



Renewable energy and storage – a driver for the electrification of heat and transport ?

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Executive Secretary, REN21

NGOs:

CAN, CEEW, FER, GACC,
GFSE, Greenpeace
International, ICLEI,
ISEP, MFC, SLoCaT, REI,
WCRE, WFC, WRI, WWF

Industry Associations:

ARE, ACOE, ALER,
APREN, CREIA, CEC, EREF,
GOGLA, GSC, GWEC, IREF,
IGA, IHA, RES4MED, WBA,
WWEA



Science & Academia:

Fundacion Bariloche, IIASA, ISES, NREL, SANEDI, TERI

International Organisations:

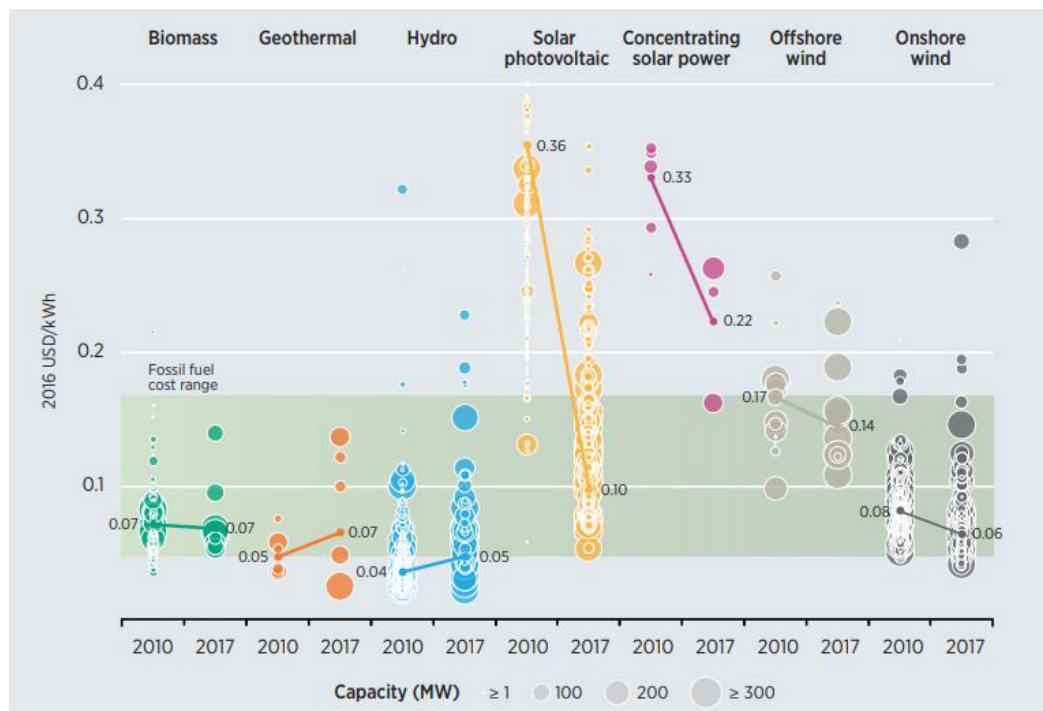
ADB, APERC, ECREEE,
EC, GEF, IEA, IEC,
IRENA, RCREEE, UNDP,
UN Environment,
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Governments:

Afghanistan,
Brazil, Denmark,
Germany, India,
Mexico, South
Africa, Spain, UAE,
USA

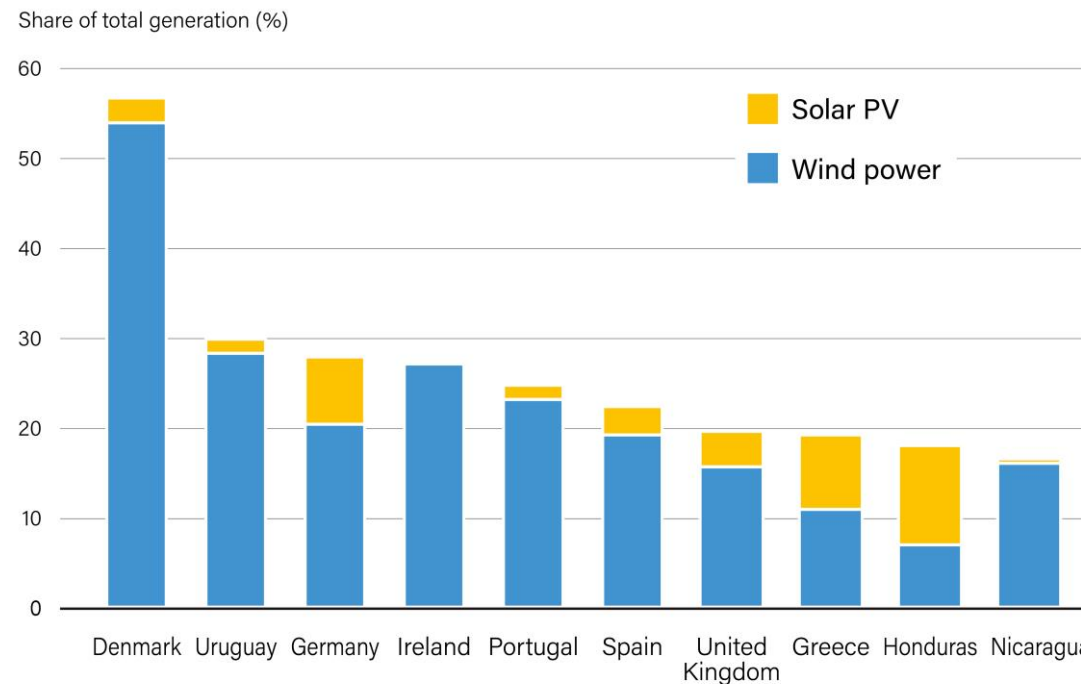
A global multi stakeholder network dedicated to the rapid uptake of renewable energy.

Global levelised cost of electricity from utility-scale renewable power generation technologies, 2010-2017



IRENA, Renewable Power Generation Costs in 2017

Share of Electricity Generation from Variable Renewable Energy, Top 10 Countries, 2017

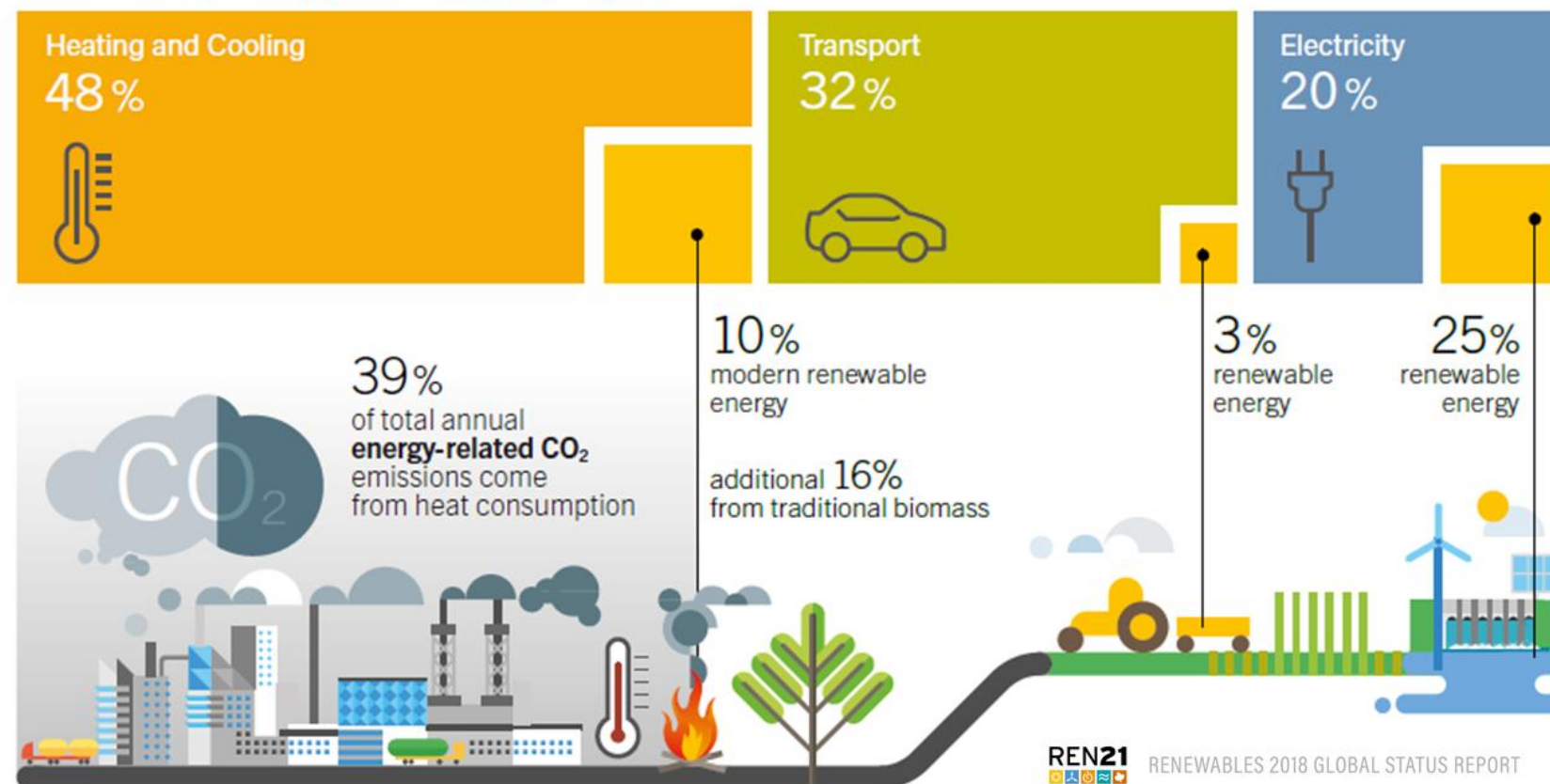


REN21 RENEWABLES 2018 GLOBAL STATUS REPORT

Renewable electricity – the renewable energy success story

■ WE CONSUME THE MOST ENERGY FOR HEATING, COOLING, AND TRANSPORT

Modern Renewable Energy in Final Energy Use by Sector, 2015



- In 2017, renewable electricity was the second largest source of renewable heat, following modern bioenergy
- District heating covers 11% of space and water heating needs globally

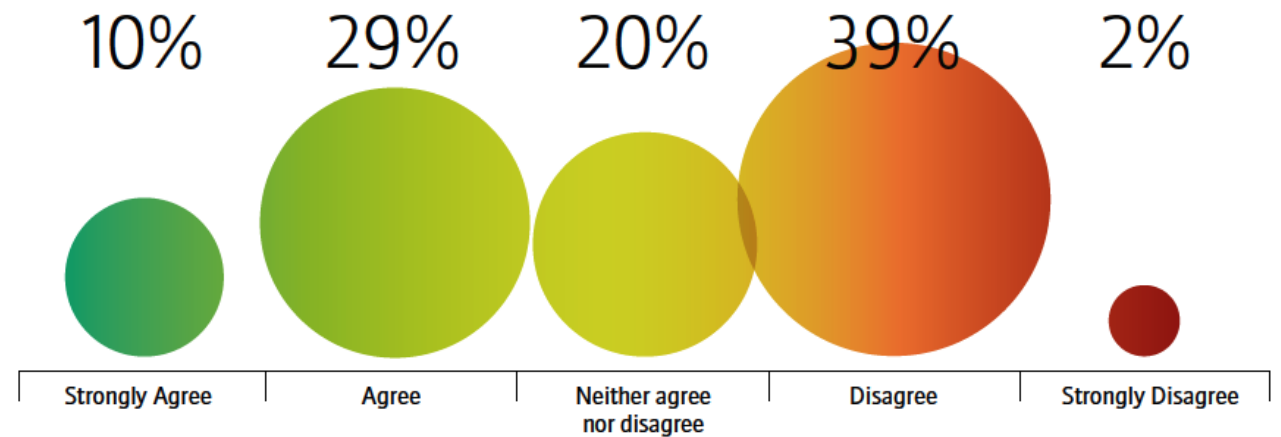
What is the role of electricity and storage to advance the renewable uptake in heating and transport ?

Electrification of the heating sector

Drivers for electrification

- Reduced cost of PV, wind and heat-pumps
- abundance of renewable power and VRE
- Electricity is more 'mobile' than thermal energy carriers
(district heating only covers 11% of space and water heating needs globally)
- Electricity can facilitate efficiency in heat, e.g. by changing the 'quality' of heat (low, medium, high temperature) or co-generation

"The electrification of the heating sector will continue and will lead to an almost complete electrification."



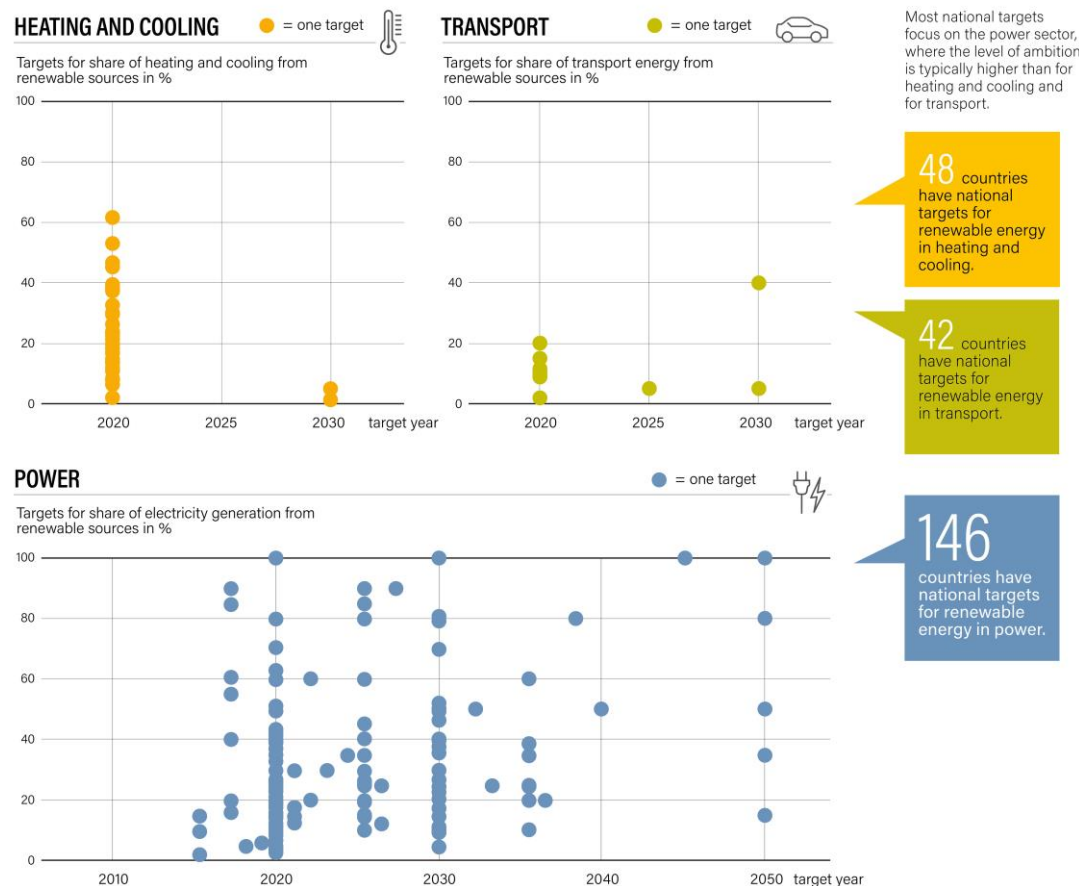
REN21 Renewables Global Futures Report

There is a lack of reliable data on renewable energy heating

Storage in the heat sector

- Providing flexibility
- Matching supply and demand
 - Electric grid
 - Thermal demand
 - Quality of heating/cooling (LT, MT, HT)
- Thermal energy storage is 50-100 times cheaper than electricity storage
- Storage provides a support function to energy efficiency

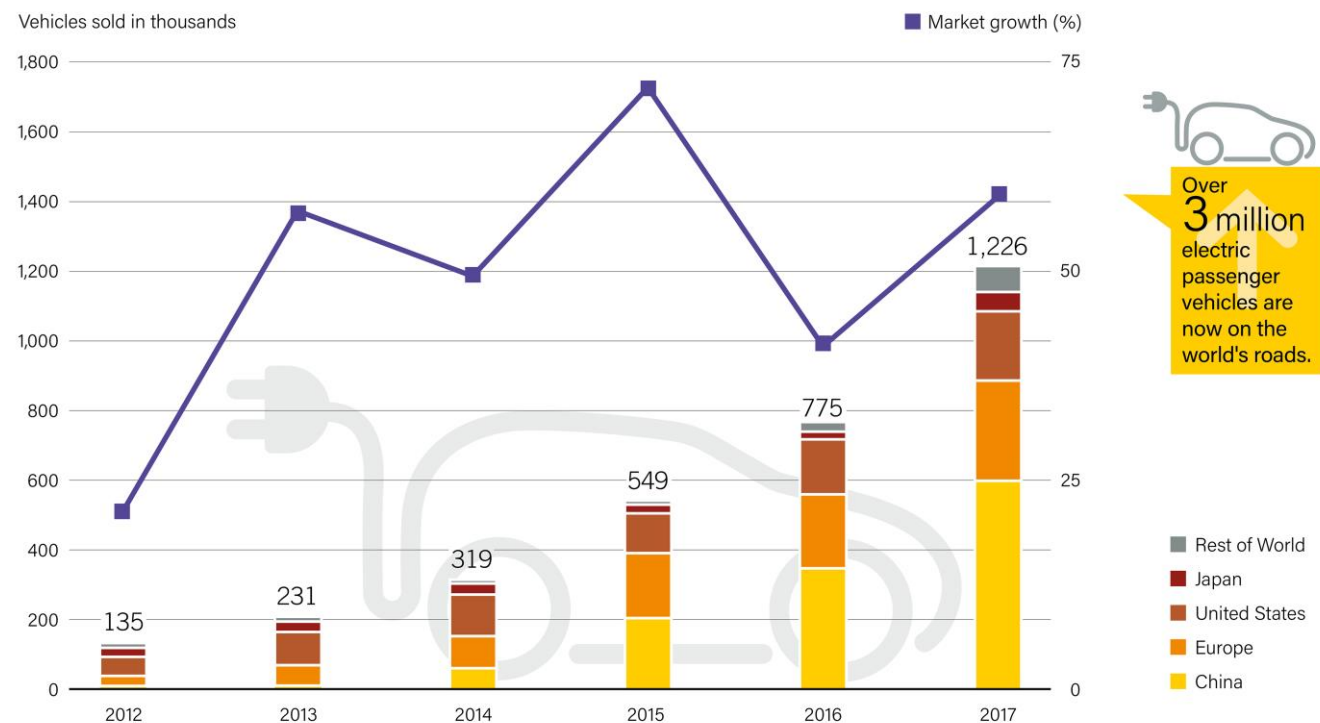
National Sector-Specific Targets for Share of Renewable Energy by a Specific Year, by Sector, in Place at End-2017



Need to increase policy attention on heating to draw on the potential for better integration

Electrification trends in transport

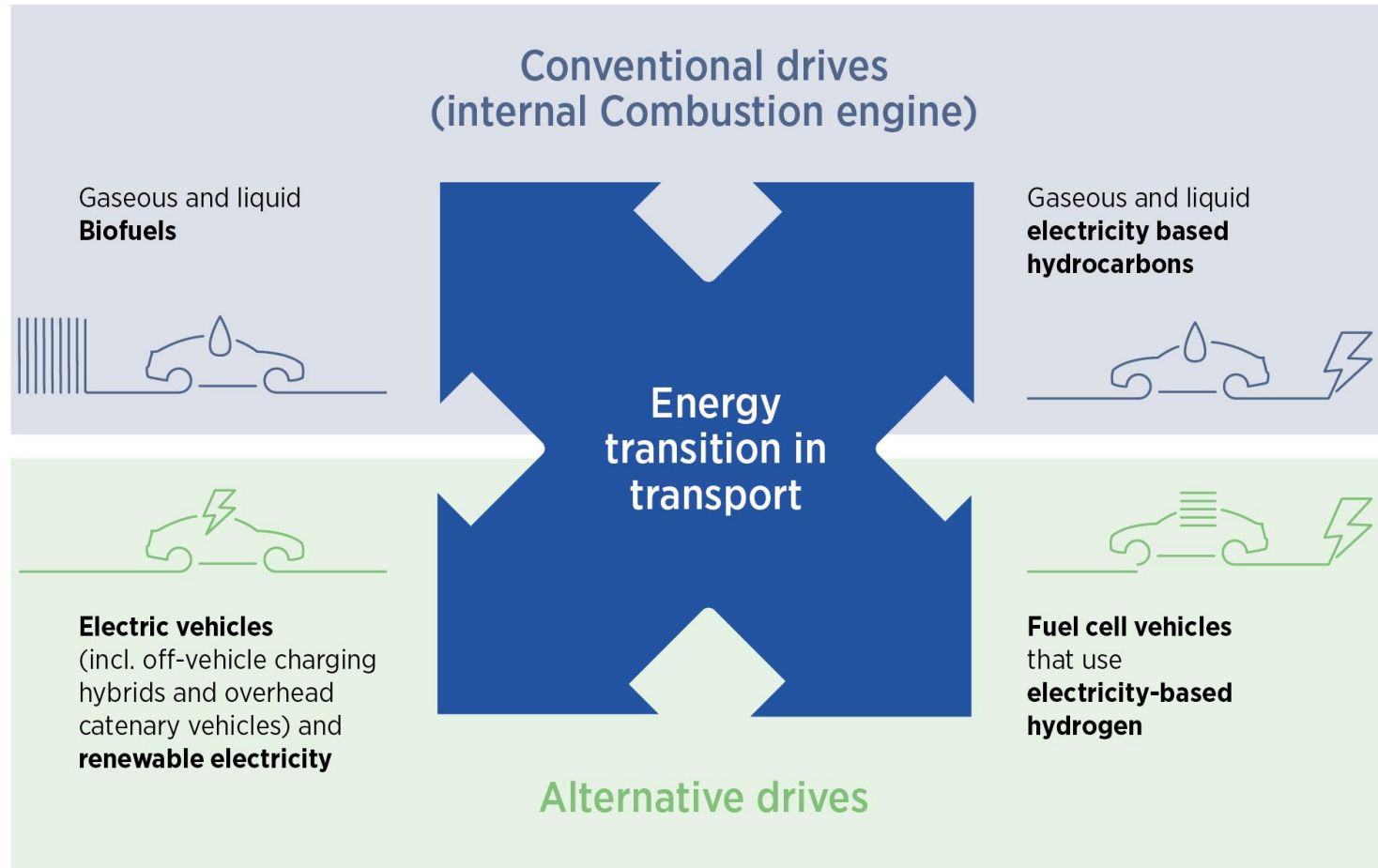
Global Passenger Electric Vehicle Market (including PHEVs), 2012-2017



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- Rail and light rail
- EVs on the road: **+70%** compared to 2016, but only **1%** of light vehicle market
- **Potential** to create a new market for renewable energy and facilitate the integration of higher shares of VRE

Energy Security = Mobility Security



IRENA-IEA-REN21, Renewable Energy Policies in a Time of Transition

Renewable electricity-based mobility vs Electric mobility