ENERGY AND GEOLOGICAL RESOURCES IN PORTUGAL
Portugal developing important endeavors in the energy sector

To ensure future sustainability, the focus should be placed:

- Adoption of *rational economic criteria* in the development of the power supply systems;

- Ensure strong energy interconnections to Europe enabling the flow of renewable electricity for the European market, as a cost effective solution for achieving the European targets;

- *Diversification of energy sources*, namely in the gas sector, enabling imports to the EU from alternative origins (America, Africa);

- Promotion of *competitive markets*;

- Keep tracking and monitoring *adequacy and security of energy supply*. 
Renewable Energy in final energy - European Union countries

Portugal's Renewable energy target for 2020 is the 5th most ambitious of the European Union

Source: Eurostat
Portuguese performance in international news headlines

Portugal is among European Leaders in Renewable Energy!

Portugal generated more renewable energy than it needed in March 2018, for the first time in at least 40 years.
NREAP 2020


**Global goals:**
- 31% gross final energy consumption (GFEC) from renewable energy sources (RES)
- External energy dependence reduced to 70%

**Sectoral goals:**
- 60% of electricity produced from RES
- 10% of energy used in the transport sector from RES
Global goal evolution regarding RES in the gross final energy consumption in Portugal

Source: DGEG, April 2018
Installed electricity generation capacity in Portugal

Source: DGEG, April 2018
Highlights of 2020 projections

• Hydropower – new 270 MW to a total of 7108 MW
• Biomass – new 172 MW to a total of 914 MW
• Wind – new 145 MW to a total of 5458 MW (+repowering of existing power plants)
• Photovoltaic – new 695 MW to a total of 1162 MW
Energy Efficiency Regulations in Portugal

Energy audits and assessments included in existing mandatory regulation systems cover sectors of activity that represent 97% of final energy consumption.

**Mandatory Regulation Systems**

- **Regulation for Managing Energy Consumption in Transport Sector (RGCE)**
  Ordinance n.º 228/90, March 27th

- **Intensive Energy Consumption Management System (SGCIE)**
  Decree-Law n.º 71/2008, April 15th

- **Energy Certification System (SCE)**
  Decree-Law n.º 118/2013, August 20th

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**SGCIE Operation**

**Audit**
- Conduct an energy audit
- Elaborate the Energy Consumption Rationalization Plan (PREn)

**Delivery Plan**
- Delivery (online) energy audit and Plan for approval.
- The approved plan becomes a Rationalization Agreement of Energy Consumption (ARCE)

**Online registration**
- SGCIE website
- Facilities operators with consumptions over 500 toe/year registration
- Voluntary registration
- Energy auditors registration for recognition

**Biennial Reports**
- Access to incentives
- Penalties are foreseen for non compliance of targets

**Incentives and Penalties**
- Delivery (online) of Execution and Progress Report (REP) every 2 years

The 1202 Rationalization Plans approved will reduce energy consumption by 135.669 toe and emissions by 539.863 tCO₂
Energy Efficiency in Transport (RGCE)

Smart choice of transport means

More efficient fuels

Mobility solutions

Or not...
Energy Certification System (SCE)

Energy certification is currently required in the advertising of properties and in the conclusion of real estate sale or lease contracts and in new buildings.

The service classifies the energy performance of a property on a scale from A+ to F, and recommends a set of improvement measures.

1,4 MILLION ENERGY CERTIFICATES ISSUED

Energetically more energy-efficient homes lead to energy bill savings and improvements in comfort and health.
Mainland Portugal, along with its semi-autonomous island regions of the Azores and Madeira, offer a market of approximately 11 million people.

As with all EU countries, Portugal’s borders and ports are completely open to the free flow of trade with other EU member countries.

Portugal has a politically stable environment with a democratically elected parliamentary government and is welcoming of foreign business and investment.

As one of the charter members of the European Union (EU), it is fully integrated with the EU, uses the Euro currency, and follows directives from the EU Commission.
Competitive advantages

MARKET
- PORTUGAL is a open door to market of 500 million people in Europe and more than 250 million Portuguese speaking consumers

SKILLS and Technology
- High level of education in business-oriented areas
- Top Country in providing technological services

Quality of Life
- A good country to invest
- A great place to live and enjoy
- Safe, sunny, with unique nature
Portugal is Mining Country

- One of the oldest mining traditions in the western world where mining started before Roman times
- Until the mid 80’s Portugal had more than 30 different mines active
- There are several villages which have created and expanded around working mines
- A complex and diversified geology with a significant potential in base metals, precious metals and strategic minerals
- The Portuguese Geological has more 150 years of history
- A large number of mineral occurrences virtually unexplored
- Second producer of tungsten and third of copper in Europe
Portugal mineral highlights...

**European Ranking:**
- Copper – 3rd
- Tungsten – 2nd
- Ornamental stones – 4th

**Critical Raw-Materials:**
- W, Sb, In, Nb, Ta, Be, Ge

**Other relevant resources:**
- Fe, Zn, U, Sn, Au, Ag, Mn
- kaolin, special clays
- Quartz, feldspar
- Special sands
- Halite, gypsum
- talc
- Aggregates ...

**Metallic Active Mines**
- Neves-Corvo (Cu and Zn) – Lundin Mining
- Aljustrel (Cu and Zn) – Almina
- Panasqueira (W) - Almonty
Non-Metallic Mining

- World class: marbles, limestones.
- Other relevant deposits: kaolin, quartz, feldspar, special clays, special sands, halite, gypsum, talc, granites, slates, aggregates, ...

Main production centers of ornamental stones

Marbles production region - Alentejo
Mining in Numbers

Geological resources production

About 900 Million €/year

Exploitation areas ≈ 63,889 ha

Exploration areas ≈ 1,055,883 ha
Lithium - An Opportunity in Portugal

Currently

- Has the target of 31% energy renewable by 2021
- In 2016, 28.5% of its energy was renewable
- More than 60% of the electricity is renewable

Potential areas for Lithium exploration

Next Steps

- More than 800 MW of application to produce energy with photovoltaics
- There will be the need to store energy
Due to its geological diversity, Portugal is very rich in natural mineral waters, with different physicochemical compositions. Since remote times, some of these waters have recorded very important characteristics, to which have been assigned unique properties for health purposes, namely to cure illnesses. This represents an important asset when compared to other groundwater.

Over the years, the composition of these waters has raised the interest of scholars from several scientific areas. However, these studies are focused mainly on the physical chemical characterization of the waters.
Natural Mineral Water – Type of using

Depending on its characteristics, they can be used in spas for bottling and as geothermal energy source.

Being, by excellence, good quality resources, natural mineral waters can constitute a considerable economic value for their region, once they are associated with “environmental friendly” activities that boost tourism.
Bilateral Cooperation

Number of institutional instruments for bilateral cooperation signed between Portugal and third countries on energy and geological and mineral resources

North America: 2
South America: 3
Africa: 11
Asia: 6
Europe: 1