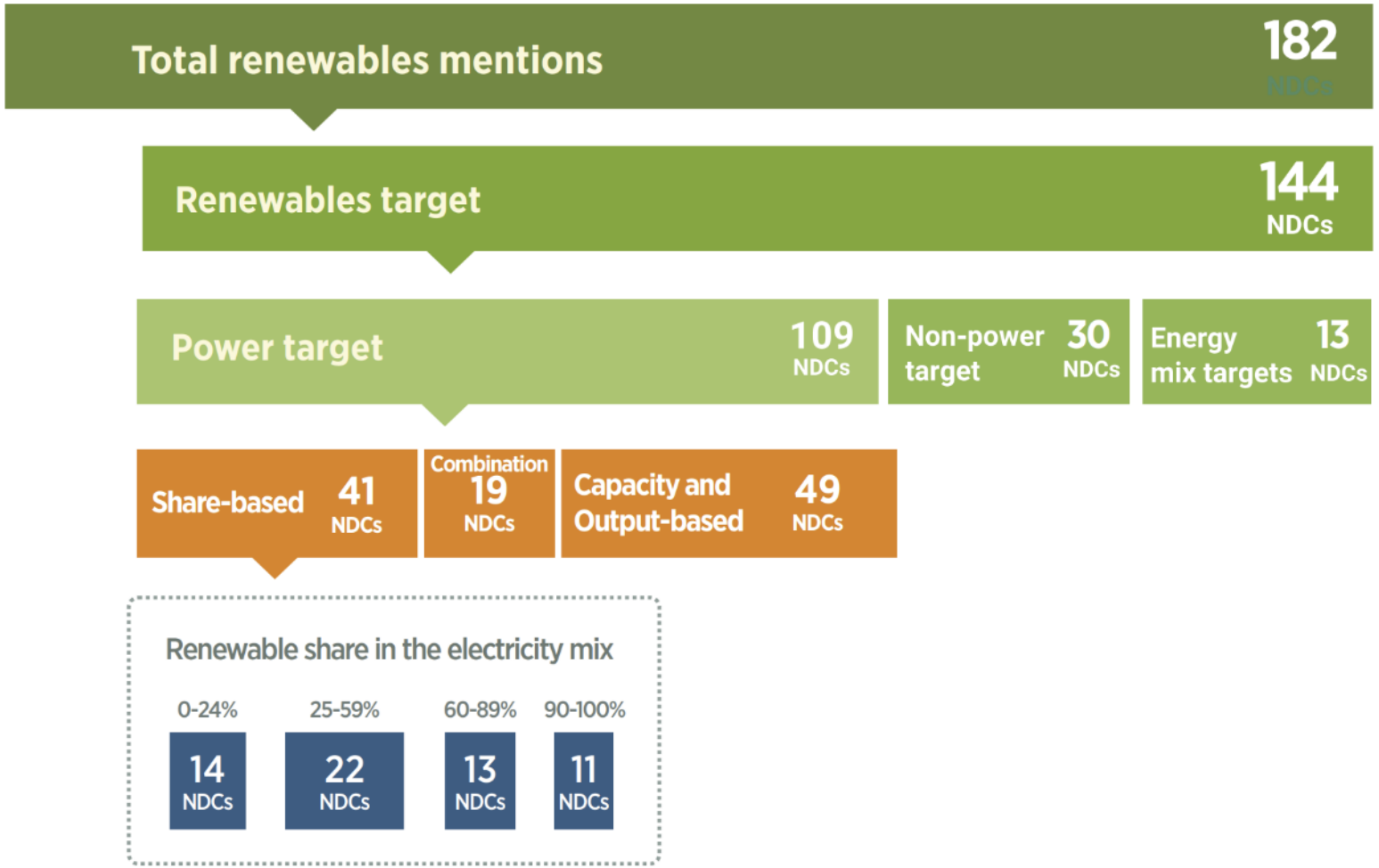
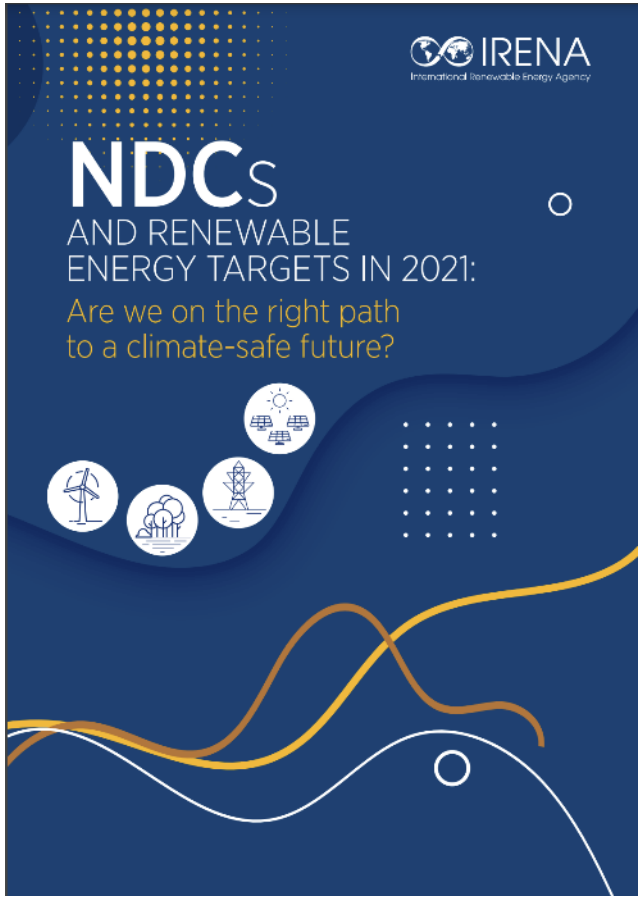
2030 Renewable Energy Targets in NDCs





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Vielen Dank!

Thank you!