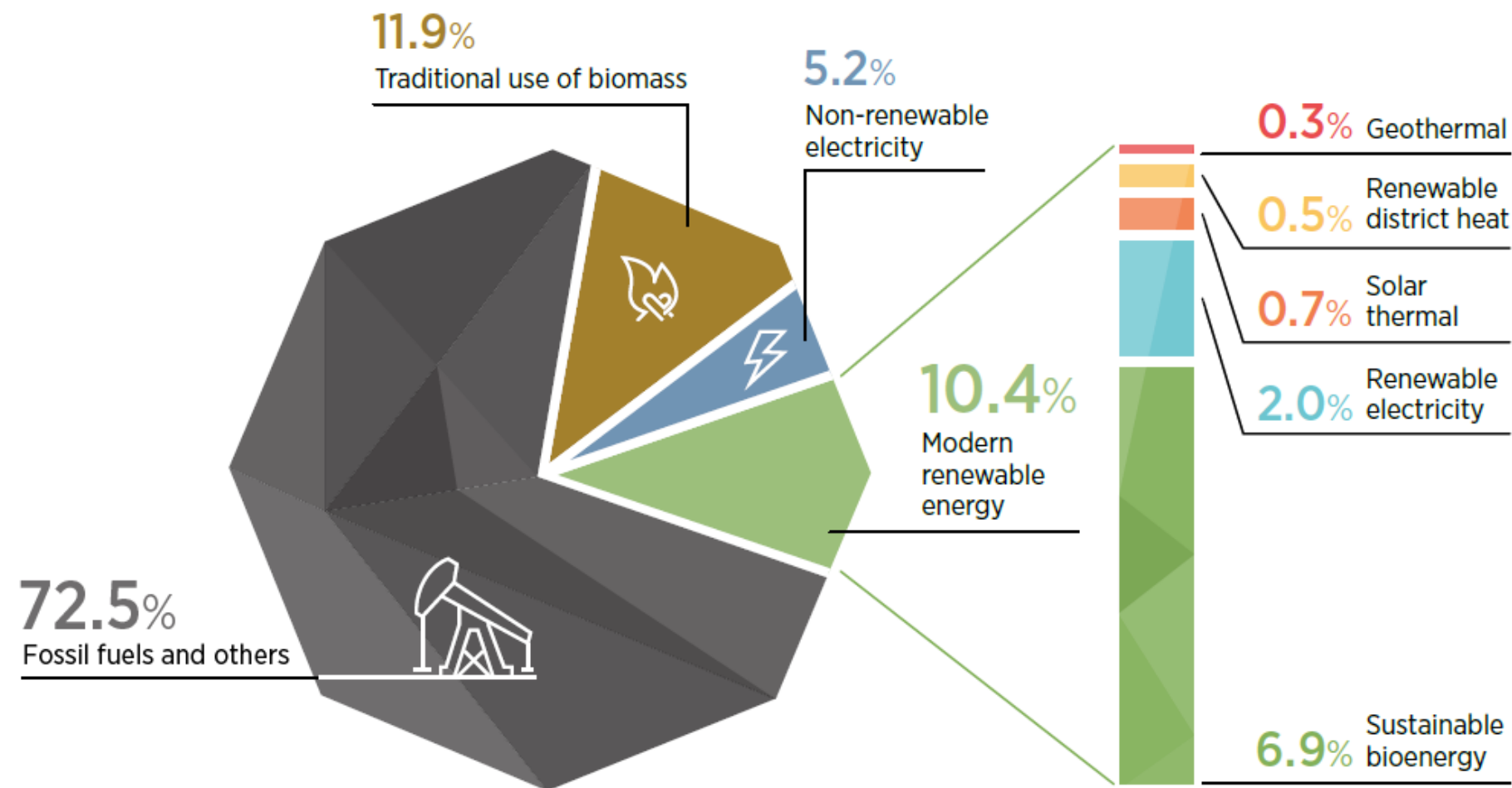




Fossil fuels still dominate

Share of energy sources in total final energy consumption of heating and cooling, 2019



- Heating and cooling: **almost half** of global energy demand
- **Demand** for renewable heating and cooling barely growing
- **Urgent need** to transition

Widespread potential benefits



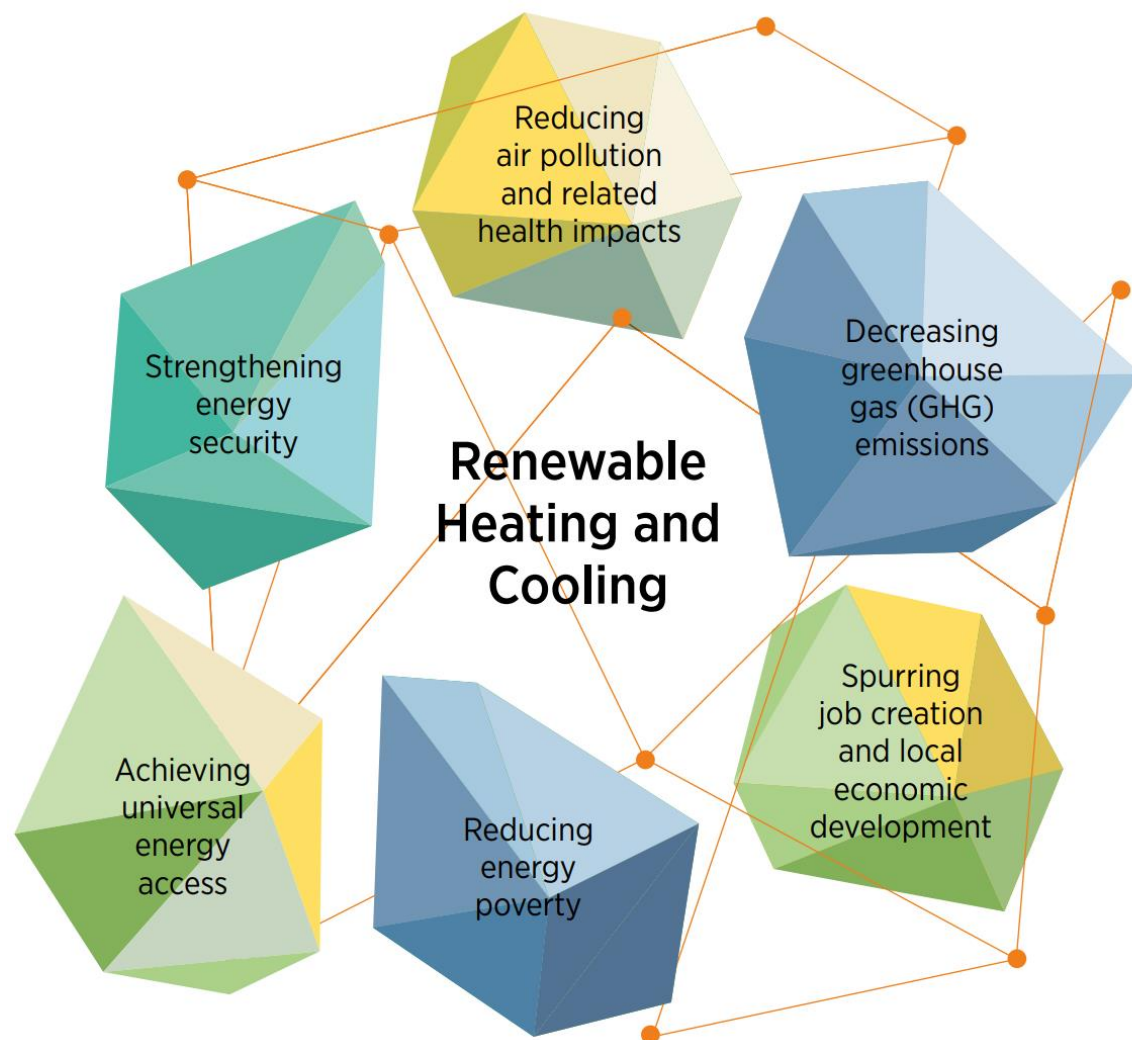
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Existing barriers limit uptake

Political and institutional barriers

- Lack of political commitment, including to universal access to energy
- Weak institutional structures (heat markets are complex, fragmented and not well understood)
- Inadequate data and statistics on types and amounts of energy required to meet heating and cooling needs
- Little awareness among decision makers of impact about the effects on the climate and the environment of using fossil fuels for heating and cooling
- Policy frameworks built around a fossil-fuel-based energy system



Economic and financial barriers

Playing field with fossil fuels is still not level, owing to:

- Externalities not accounted for
- Persistent fossil fuel subsidies in many parts of the world

High upfront costs, including:

- Capital costs
- Cost of and access to finance
- Unbalanced tax burden



Other

Weak supply chains, including:

- Infrastructure and renewable fuels
- Shortages of trained personnel
- Lack of economies of scale

Consumer inertia and behaviour, resulting from:

- Lack of awareness about potential and benefits
- Distressed purchase and consumer inertia
- Disruption and “hassle costs”
- Split incentives

Technical barriers, including:

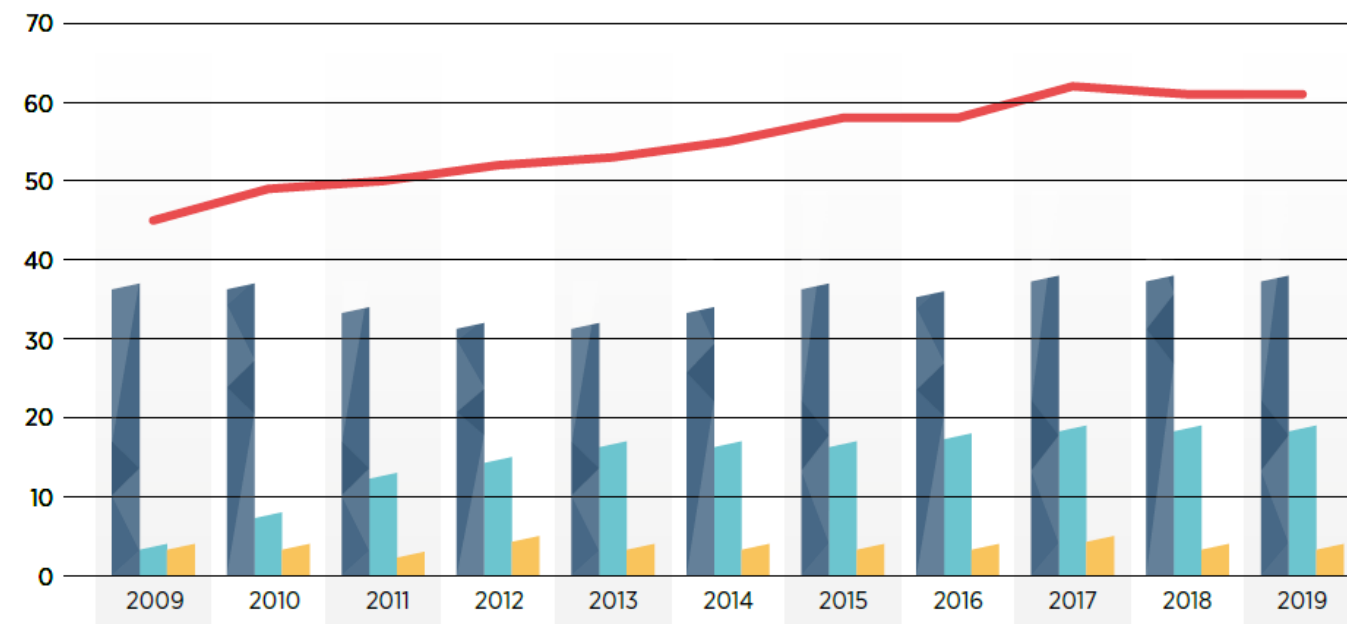
- Building suitability
- Industrial heat requirements
- Reliability of technology



Policy deficit and stagnation

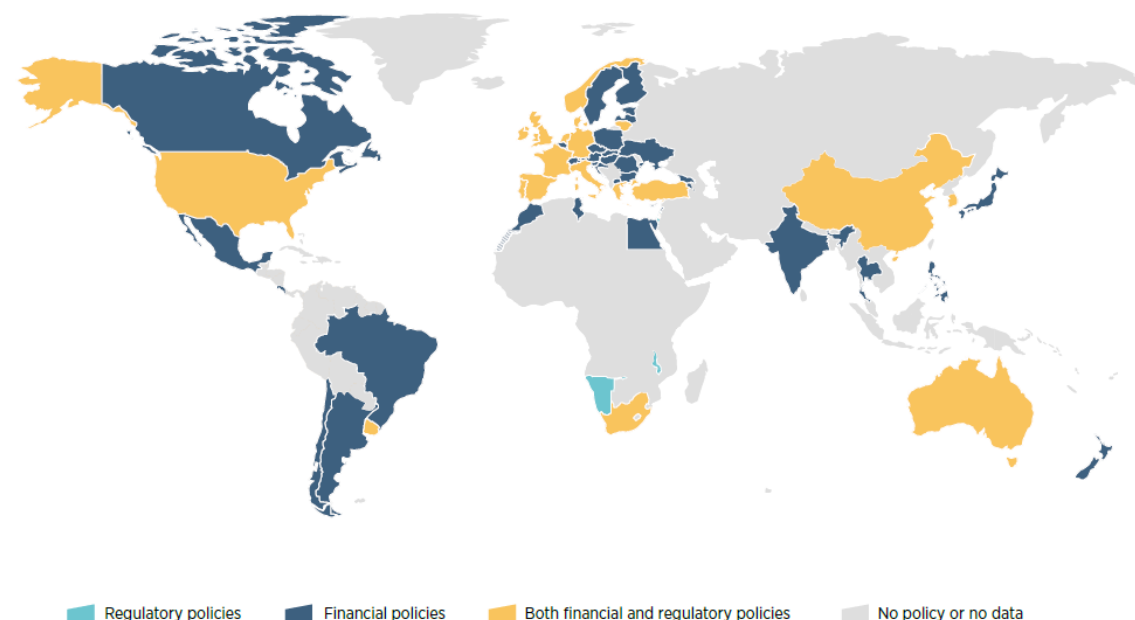
Countries with policies for renewable heating and cooling, 2009-19

Number of countries



■ Countries with only financial policies
■ Countries with both financial and regulatory policies
■ Countries with only regulatory policies

— Total countries with financial or regulatory policies for renewable heating and cooling



Renewable-based electrification



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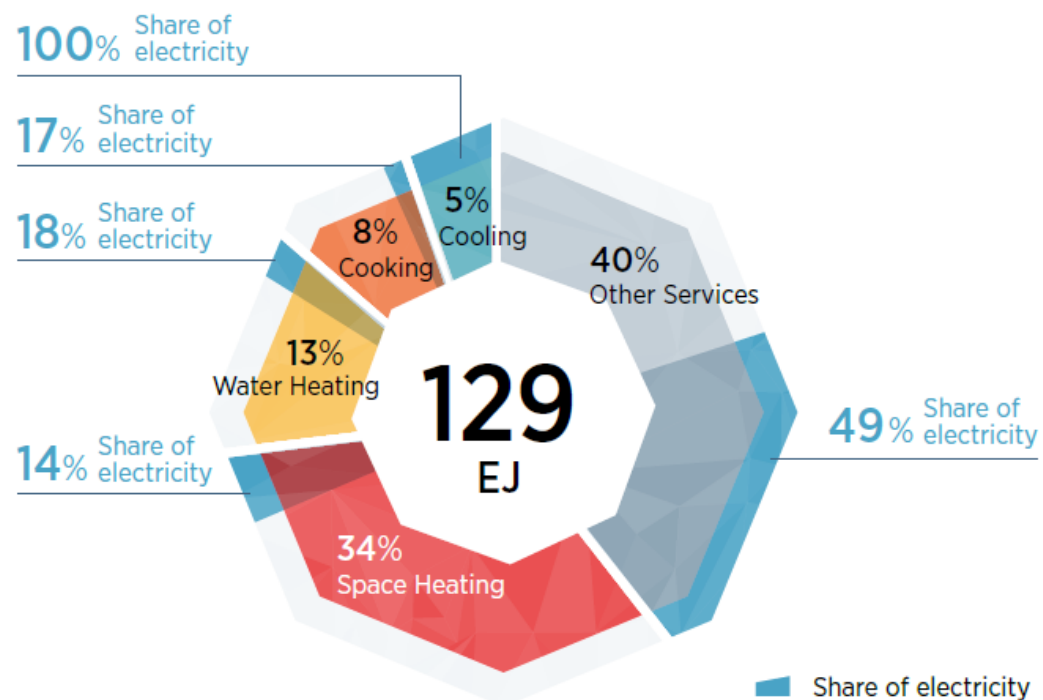


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Global share of electricity in the buildings sector by service, 2019



Overcoming high upfront cost of appliances (HP)

Capital grants, subsidies, loans, rebates

Increasing consumer confidence

Quality standards, labels, MEPS

Addressing high operational costs

Electric heating tariffs, energy efficiency in building codes

Addressing network constraints

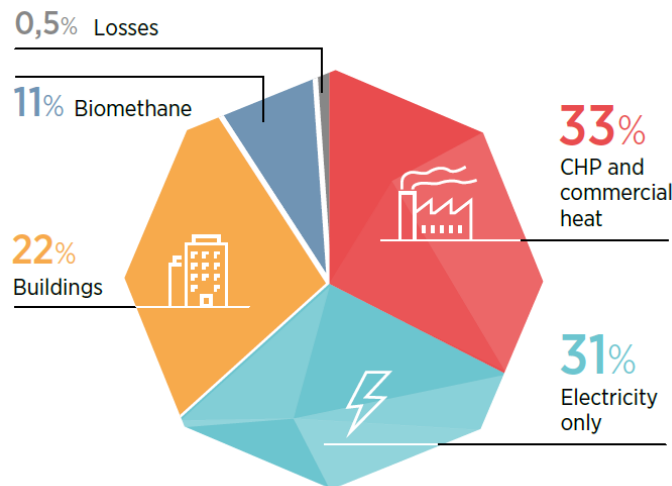
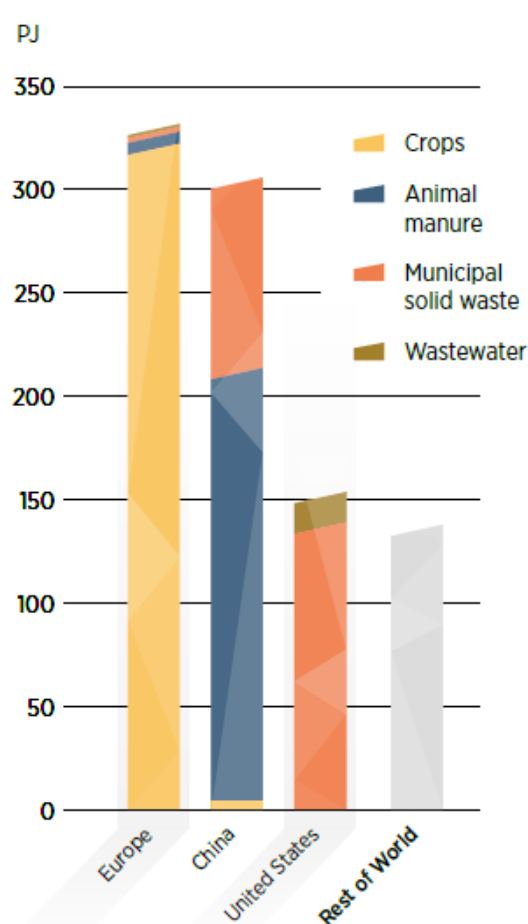
Tariffication schemes (ToU tariffs), digital monitoring & control for DR, conducive market design

Ex:

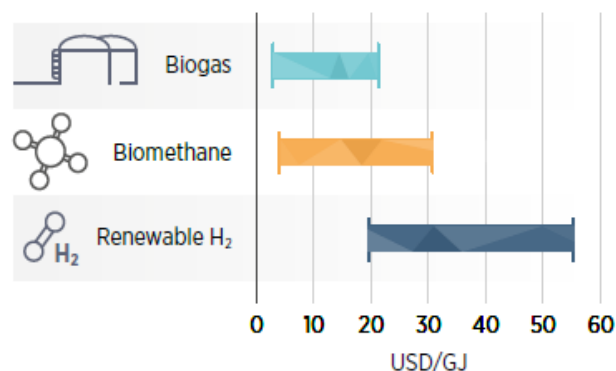
- **China's** Clean Winter Heating in Northern Regions pilot program
- **UK's** Renewable Heat Incentive
- **Illinois'** ToU tariffs (US)

Renewable gases

Biogas production by region and by feedstock and end use, 2017



Renewable gas production cost range, 2018



Closing the gap with fossil fuels

Recognition of avoided CH₄ emissions from biogas/biomethane

RE gas injection subsidies

Stimulating investment by lowering the risk

Clear long-term framework for the gas industry

Targets

Capital grants, loan guarantees, soft loans

Harnessing the potential of existing gas infrastructure

“Guarantee of origin” registries

Blending demonstration projects

Deploying renewable gases in industry

Industrial clusters for hydrogen projects

- **Denmark’s target** : 100% of gas injected into its grid renewable by 2035; **France’s target** : 10% of renewable gas consumption by 2030
- **California’s low carbon fuel standard**
- Port of **Rotterdam’s** hydrogen hub project

Sustainable use of biomass



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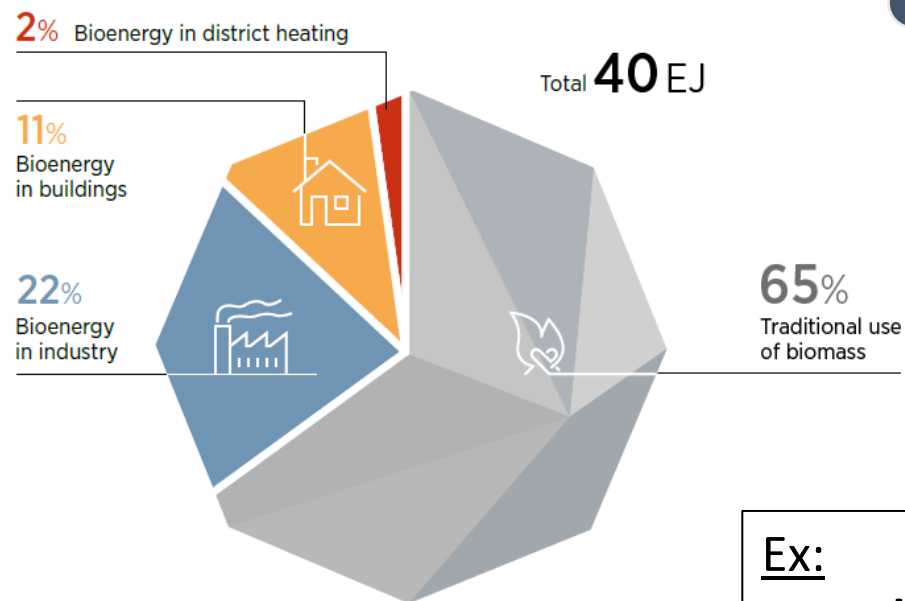


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Bioenergy used for heating, 2018



Developing reliable supply chains

Consistent & long-term policy approach in coordination with all stakeholders ; clear planning & regulatory framework

Addressing cost and market barriers

Capital grants, tax incentives, loans, FiT, inclusion in RPS, investment funds

Ensuring sustainability of biomass supply

Clear sustainability guidelines & biomass certification schemes

Ensuring quality of installations and fuels

Strict standards, certification of systems & installers

Ex:

- **Italy's** « Conto termico » (grants) & **France's** « Fonds Chaleur » (subsidies)
- Loan support for biomass CHP from **Brazil's** development bank
- **India's** grant scheme for industrial-scale biomass co-generation
- Sustainability criteria in the **EU RED II Directive**

Direct use of solar thermal heat



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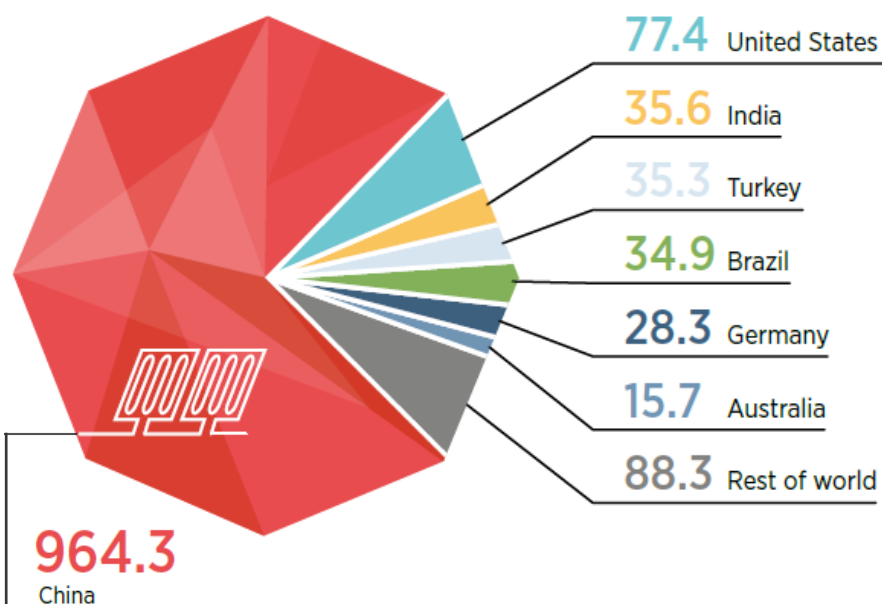


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Solar thermal heat use by country,
2017 (PJ)



Source: IEA-SHC, 2020.

Overcoming
upfront costs

Loans,
grants,
subsidies,
tax
incentives

Improving
investors
confidence

Technology-
specific targets

Rising consumers
awareness and
confidence in available
options and benefits

Public
campaigns,
information-
sharing activities

Certification
schemes

Improving the
range of
possible
applications

RD&D

Driving
demand
through
regulation

SWH
mandates,
RE
mandates
in building
codes

- **China's** SWH deployment was supported by a mix of **targets, subsidies** and **mandates**
- Combination of **grants, tax exemptions** and preferential **loans** in **Tunisia** (*PROSOL*), **Rwanda** (*SolaRwanda*) & **Lebanon**
- Solar thermal District Heating in **Denmark** developed thanks to **high fossil fuel taxes**

Direct use of geothermal heat



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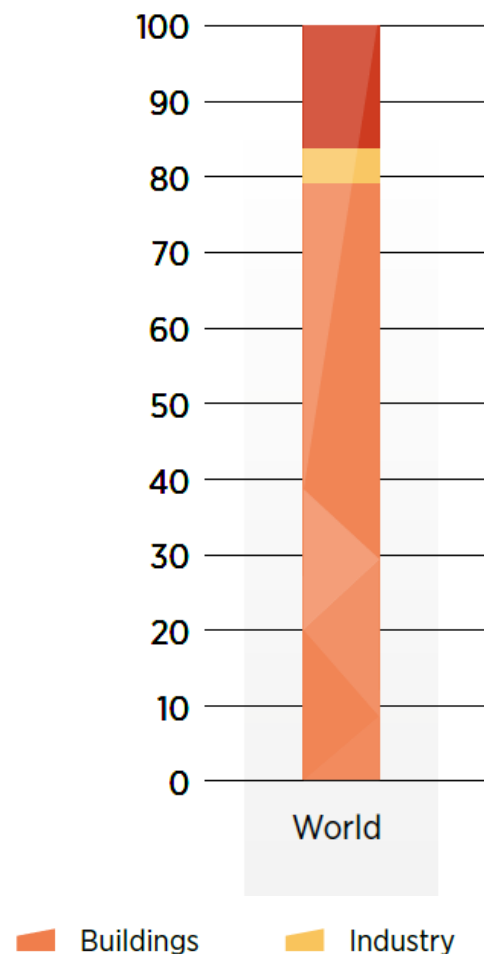


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Geothermal heat use by sector, 2020 (%)



De-risking geothermal exploration

Data collection and sharing on geothermal resources

Dedicated loan guarantees and grants

Risk insurance funds

Improving investors confidence

Road maps and action plans

Overcoming high upfront costs

Tax incentives, loans

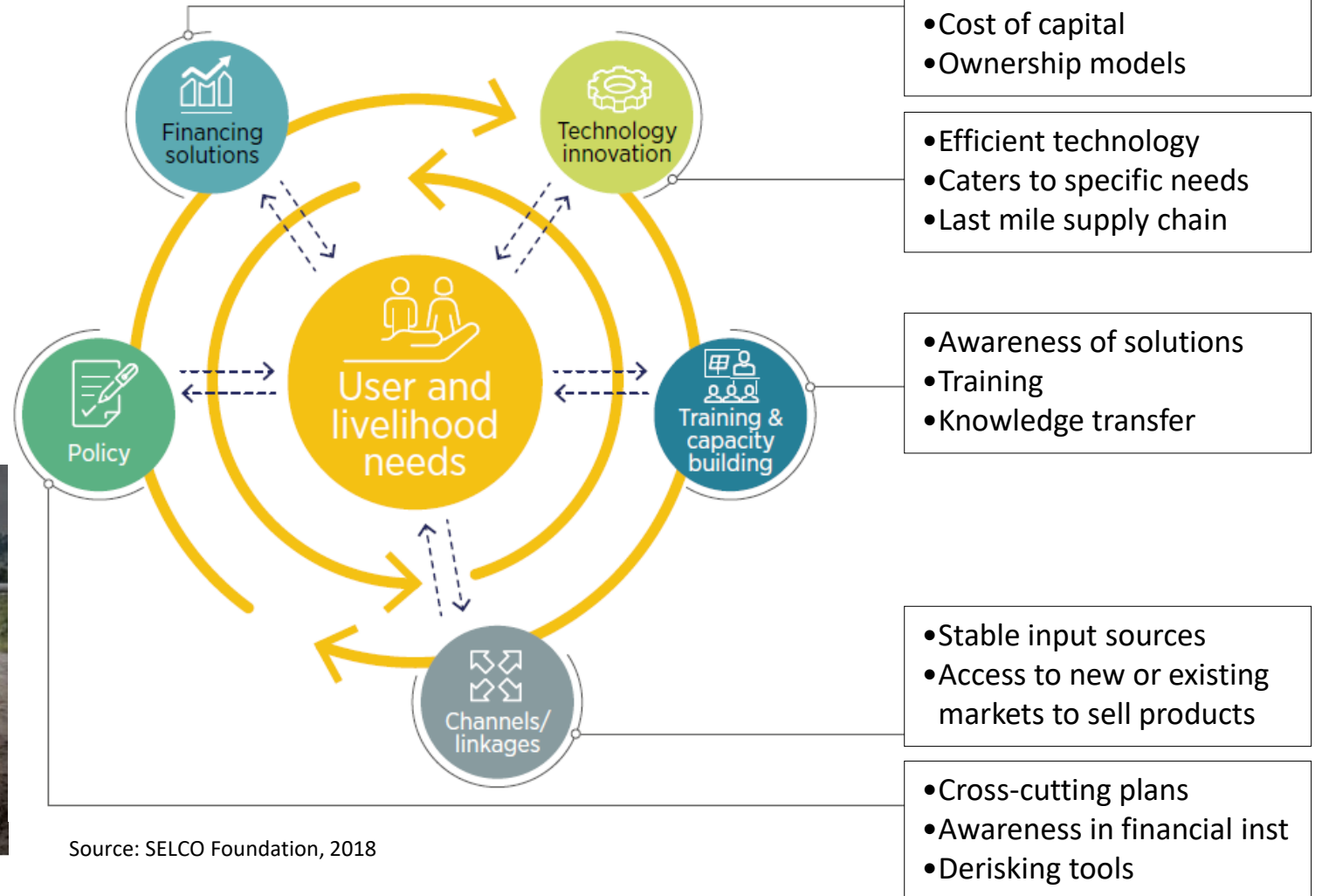
Ex: The Netherlands

- *Geothermal Action Plan (2011) & Acceleration Plan for Geothermal Energy in Horticulture (2014)*
- SDE+ feed-in-premium for renewable heat
- Public geological database
- Post-damage guarantee scheme (financed by an insurance fee for participants)
- Collaborative venture programme between government and industry for information sharing

Provide universal access to clean, affordable, reliable energy



Ecosystem needs for supporting livelihoods



Source: SELCO Foundation, 2018

Raise ambition

ANNOUNCEMENT / 19 JUN, 201



South Korea formally commits to cutting emissions to net zero by 2050

Published on 28/10/2020, 3:01pm

President Moon Jae-in's announcement follows a three-day visit by Cop26 president-designate Alok Sharma to South Korea



Japan net zero emis the spotlight

Published on 26/10/2020, 2:35pm

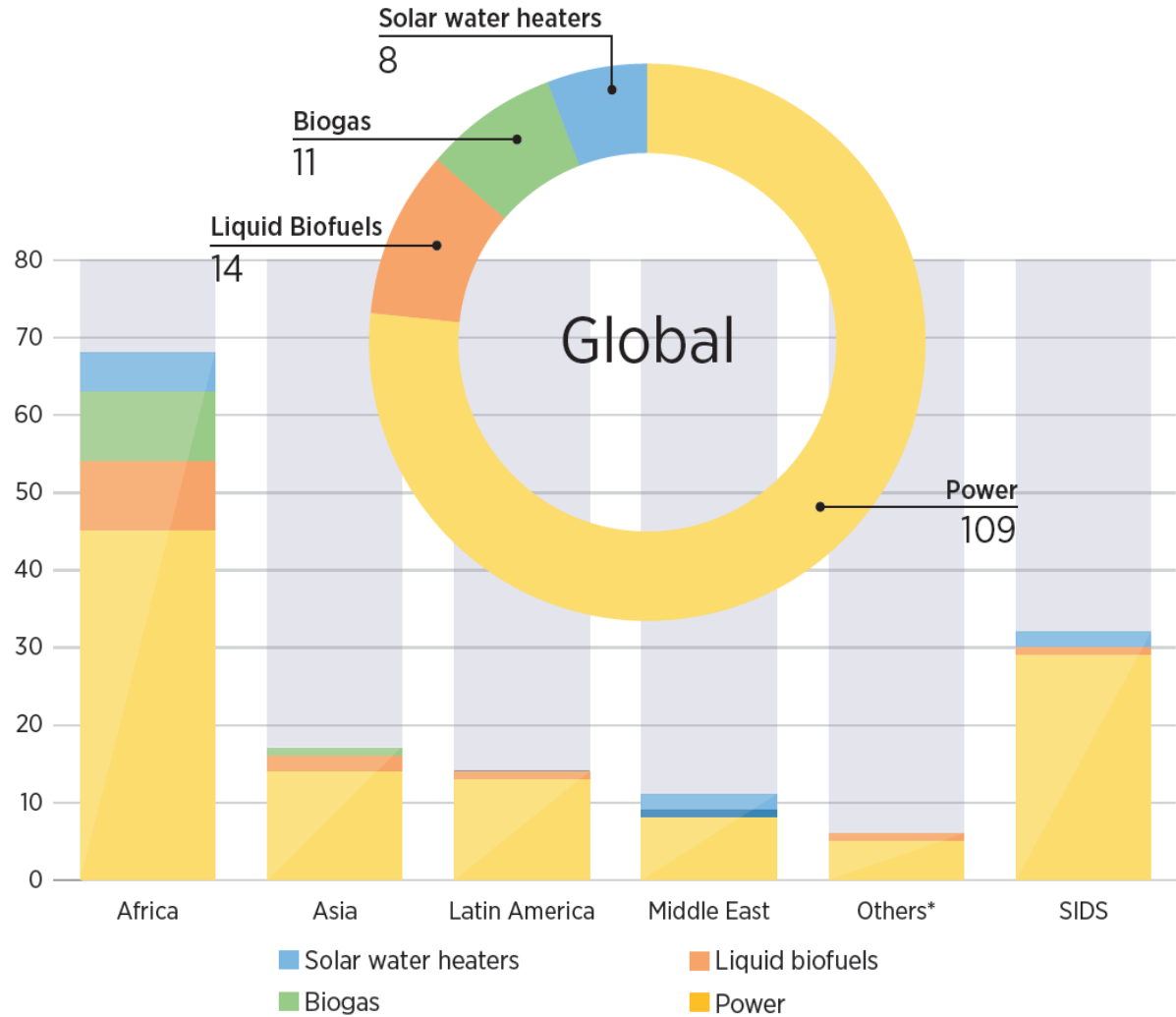
Prime minister Yoshihide Suga has pro to achieve carbon neutrality by 2050



Soga coal power station, Japan (Photo: Flickr/Friends of the Earth)

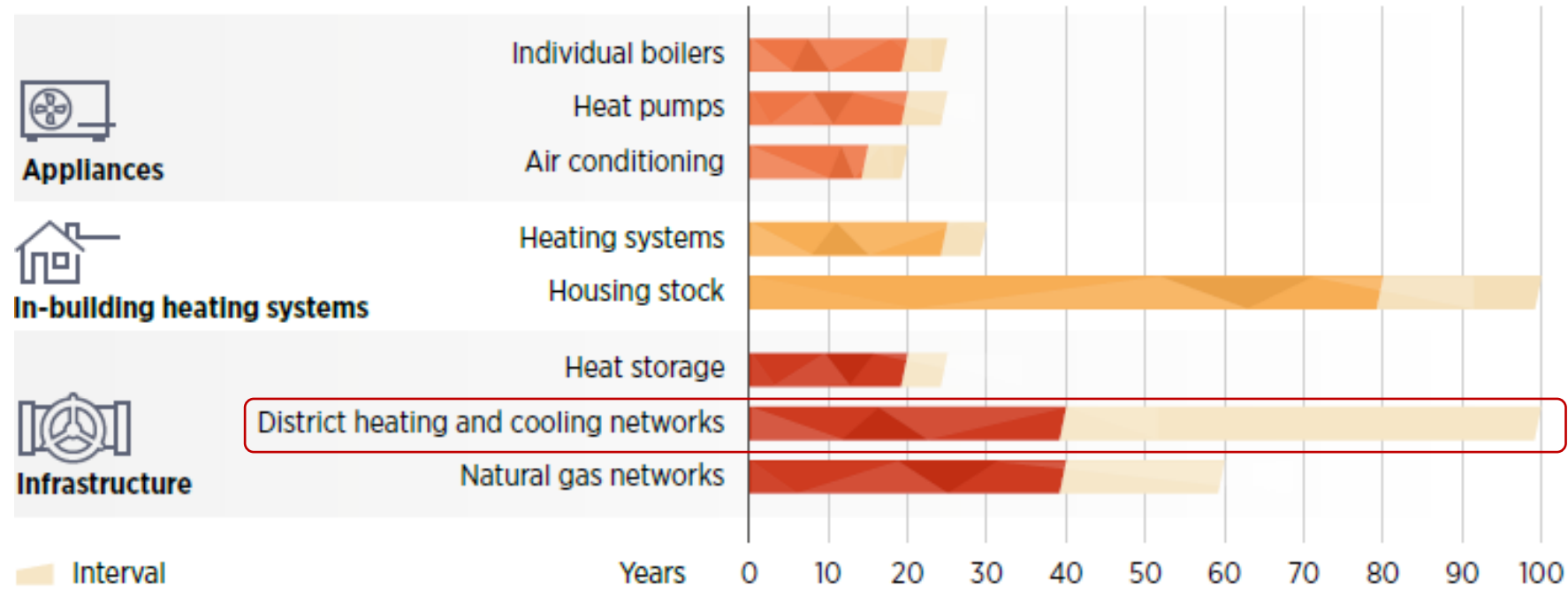


Renewable energy targets in the NDCs, 2020

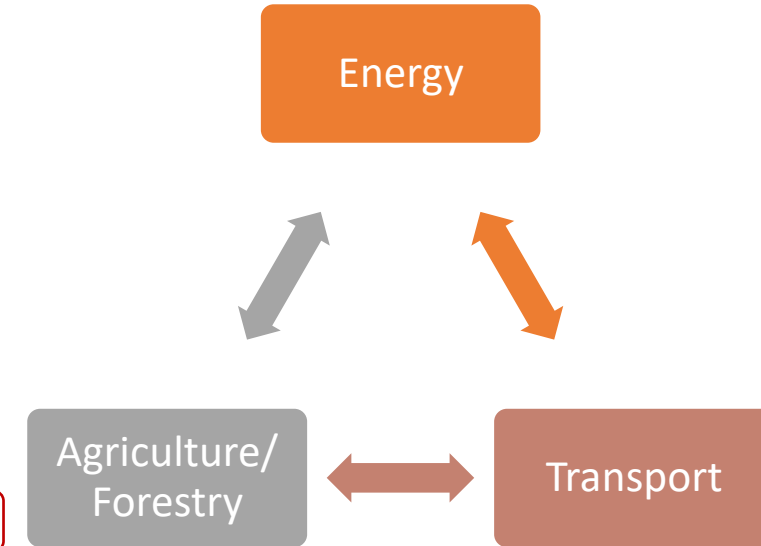


Develop an integrated long term plan and institutional coordination

Operating lifetime of heating and cooling infrastructure, systems and appliances

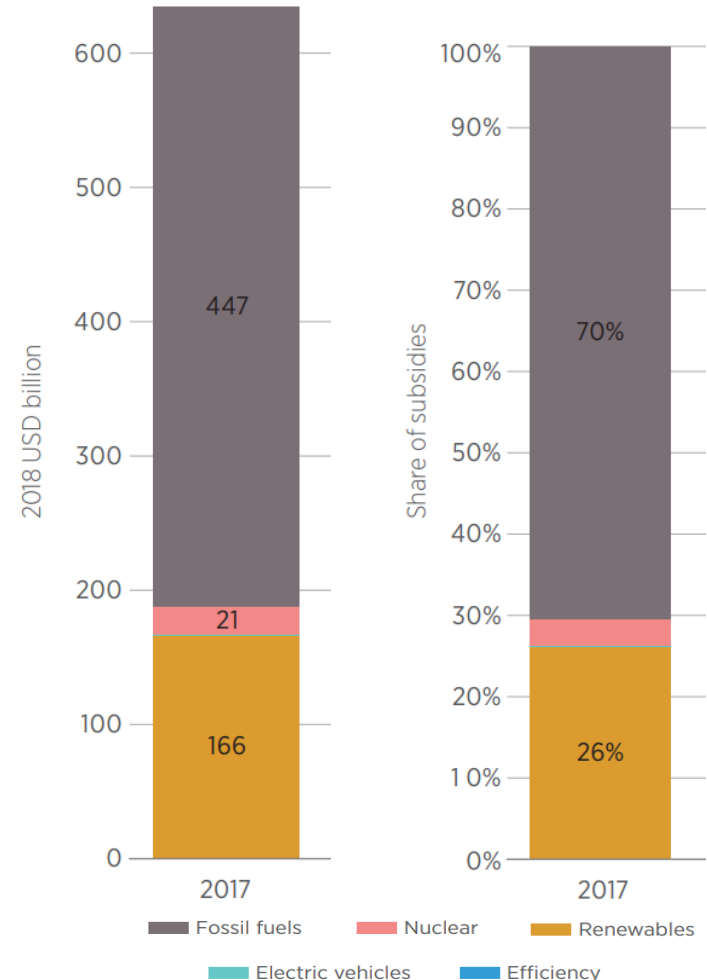


Intersectoral coordination

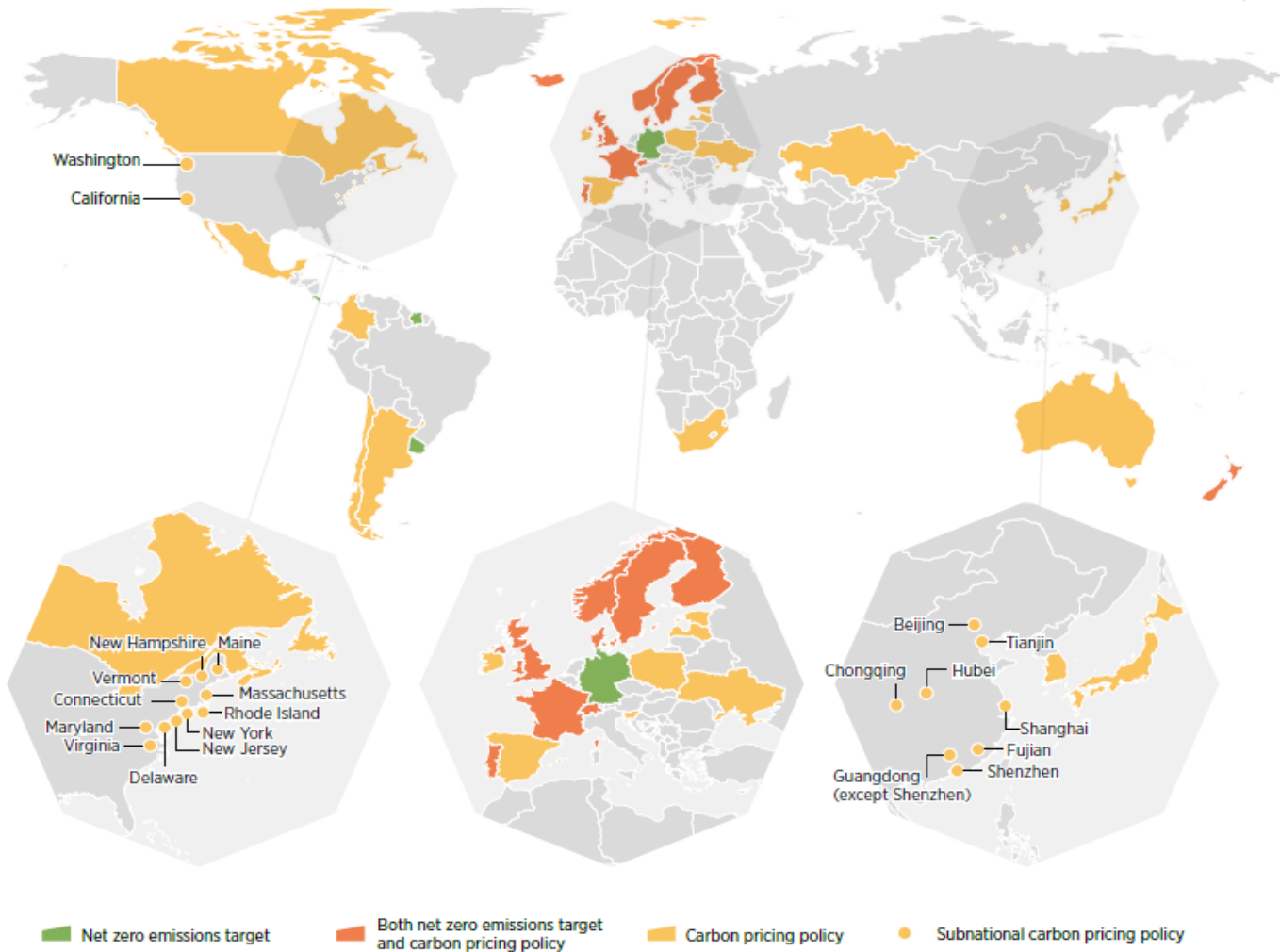


Level the playing field

Energy sector subsidies by source excluding climate and health costs, 2017

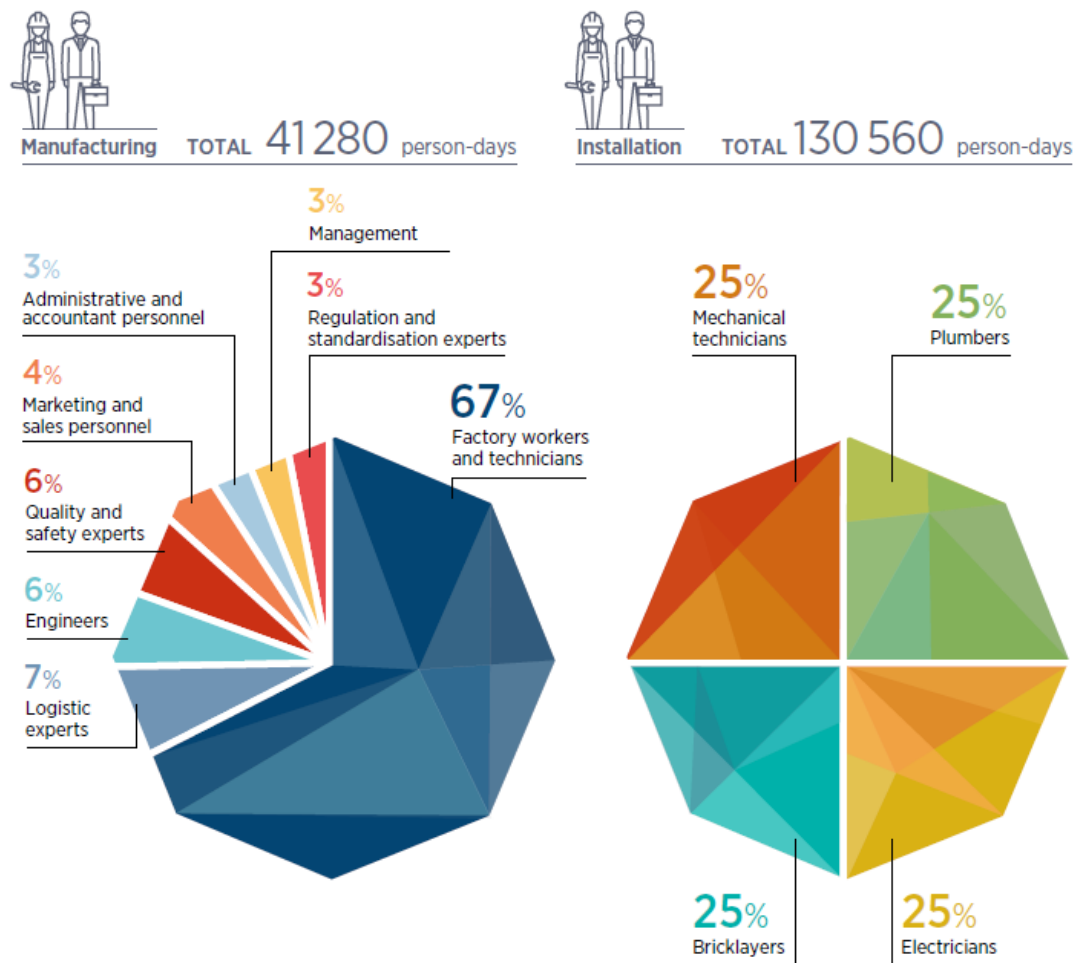


Jurisdictions with selected climate change policies, early 2020

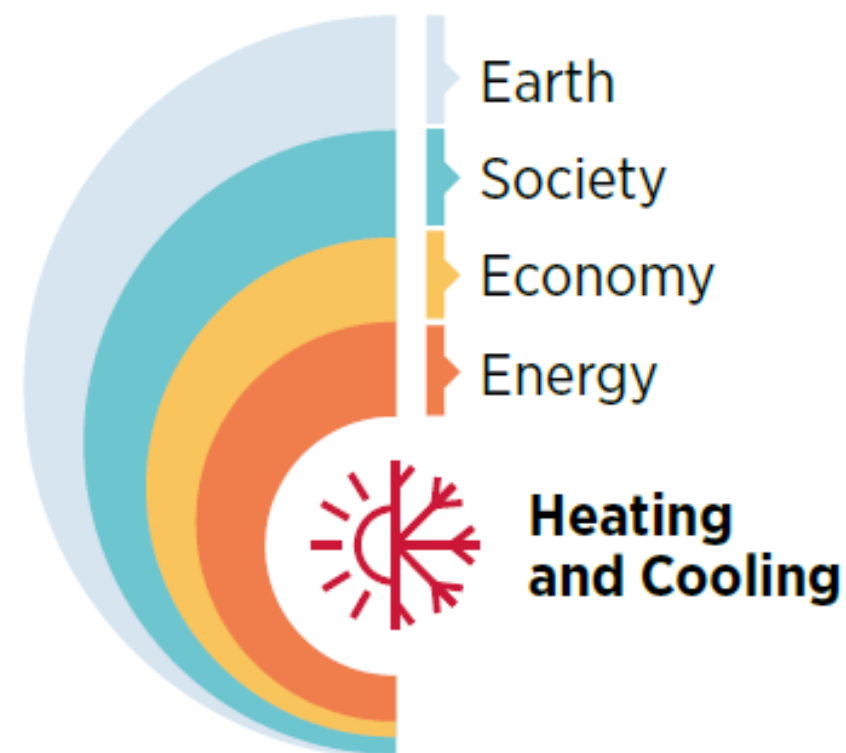


Ensure a just inclusive transition

Human resources required for the manufacturing and installation of SWHs for 10 000 single-family households, by occupation



The broad dimension of renewable energy policy making



Thank you

