António Sá da Costa

Antigo Presidente da APREN – Associação Portuguesa de Energias Renováveis

Renewable Energies in Portugal

04.03.2021 ISA – Instituto Superior de Agronomia

A nova Diretiva de Energias Renováveis para 2030

que cenários para Portugal?

Nota previa:

em abril de 2019 deixei a presidência da APREN mas não deixei de estar em contacto com o setor das energias renováveis, contudo para as intervenções como a de hoje continuo a recorrer ao apoio da APREN e ao material que é por ela produzido.
Para a apresentação inicial adaptei ligeiramente a apresentação que o presidente da APREN o eng. Pedro Amaral Jorge fez no passado dia 13/02/21 no Encontro Nacional de Jovens pelo Ambiente

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APREN – Our History

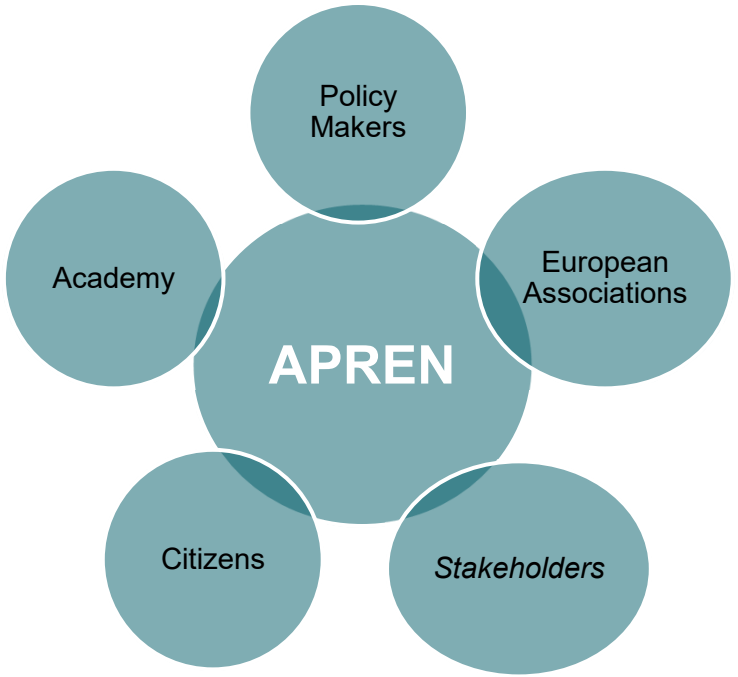
Renewable Energies in Portugal

About us

The Portuguese Renewable Energy Association (APREN) is a non-profit association, founded in October 1988, with the mission of coordination, representation and defence of the common interests of its Members.

APREN's mission:

- Promote the deployment of renewable technologies for electricity production;
- Support, encourage and collaborate directly with policy-makers and government entities to create a sustainable and cost-effective strategy for the energy sector;
- Support, advise and promote the renewable electricity producers;
- Inform and disseminate the importance of the Portuguese endogenous energy resources.



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APREN, Europe and the World

Main Partners:

Following:

- European Policies
- Energy Sector Trends
- European Projects
- Statistics
- Conferences

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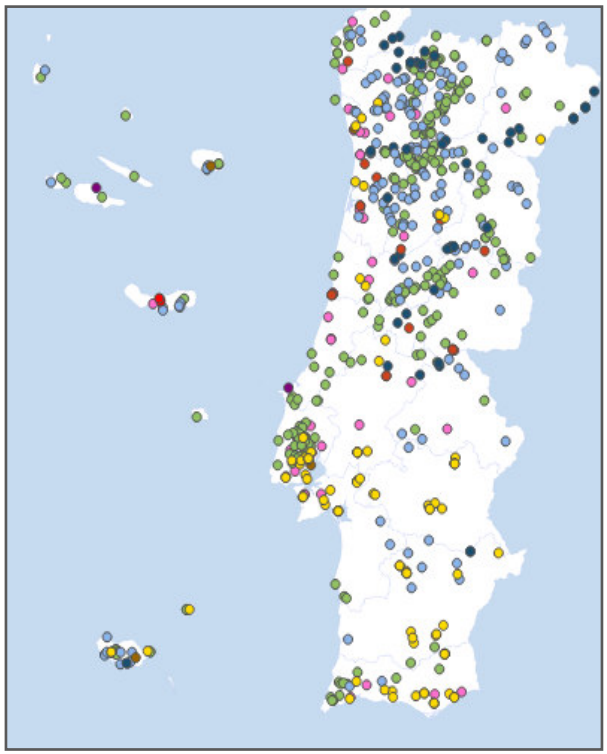
APREN's representativity in 2020

Technology	Share
Wind	93 %
Large Hydropower	100 %
SHP	90 %
Solar PV	26 %
Biomass	25 %
Geothermal	100 %
Overall Renewables	89 %



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European and National Context

Renewable Energies in Portugal

European and National Commitment by 2020

Biding targets for Member States!!

Kyoto Protocol (1997)

- GHG emissions, Global Warming, Environment and Resources

-8% GHG Emissions for the EU

2001/77/CE Directive For RES-E

- Global Warming, Security of Supply, Jobs and Costs

12% RES-E until 2010

2009/28/CE Directive REDI

- Climate Changes, Security of Supply, Innovation, Jobs, Energy efficiency and costs

-20% GHG until 2020

20% RES until 2020

10% Interconnections

20% Energy Efficiency

In Portugal

39% RES-E until 2010

31% **RES** until 2020

60% RES-E until 2020

10% RES-T until 2020

34% RES-H&C until 2020

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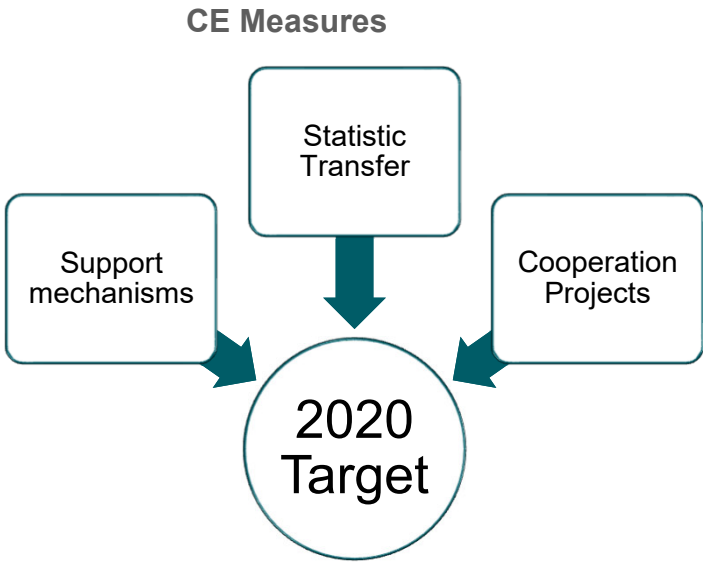
Failure to meet the 2020 target??

Article 5 – 2.- **2009/28/CE DIRECTIVE**

"Where a Member State considers that, due to force majeure, it is impossible for it to meet its share of energy from renewable sources in gross final consumption of energy in 2020…it shall inform the Commission accordingly as soon as possible. The Commission shall adopt a decision on whether force majeure has been demonstrated. In the event that the Commission decides that force majeure has been demonstrated, it shall determine what adjustment shall be made to the Member State's gross final consumption of energy from renewable sources for the year 2020."



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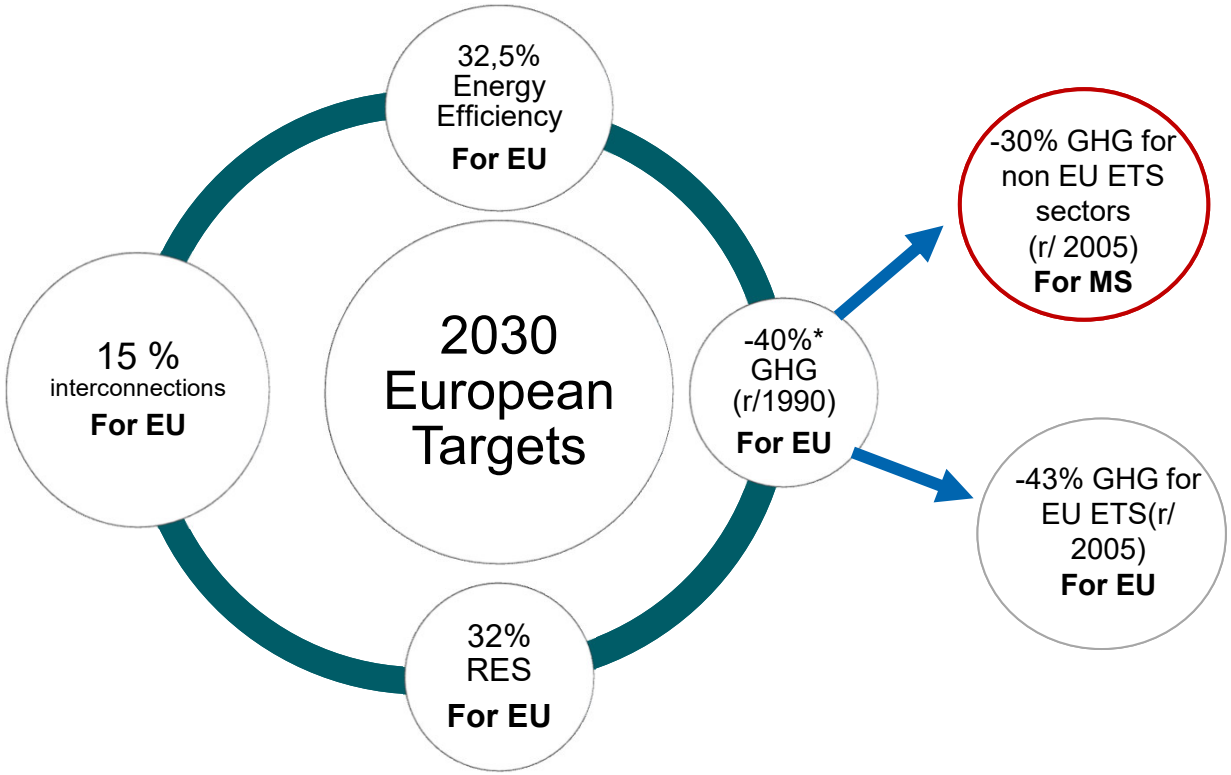
Clean Energy Pack for EU Citizens

2030 Targets



*Following the increased ambition proposed in the European Green Deal, an increase in the **overall GHG emission reduction target was approved, to be -55% r/1990**. Every other target will be amended accordingly.

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Clean Energy Package Transposition

for National Legislation

Governance

Strict reporting:

- Biding templates;
- Progress reports every 2 years and annual reports (incl. GHG national inventories);
- Reporting requirements at the Paris Agreement level and UNFCCC coordination.

NECP and LTS: Binds MS to submit 10 and 30-50 years views

32% RES Biding Target for EU

Intermediate RES targets: 18% for 2022; 43% until 2025; 65% until 2027

Gap correcting mechanisms:

cooperation mechanisms between MS and voluntary funding mechanisms

REDII

- **Electricity support schemes** between member states;
- **Design of support schemes:** *Market-based*, open, clear, competitive, non-discriminatory and cost-effective;
- **Financial support stability:** Long-term timetable: review every 5 years
- **Permitting:** Simplifcation of administrative procedures
- **Self-consumption:** Produce, store and sell
- **Energy Communities and Self-consumption Collectives:** Produce, consume, storage and sell

Single Market

- **Consumer and communities participation**, *demand-response*, storage and flexible generation;
- **Electricity dynamic prices,** available to the consumer;
- **Demand-Response** aggregation;
- **Responsibility and Balance sheet markets,** variable renewables, demand-response and storage;
- **End of dispatch priority;**
- **Congestion Curtailment Compensation.**

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European Green Deal

1. **A European Green Deal**
2. An economy that works for people
3. A Europe fit for the digital age
4. Protecting our European way of life
5. A stronger Europe in the world
6. A new push for European democracy

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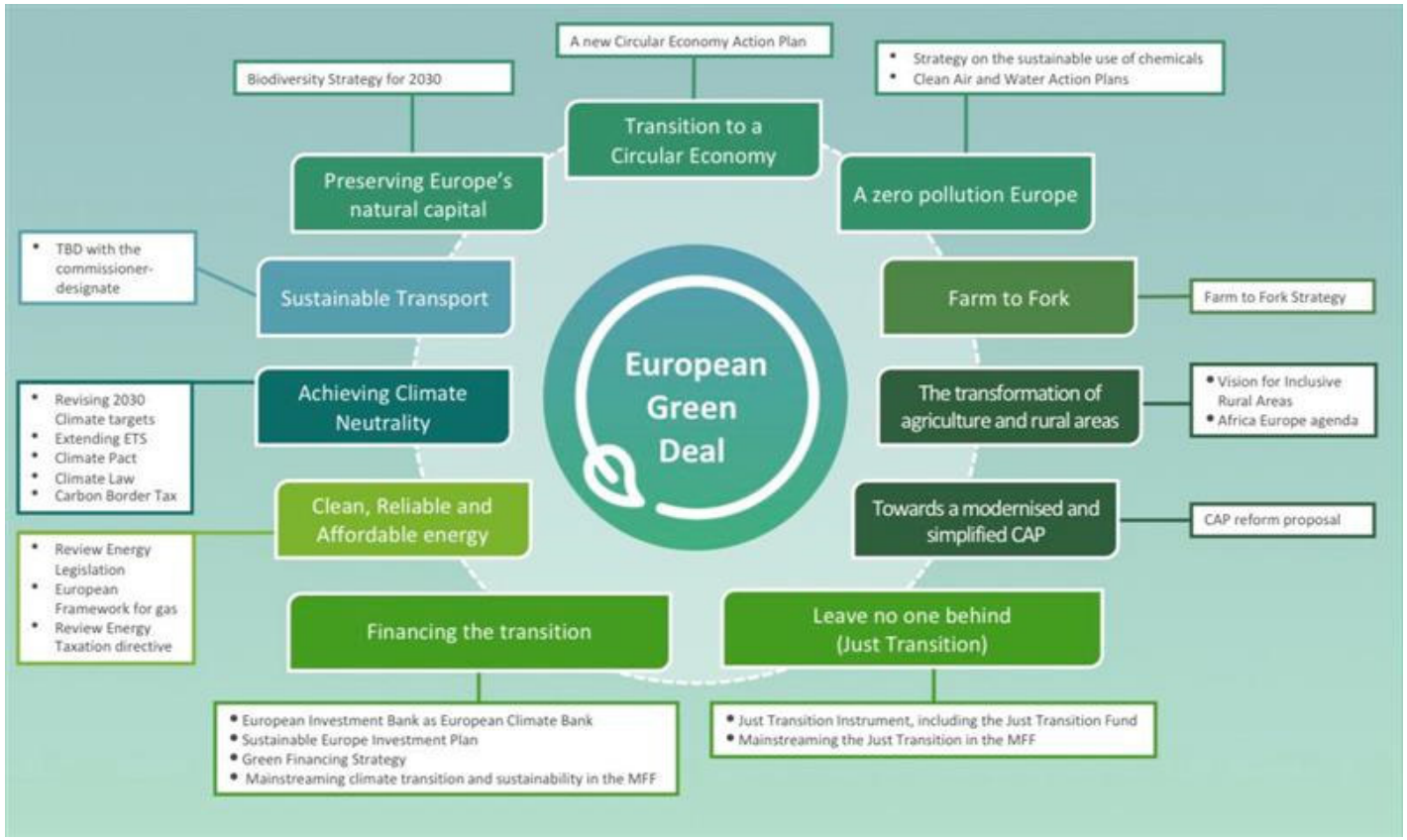
European Green Deal



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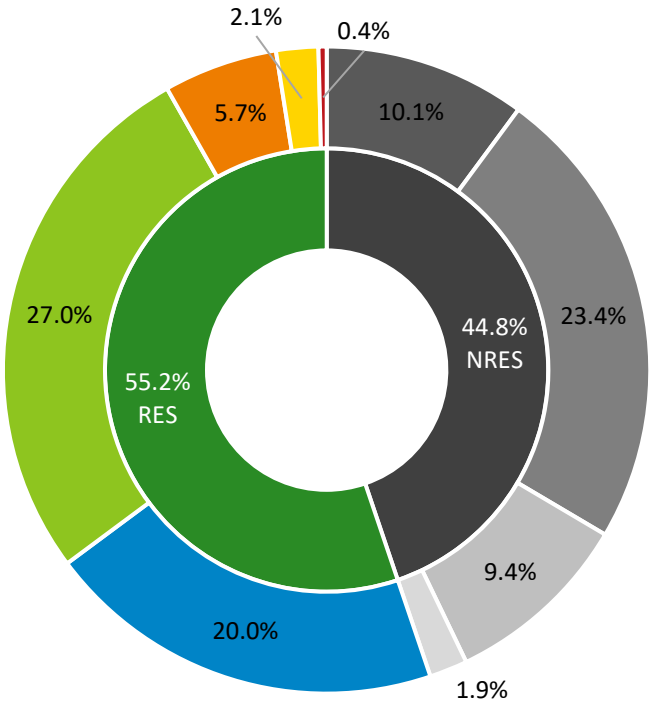
Portuguese Market – Current Status

Renewable Energies in Portugal

Portuguese Electricity Production, 2019

- Geothermal
- Solar
- Bioenergy
- Hydro
- Wind
- Coal
- Natural Gas
- Fossil CHP
- Fuel and Diesel



15 Mt CO_2 avoided emissions

- In 2019, **renewable electricity represented 55.2% (27.8 TWh)** of the total electricity produced in Portugal (50.4 TWh).

Source: REN, APREN's analysis

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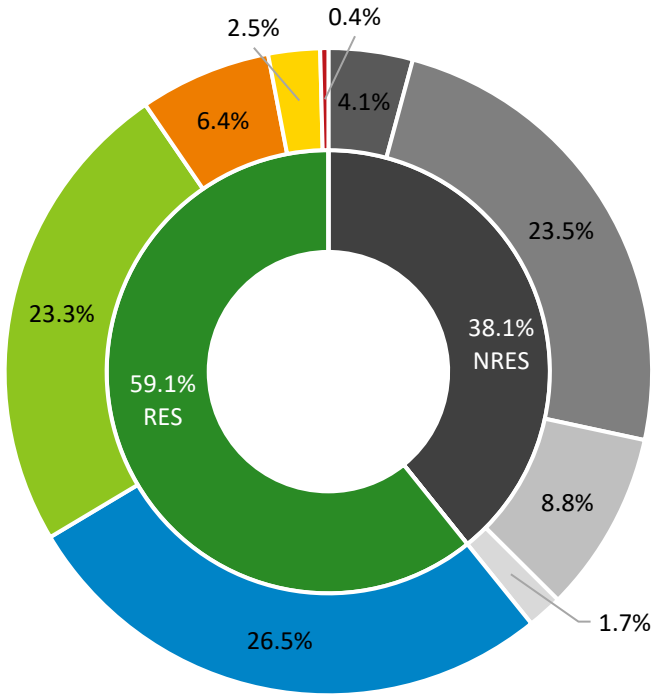
Renewable Energies in Portugal

Portuguese Electricity Production, 2020

- Geothermal
- Solar
- Bioenergy
- Hydro
- Wind
- Coal
- Natural Gas
- Fossil CHP
- Fuel and Diesel



17.8 Mt CO_2 avoided emissions

- In 2020, **renewable electricity represented 59.1% (30.9 TWh)** of the total electricity produced in Portugal (50.9 TWh).

Source: REN, APREN's analysis

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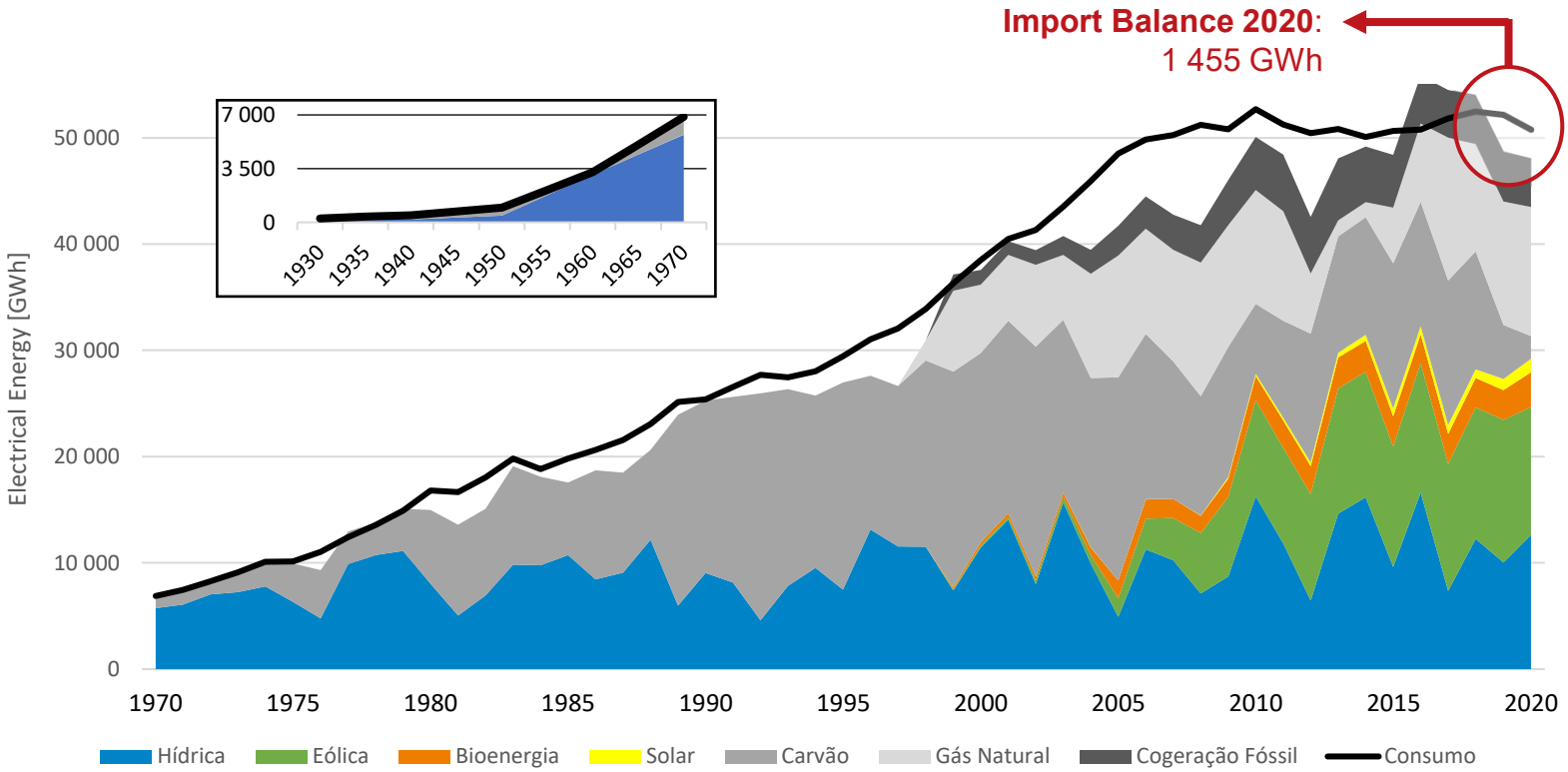
Renewable Energies in Portugal

Electricity generation in mainland Portugal 1970 - 2020



Source: REN, EDP, Apren's Analysis

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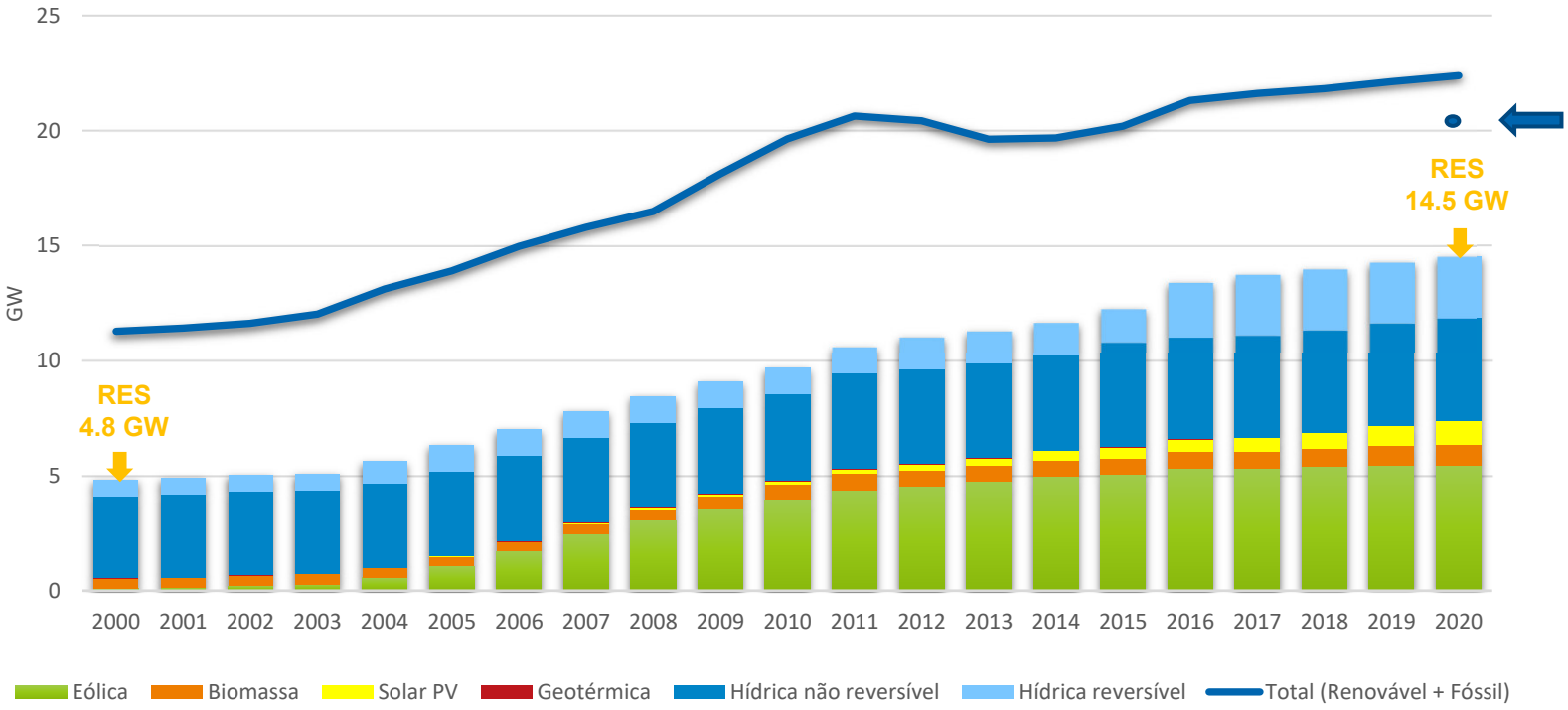
Portuguese Renewable Installed Capacity 2000 - 2020

In **20 years**, the renewable installed capacity has grown **3.02 times**



Source: DGEG, APREN's Analysis

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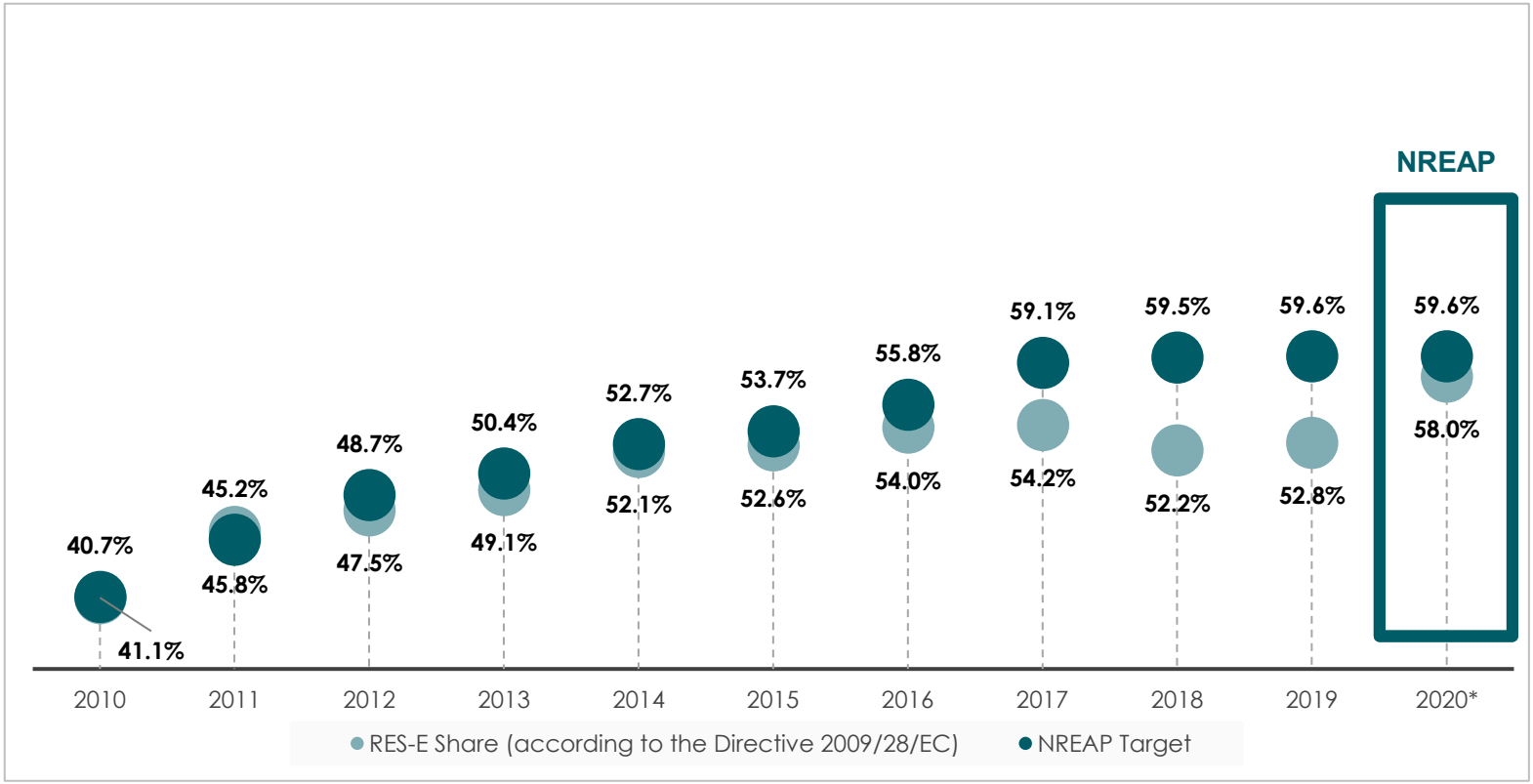
Renewable Energies in Portugal

Renewables Share in the Electricity Mix Targets 2010-2020



Source: PNAER; DGEG, 2019

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National Energy and Climate Plan 2030

Renewable Energies in Portugal

NECP 2030 Objectives

- Decarbonize the national Economy
- Give priority to Energy Efficiency
- Reinforce the deployment of renewable energies and reduce the external Energy Dependency
- Guarantee the Security of Supply
- Promote sustainable green mobility
- Promote sustainable agriculture and carbon capture
- Develop an innovative and competitive industry
- Guarantee a just, democratic and cohesive Energy Transition

Source: PNEC 2030

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Renewable Energies in Portugal

NEPC Targets vs. Clean Energy Package

	Decarbonis.	Energy Efficiency	Energy Security	Internal Market	Investigation, Innovation and Compet.
Decarbonise the national Economy	3	2	1	1	3
Give priority to Energy Efficiency	3	3	1		3
Promote Renewable energy	3		3	2	3
Guarantee the Security of Supply	1		3	2	2
Sustainable green mobility	3	3	1	1	2
Sustainable agriculture and carbon capture	3	1			2
Develop an innovative and competitive industry	3	2			3
Just, democratic and cohesive Energy Transition	3	2	1	2	1

Source: NECP 2030

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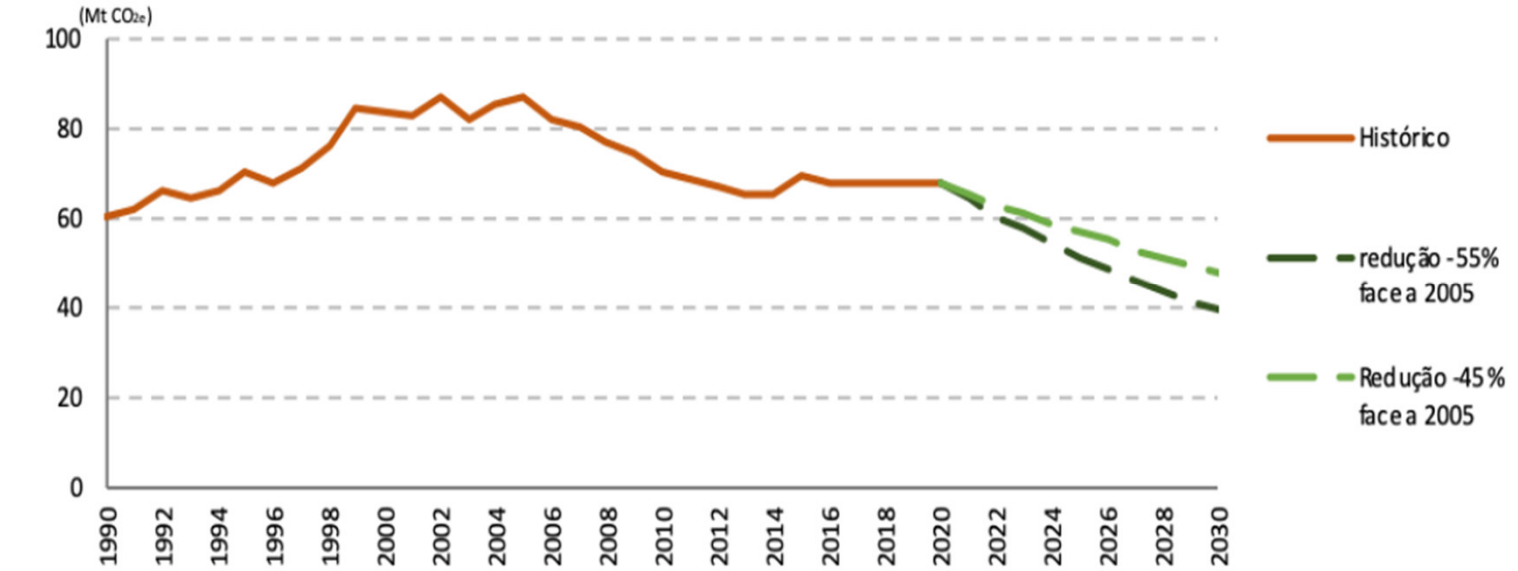
GHG emissions and 2030 reduction targets Evolution



Source: NECP 2030

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2030 National Targets

	2020 Target	2030 Target
GHG Emissions	- 18% to -23%	-45% to -55%
Energy Efficiency	25%	35%
Renewable Energy	31%	47%
Electricity	59.6%	**80%**
Heating & Cooling	34%	38%
Transports	10%	20%
Interconnections	10%	15%

Source: NECP 2030

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Renewable Energies in Portugal

Renewable Electricity until 2030

	2020	2030
Demand	56 TWh	~65 TWh
Renewable Electricity	53.7 %[1]	80 %
RES Installed Capacity	14.8 GW	27.4 – 27.9 GW
Hydro	7.0 GW	8.2 – 8.7 GW
Wind	5.4 GW	9.3 GW
Solar	2.0 GW	9.0 GW
Large scale	1.5 GW	7.0 GW
Small and medium scale	0.5 GW	2.0 GW
Other RES[2]	0.4 GW	0.9 GW

1 - DGEG, Estatísticas Rápidas – Renováveis, Dec. 2019
2 – Includes Waves, Geothermal, Concentrated Solar thermal and Biomass (excluding cogeneration)

Source: NECP 2030

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Goals for renewable technology in electricity

Hydro	Alto Tâmega hydropower plant, with 1.2 GW In Madeira, expansion of the Calheta Hydropower Plant
Onshore & Offshore Wind	Repowering of existing wind fleet WindFloat - 25 MW, project in Viano do Castelo
Solar	Solar auctions for large scale New regulation for decentralised production
Biomass	Energy recovery through cogeneration
Geothermal	Azores - enhance the exploitation of geothermal resources Increase in installed capacity
Waves	Expand the Economy of the Sea, explore the potential of wave energy

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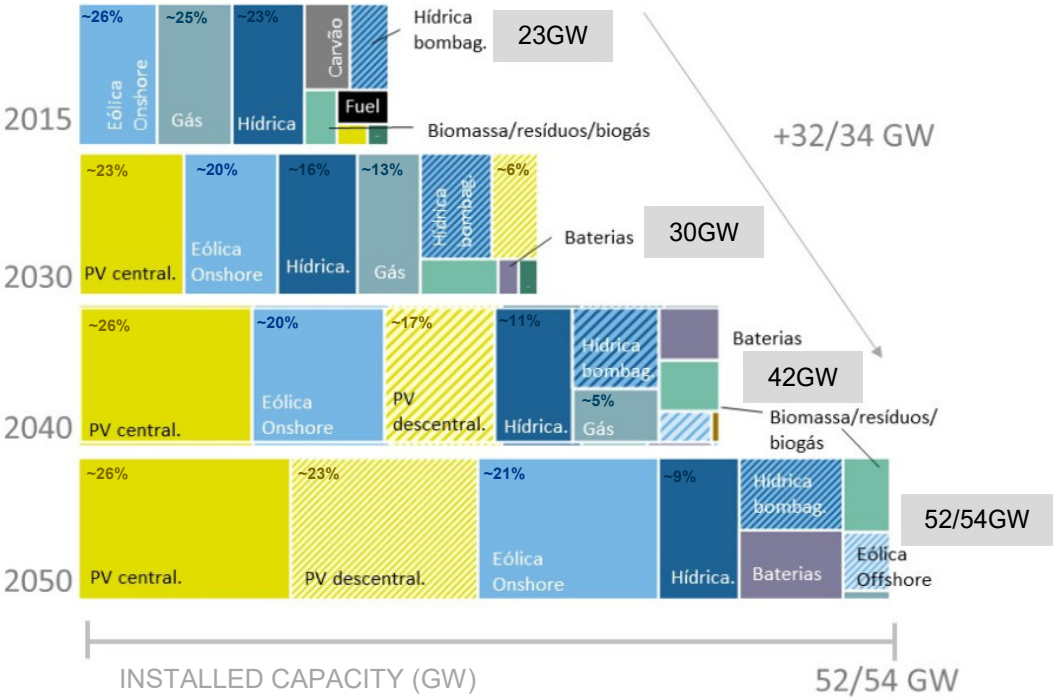
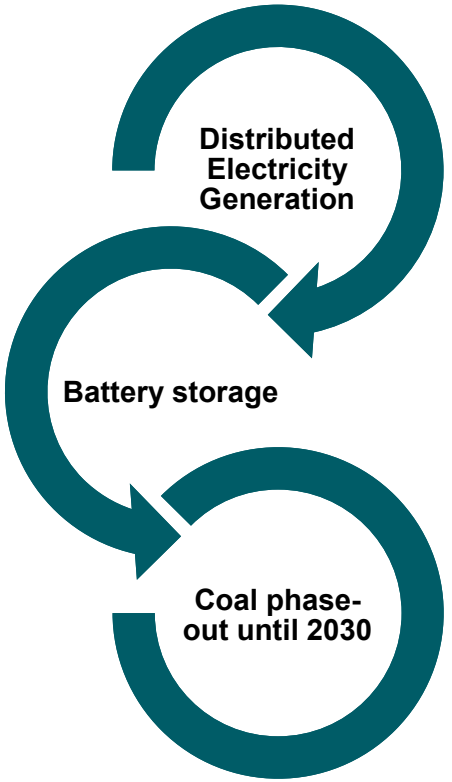
Electricity until 2050





Source: RNC 2050, Cenário Pelotão e Camisola Amarela, 2018

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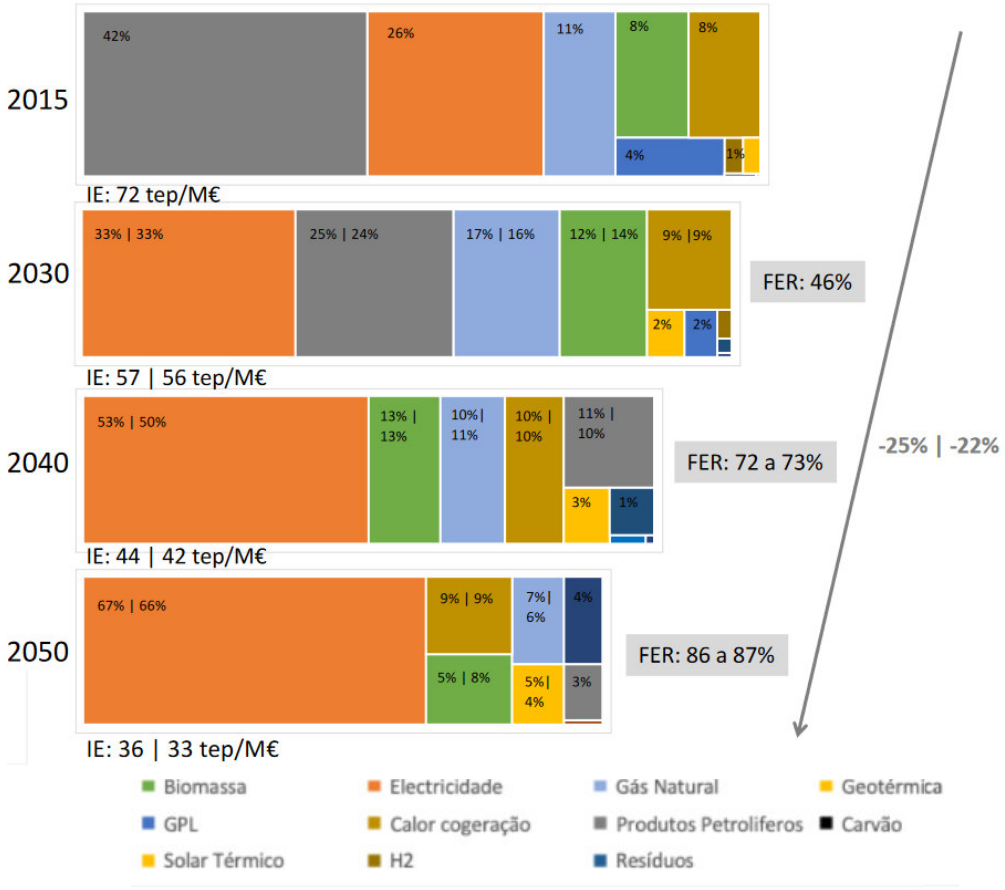
Energy Consumption until 2050



Source: RNC 2050, Cenário Pelotão and Camisola Amarela, 2018

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NECP 2030 Next Steps

Sources: European Comission, 2018

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Main Challenges

REGULATORY AND FINANCIAL STABILITY

- Process for the attribution of production permits (capacity)
- Capacity auctions design
- Regulation for PPAs
- Energy Taxation measures

SIMPLIFICATION PERMITTING PROCESS

- No "One-stop-shop"
- Difficult interaction with the different involved parties

Environmental requirements and protection of fire-risk zones

- High response times

GRID EXPANSION AND ADEQUACY

- No grid investments in the last years, lack of capacity for new projects
- Review of Grid Investment and Development Plans in accordance with higher connection capacity needs

Risk of not meeting 2020 targets

- RES-E in risk of not complying with the 2020 target
- Market stagnation due to crisis

High tariff debt

- Measures to reduce debt
- Public opinion
- Reduce tariff to consumers

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Thank You!

Fim da 1ª parte

APREN Associação de Energias Renováveis

www.apren.pt