Portugal: Context according to the Energy Trilemma Index

Associação Portuguesa da Energia

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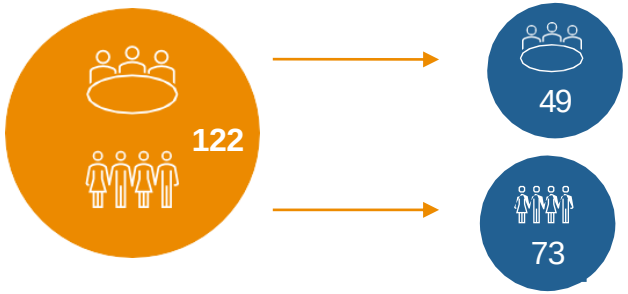
APE aims to stimulate the reflection and debate on energy related themes, within the broader value chain, promoting the sector's contribution for economic and social development, and the quality of life in Portugal.

Private. non-profit NGO, recognized of Public Interest.

Portuguese Member Committee of the World Energy Council, inheriting a legacy from the 1930's. The Council has MC's in almost 100 countries, including Tunisia.

Members



APE's 4 strategic vectors

NETWORKER

Create and boost a network which promotes. nationally and internationally, the sharing and debate of ideas, in line with the World Energy Council

OPINION MAKER

Inform public opinion, maintaining an independent and global perspective, and fostering presence in the media.

TALENT SHAPER

Develop and accompany the talents of the energy sector in Portugal, supporting their training and mentoring

CURATOR

Promote a curation of knowledge, content and skills on the sector's topics

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Portugal: Energy Trilemma Index

ENERGY TRILEMMA INDEX

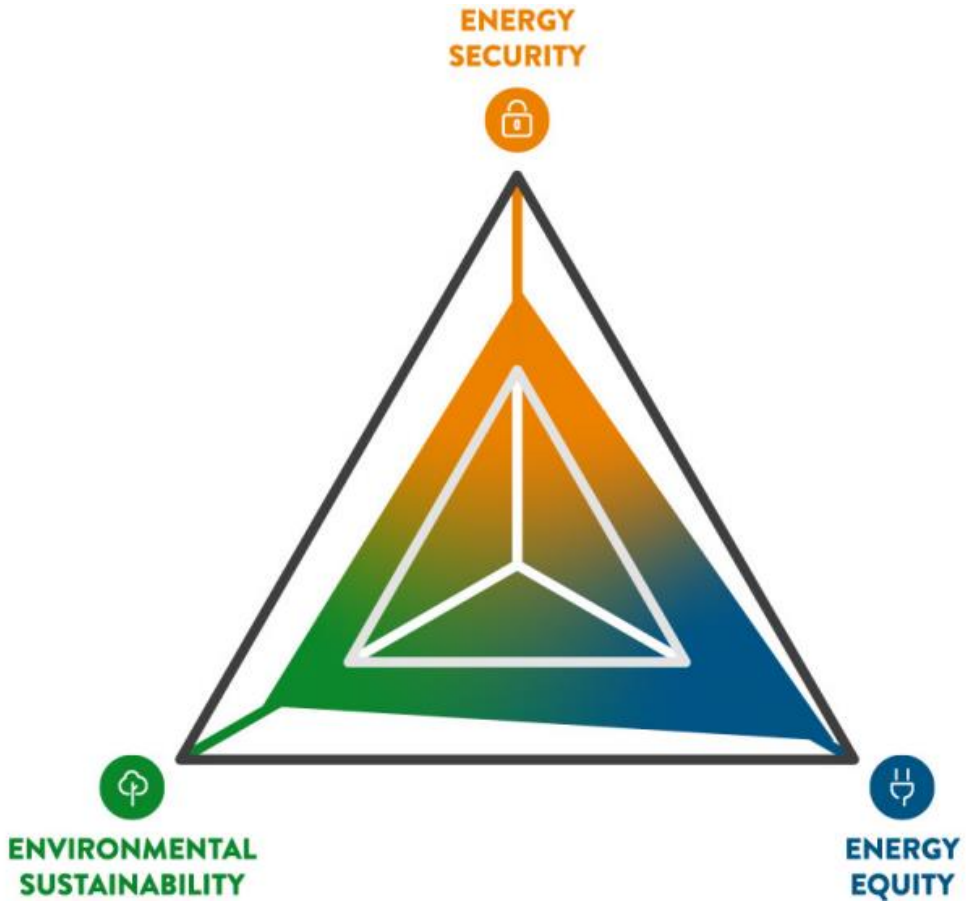
The World Energy Trilemma Index, powered by World Energy Council, is an annual measurement of national energy system performances across each of the three trilemma dimensions.

Healthy energy systems are secure, equitable and environmentally sustainable, showing a carefully managed balanced Trilemma between the three dimensions.

Maintaining this balance in context of rapid transition to decentralised, decarbonised and digitalised systems is challenging, with the risk of passive trade-offs between equally critical priorities.

https://trilemma.worldenergy.org/

ENERGY TRILEMMA INDEX



Energy Security

- Resilience of energy systems
- Diversity of electricity generation/ demand and flexibility
- Energy storage (electricity, natural gas, …)

Energy Equity

- Energy access
- Quality of energy access
- Affordability

Environmental Sustainability

- Energy Resource Productivity
- Decarbonisation
- Emissions and pollution

PORTUGAL - ENERGY SECURITY

Carregado Thermoelectric Power Plant

Shut down since 2010, after 42 years in operation, this former fueloil power plant is in the final phase of dismantling.

In 1997 it was reconverted and was the first Portuguese power plant to make the transition to natural gas.

Sines Coal-Fired Thermoelectric Power Plant

35 years later, the coal power plant in Sines is closed.

A new clean energy endeavour is planned for Sines.

Green H2, which will give rise to a major industrial hub.

Pego Thermoelectric Power Plant

Pego thermoelectric power station was the last coal-fired power unit in Portugal.

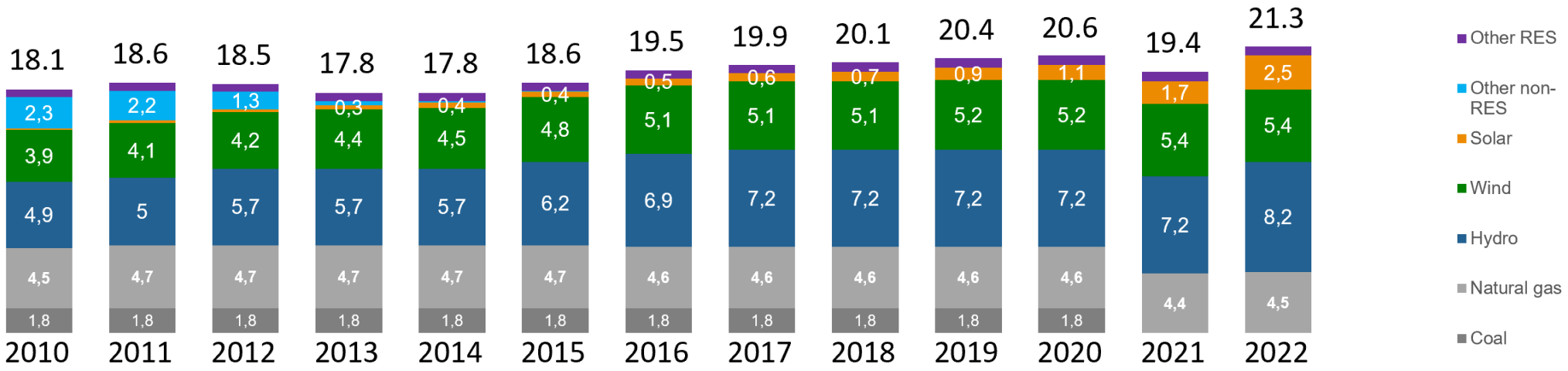
Ceased its operations in 2021.

PORTUGAL - ENERGY SECURITY

Power capacity has remained at ~20 GW, as RES compensated coal closures

Installed capacity (GW)

Yearly additions (MW)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Solar	32	50	100	100	139	43	83	89	128	264	182	615	998
Wind	350	160	114	174	176	307	233	21	45	68	37	129	-



PORTUGAL - ENERGY SECURITY

Portugal has seen a decrease in energy dependence in recent decades.

By 2030, Portugal is expected to become more energy independent.

Portuguese Energy dependency over time

Fonte: DGEG

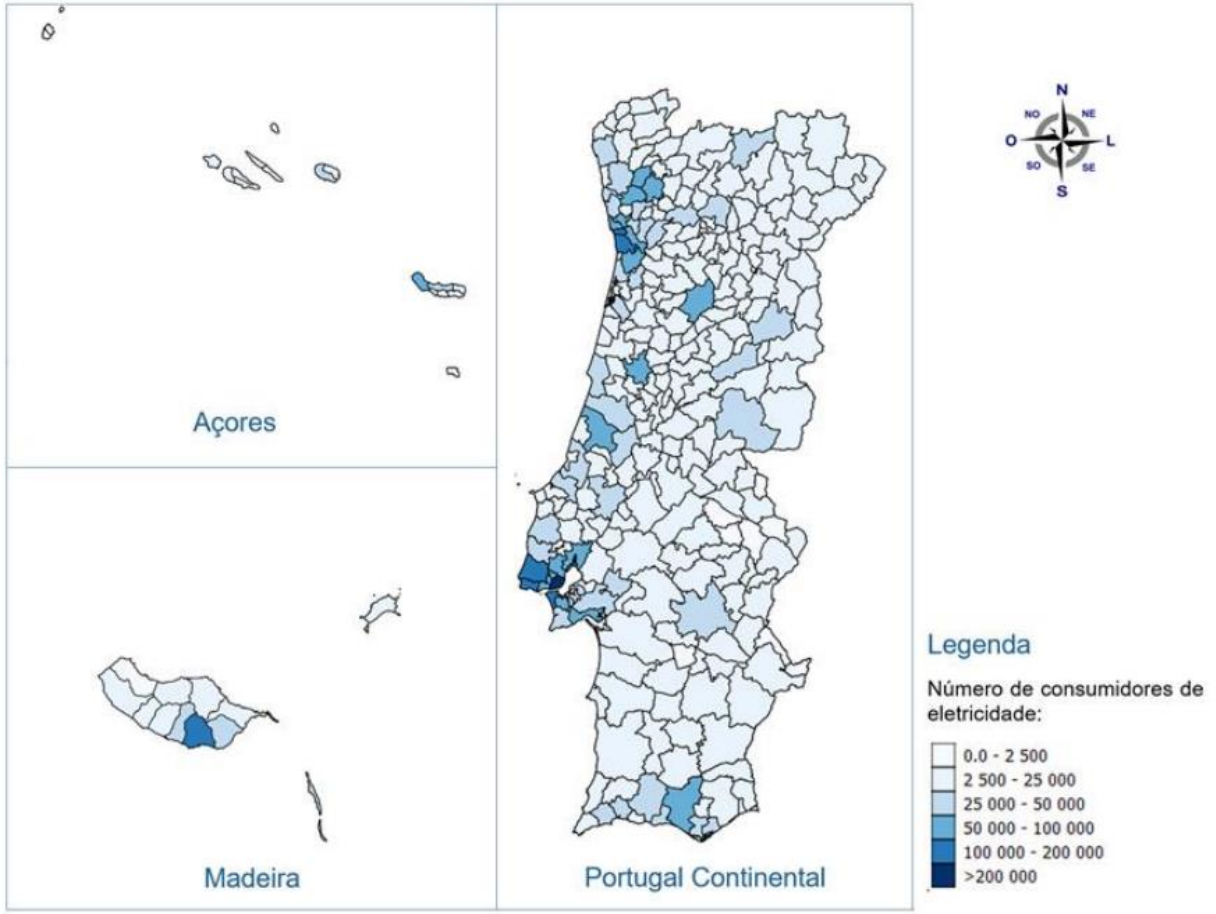
NECP 2030 ➔ **65%**

PORTUGAL - ENERGY EQUITY

National access to secure and stable electricity for both domestic and commercial use and services is reaching 100%.

The cost of energy does not vary with geographical location.

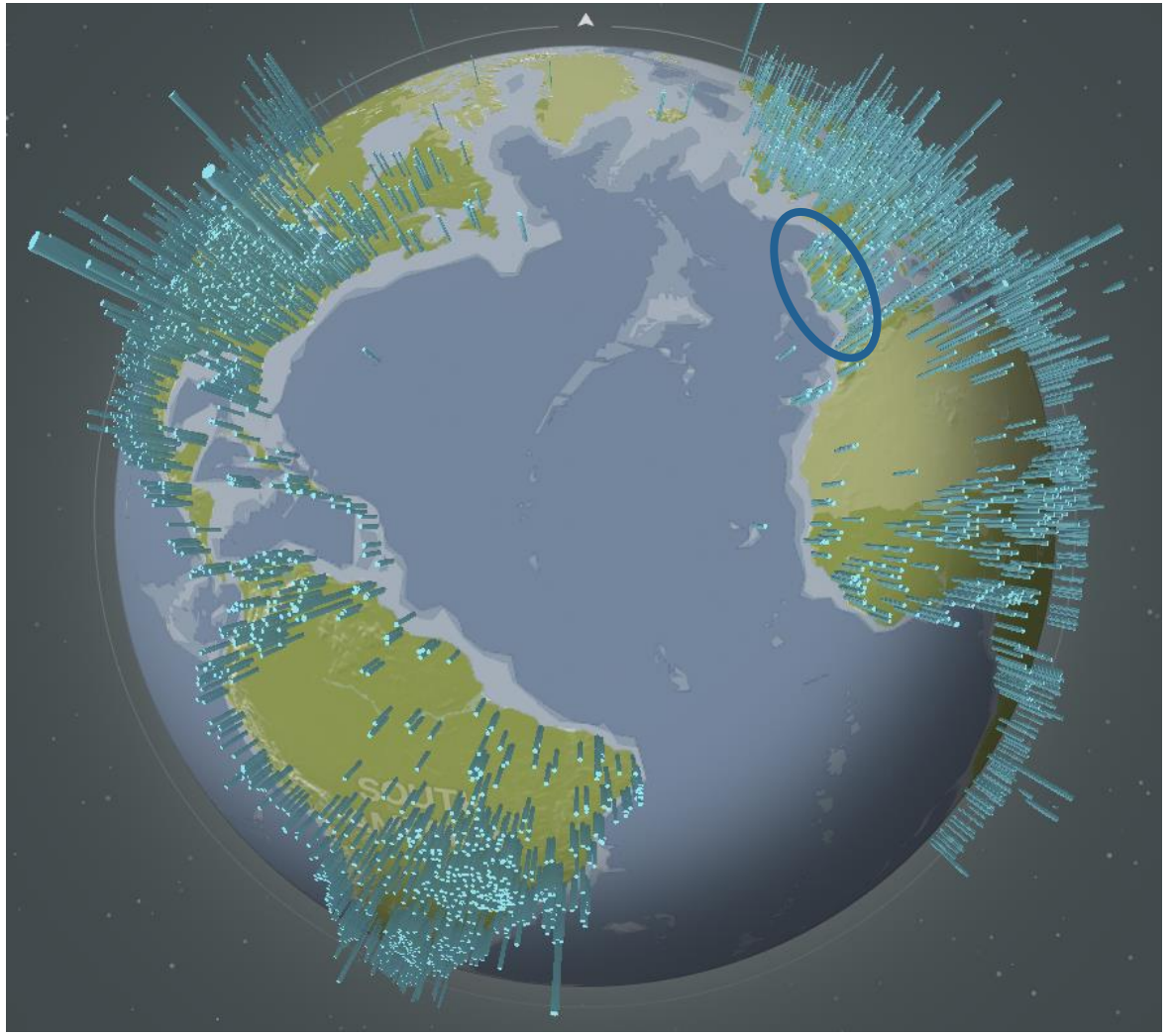
Portugal aims to guarantee affordable and fairly priced energy.



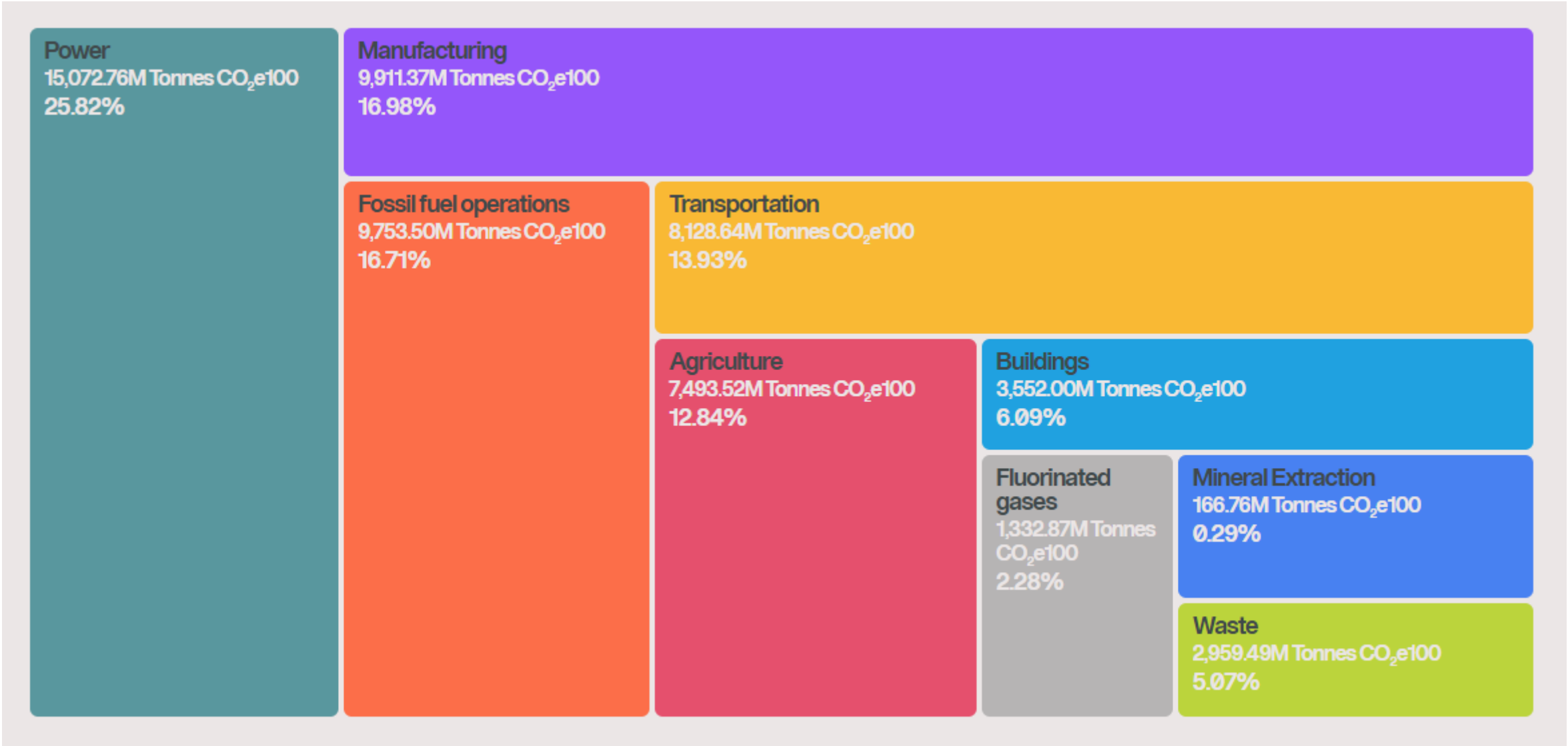
Regional Distribution of domestic consumers

PORTUGAL - ENVIRONMENTAL SUSTAINABILITY

Environmental sustainability has broadened to a holistic concern for planetary balance, embracing **circular economy** principles, the interconnectedness of water, food, and energy systems, and the alignment of decarbonisation with the planet's **ecological limits**.



PORTUGAL - ENVIRONMENTAL SUSTAINABILITY



CO_2e emissions in Portugal 2022

Source: Climate Trace

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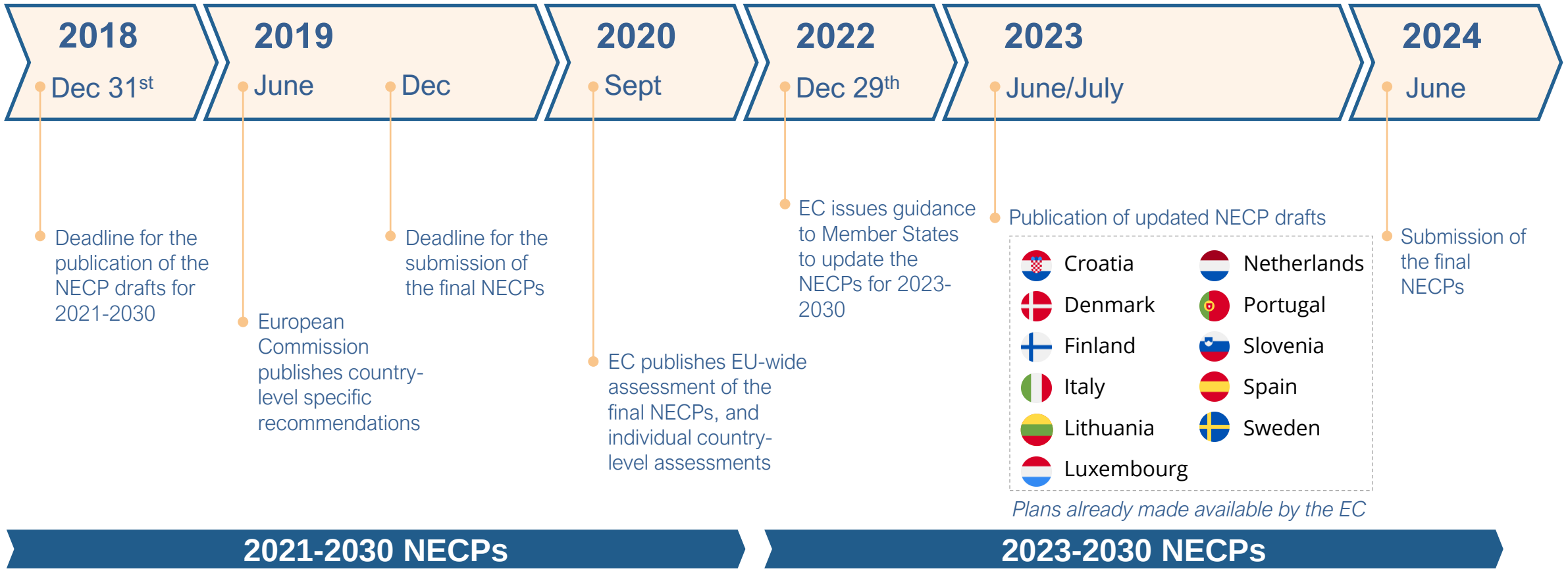
Energy: Portuguese Prospects

National Energy and Climate Plan 2030 (NECP2030)

Revision of National Energy and Climate Plans



National Energy and Climate Plan 2030 – Targets

	2021 RESULTS	NECP 2030 TARGET 2030	NECP 2030 Revision TARGET 2030
GHG EMISSIONS EU Target: reduce 55% by 2030	-35%	-45% to -55%	-55% ↑
ENERGY EFFICIENCY EU Target: improve 32,5% by 2030	35%	35%	35%
RENEWABLES* EU Target: include 49% by 2030	34%	47%	49% ↑
RENEWABLES IN TRANSPORT* EU Target: include 14% by 2030	9%	20%	23% ↑
ELECTRICAL INTERCONNECTIONS EU Target: 15% in Portugal by 2030	16%	15%	15% ↓

* In final consumption

National Energy and Climate Plan 2030 – Targets

The NECP's goals for solar and wind energy are highly ambitious.
Portugal's draft reflects the intention to accelerate the energy transition, mainly through higher RES demand

Past

Future

Installed capacity (GW)

Yearly additions (MW)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
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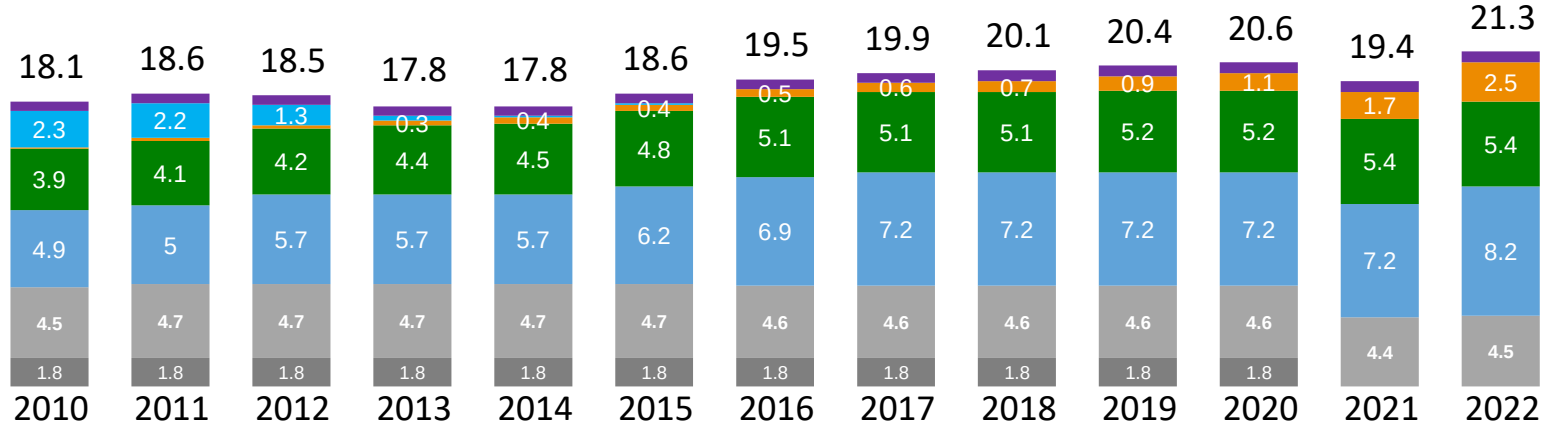
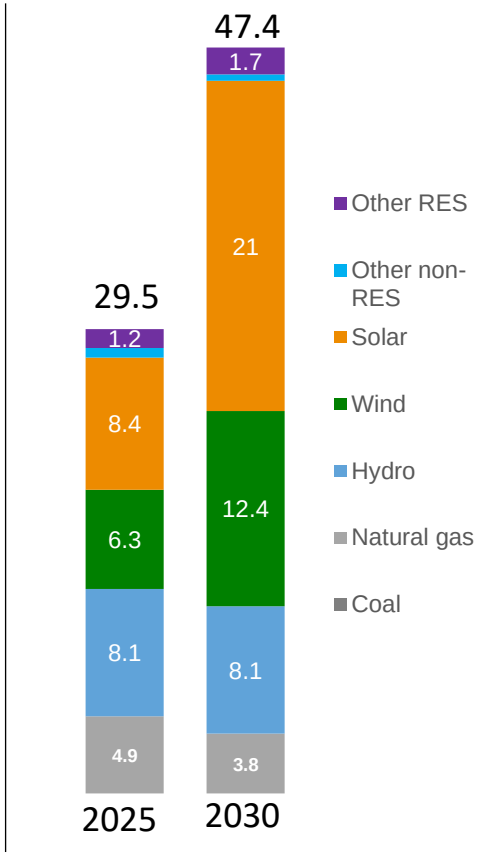


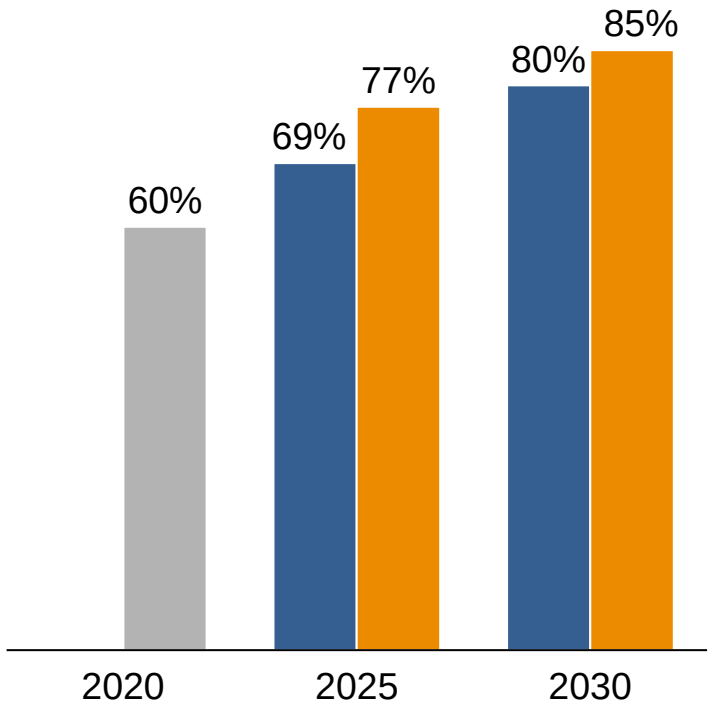


National Energy and Climate Plan 2030 – Targets

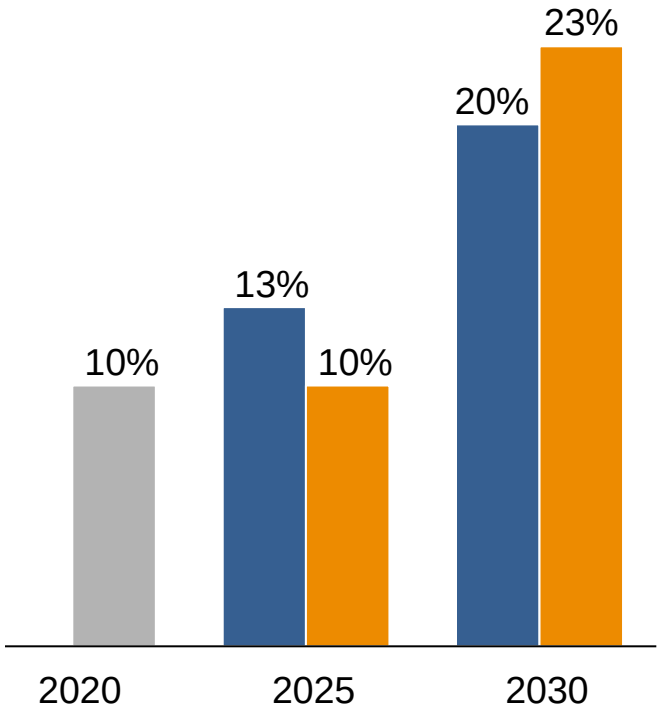
Renewables will reach 85% of power demand by 2030, 23% of transport demand and 47% of H&C demand, all targets revised

RES (%) in power demand

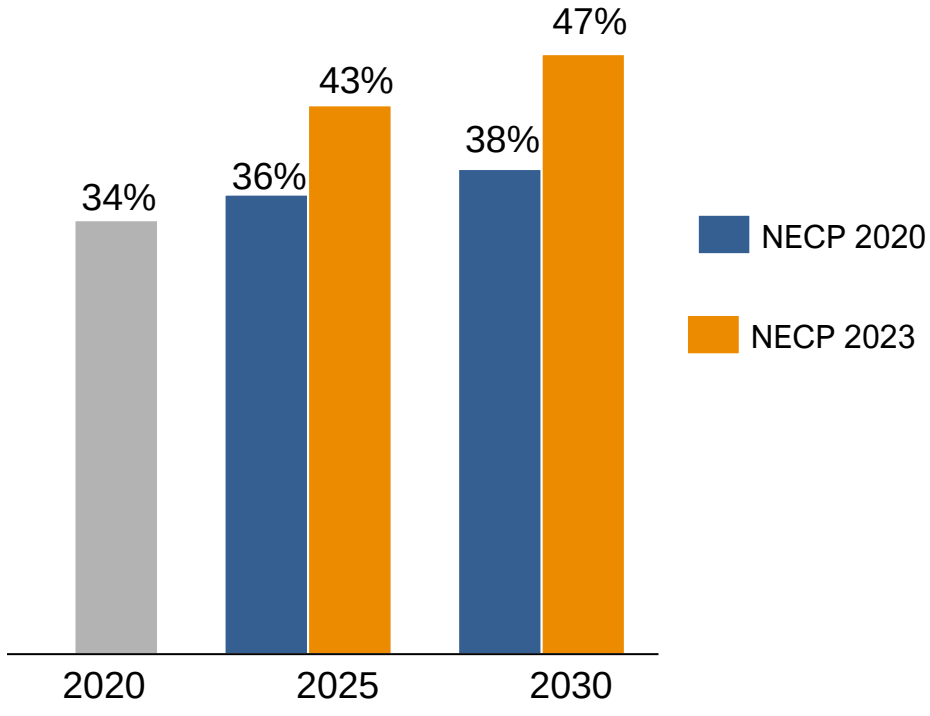
%RES in demand differs from % RES in generation, which is 90% (excl. H_2)



RES (%) in transport demand

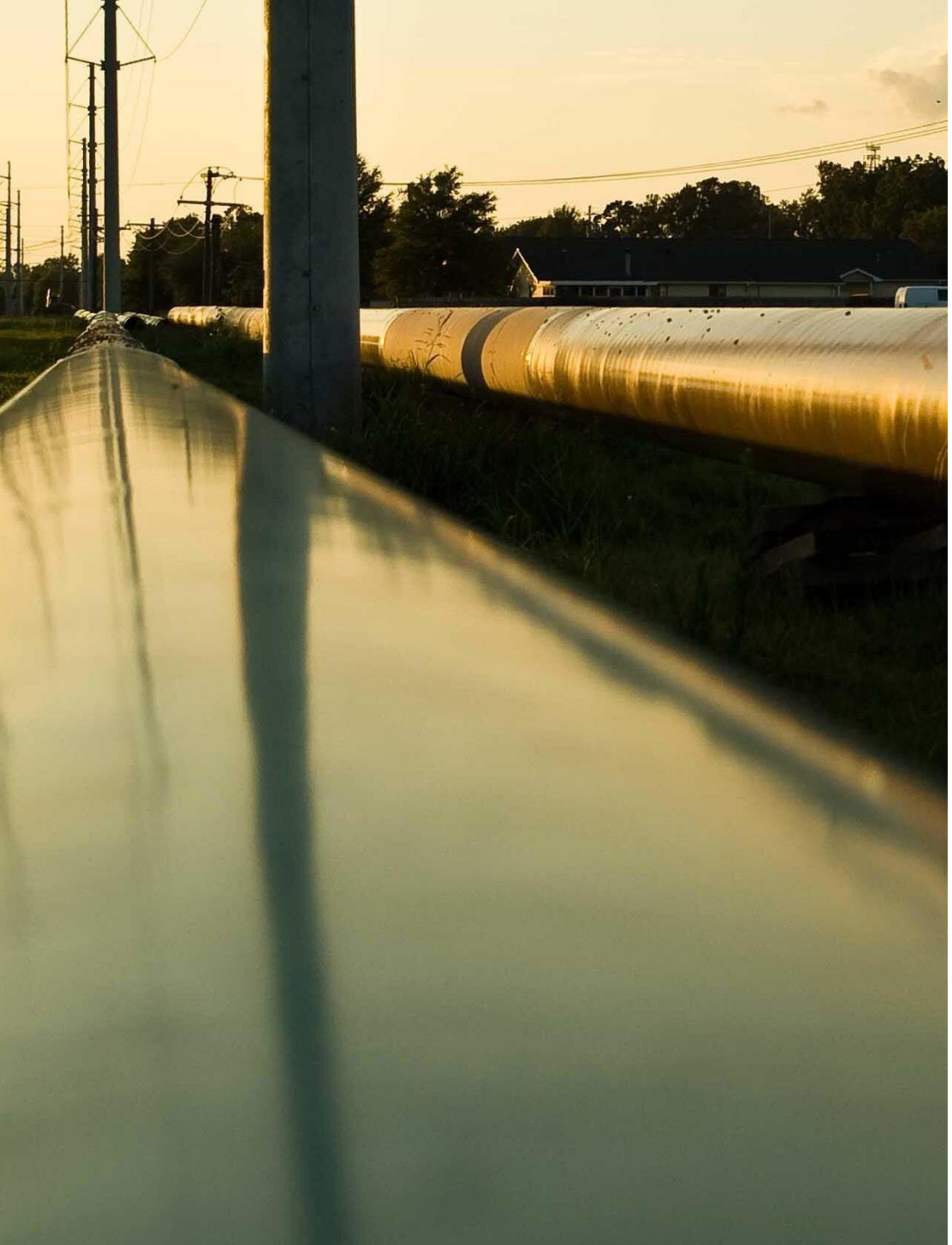


RES (%) in H&C demand



KEY MESSAGES

1. Increase renewable production, through:
    - Solar (licensing simplification)
    - Onshore wind (reequipment and repowering)
    - Offshore wind (grid management)
    - Hydro Pumping
    - Hybridization



KEY MESSAGES

2. Gas and electricity infrastructures

- Electricity interconnections
- Land and maritime corridors for renewable gases
- System services
- Storage

KEY MESSAGES

3. Consumption

- Energy efficiency
- Energy literacy (schools and local government)
- Dynamic demand management
- Decarbonization of transport and industry sectors

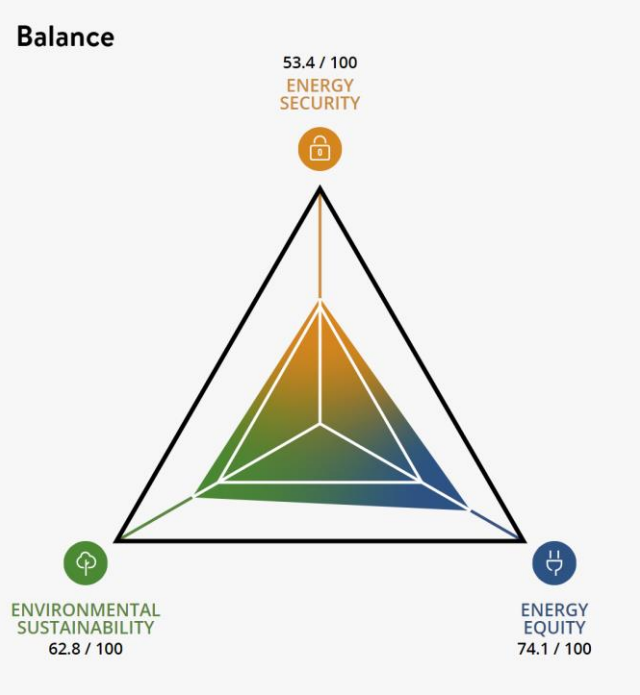
KEY MESSAGES

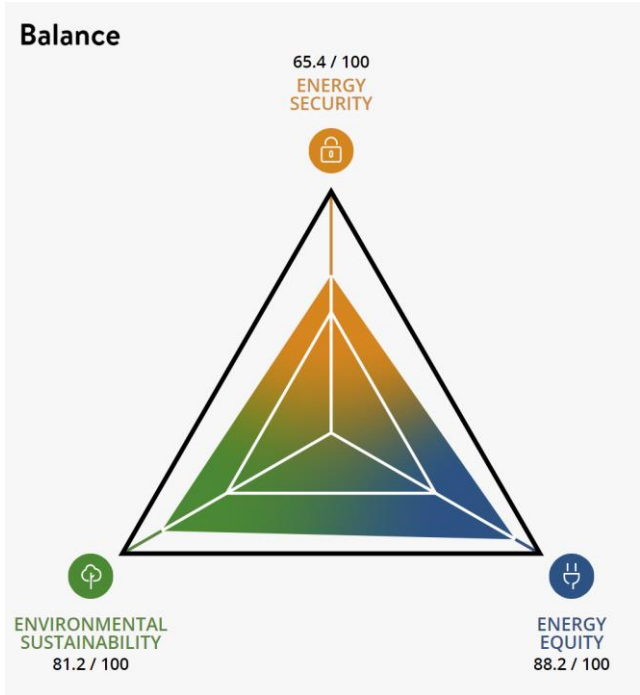
4. Fair energy transition

- Social justice
- Workers retraining
- Professional education
- Vulnerable consumer support
- Territorial cohesion

Final Remarks

How to balance the energy trilemma?





Effective **cooperation** is essential to achieving the ambitious **energy** and **climate goals**!

Thank You!

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