



IBERDROLA

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The fight against climate change as an opportunity for Europe: A viable scenario from a business perspective

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Context

In spite global progress towards combating climate change, speed is not fast enough: more ambition is needed



1. **Climate change** is, probably, the **greatest challenge facing humanity**
2. We are **already seeing its negative consequences** but scientists are telling us that these will be much more important in the future
3. The **Paris Agreement was a historic milestone** which is now facing the challenge of developing its implementation guidelines and ratcheting up ambition in the revision phase.
4. However, climate science is telling us that we are **not moving fast enough**, that we have to be **more ambitious** and that we have to **act NOW**

Decarbonization of energy sector is viable: the Spanish case

Companies are ready to invest but clear targets and robust policies are needed

Electricity sector is at the core of the decarbonization process

Ending remarks



European Union has set the foundations for its long term climate strategy ...



... and has now the opportunity to increase its current 2050 targets

- EU set **2030 goals** ...
 - **Emissions** reduction (ETS y diffuse sectors)
 - **Renewable** energy
 - **Energy Efficiency**
- ... And has launched a process to develop an **EU long term climate strategy** by **first quarter 2019** to meet Paris Agreement mandates.
- In the **horizon 2050**, EU has committed an **80-95% emissions reduction** compared to 1990

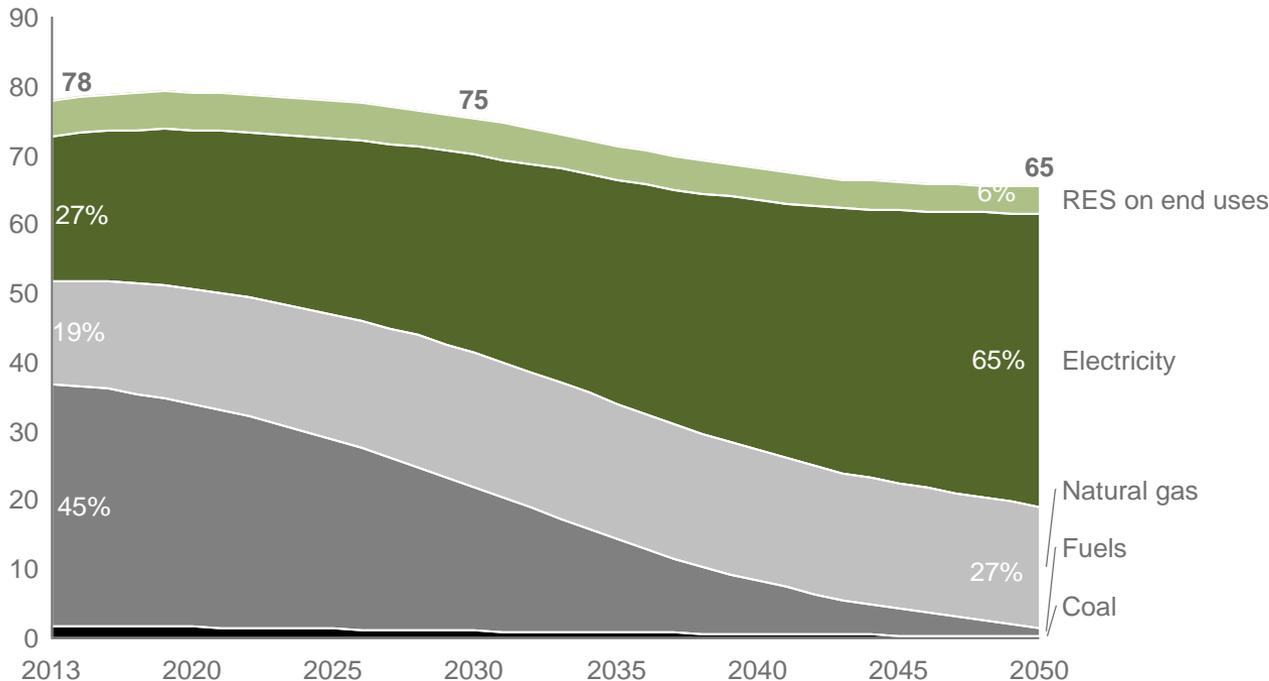
EU goals implemented at member state level: the Spanish case (I)



A sustainable scenario is key to show which energy sector paths meet EU goals effectively and efficiently

Final energy consumption by energy source in a “Sustainable Scenario” that meets EU goals (Mtoe)

Emissions (MtCO ₂)	~322	~310	~250	~88
Fulfilment of EU goals		✓		✓



- Reduce **energy consumption**
- Phase out **oil and coal**
- Maintain **gas** as a transition energy wherever electrification is not viable
- Reach high penetration of **renewables**, through the **electricity** sector

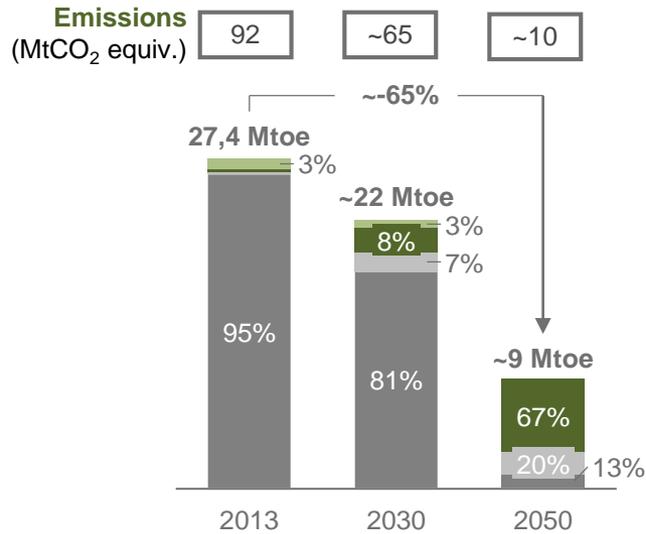
EU goals implemented at member state level: the Spanish case (II)



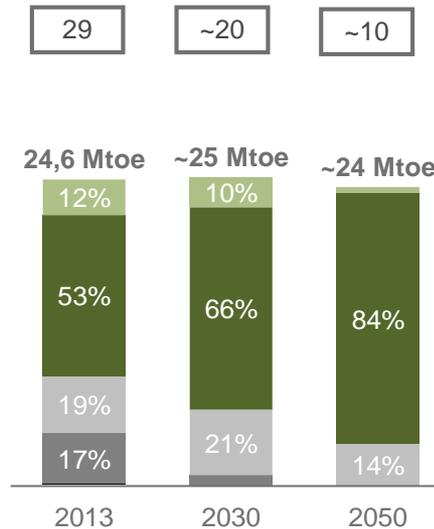
Electrification of transport & buildings is key to meet climate goals in a cost effective way

Breakdown of final energy consumption by sector (Mtoe)

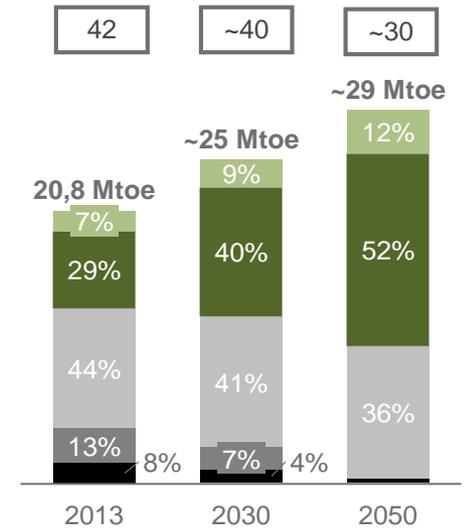
a) Transport



b) Buildings



c) Industry



■ RES in end uses
 ■ Electricity
 ■ Natural gas
 ■ Fuels
 ■ Coal

- **Electrification ~100% of light vehicle fleet** and increase of rail and electric trucks in freight transport (~85%) by 2050

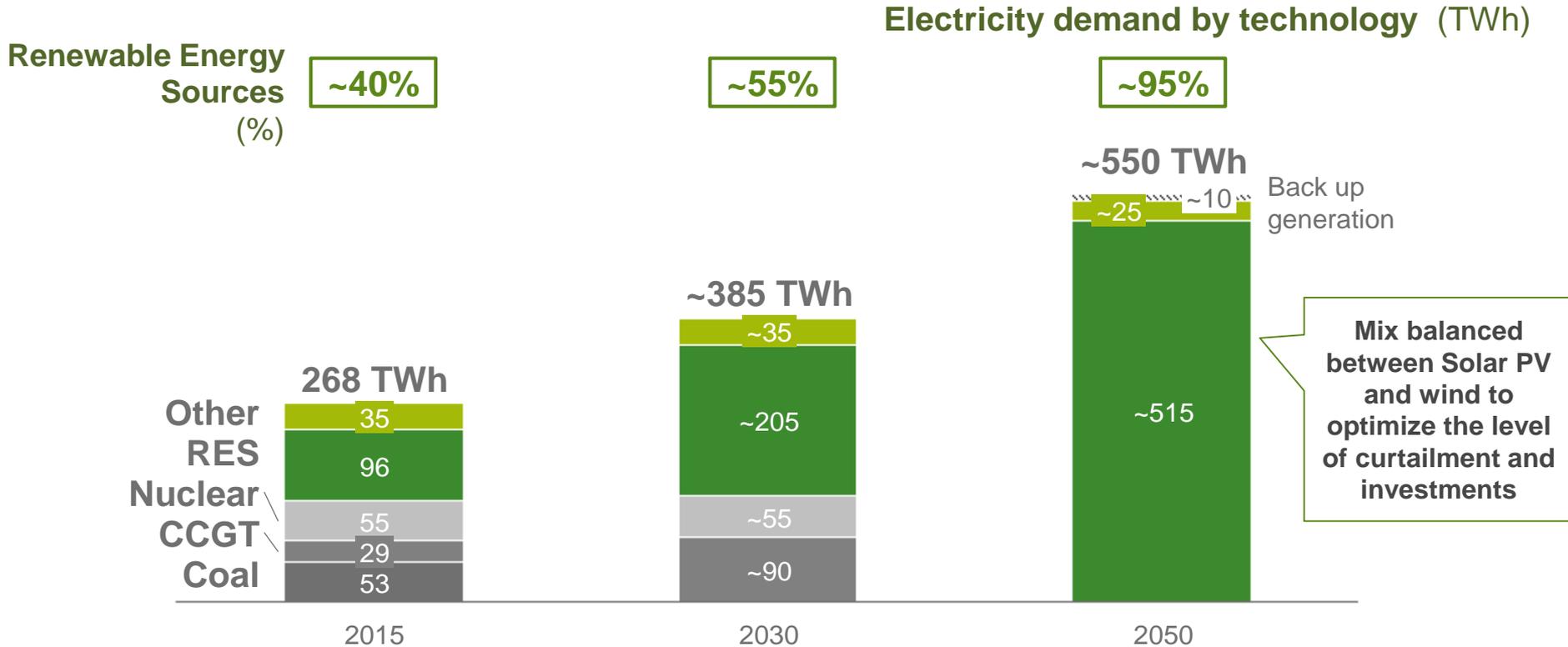
- **Electrification of Heating & Cooling in Buildings** (important role of Heat Pumps)

- **Different penetration depending on the characteristics of each industry**

EU goals implemented at member state level: the Spanish case (III)



Electricity model will be almost fully based on renewable energy sources by 2050 (~95%)



No new firm capacity required for 2030 and only some open gas cycles in 2050

EU goals implemented at member state level: the Spanish case (IV)

A sustainable pathway has challenges but involves a wide range of positive impacts

The **breakthrough evolution of clean technologies** make this scenario viable:

Technically

Economically



Not only are they viable, but they are desirable:

Air quality and health improvements

More affordable energy (25% bill reduction by 2030 and 33% by 2050)

Less energy dependence (from 80% to 40% by 2050)

Huge opportunity to strengthen growth, create jobs and improve conditions of vulnerable consumers

To materialize these opportunities Europe needs to move ahead. Others are doing so



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Companies are ready to invest and technologies are available...

... But there are barriers and a need of a robust climate policy frameworks to ensure effective implementation of climate goals

*Key
elements
of a robust
policy
framework*

- **Targets for 2030 and 2050**
- **Crosscutting policies** such as:
 - **taxation** based on the “**polluter pays principle**”
 - elimination of costs which are not related to supply from electricity prices, removal of fossil fuel subsidies
 - promotion of **information** and awareness...
- **Sectoral plans** and measures to address barriers to decarbonisation in different fields

Essential role of the Environmental Tax Reform based on “polluter pays principle” (CO₂, pollutants...)...

... Not always implemented in the current tax system

Environmental tax reform based on the “polluter pays principle” is essential ...

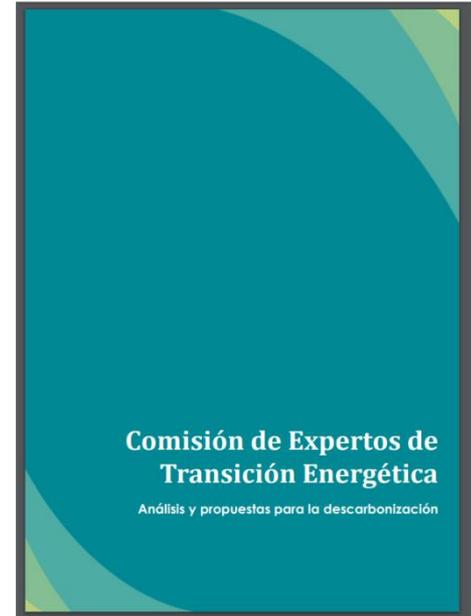
... as it can provide the price signals and positive overall economic impacts

Expert Commission for Energy transition (Spanish Government) guidelines for environmental fiscal reform

Principles

- **Internalization** of the **environmental costs** of all energies
- **Substitution of current energy taxes** for new ones that internalize all externalities (CO₂, NO_x, SO₂, PM)
- All REs subsidies paid by all energy consumers

- **Estimated impact:**
 - **GDP+0.8%**
 - **270,000 new jobs**



A well defined Environmental Tax Reform is key today since there is a growing competition between final energies



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Electrification based on RES is key to decarbonize EU economy...



.... **But changes in policies are needed to tackle it successfully**

- **Electricity based on RES** is key to decarbonize **end uses** (housing, transport...) due to greater efficiency and technical feasibility.
- The **huge penetration of RES** will involve **challenges** under the current design of the **market** (firm and flexible capacity needed, management of intermittency...)
- **Right policy signals needed to account for RES characteristics** (intermittency, firmness...) for an adequate operation and investment.
- **Tariff structures and network charges** must also be designed to reflect System costs and allow participation of consumers in an efficient and equitable way

ELECTRIFICATION CHALLENGES...

... NEED FOR POLICY CHANGES



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Decarbonization is possible, viable and good for EU society

1. Energy sector decarbonisation is **possible** and **desirable** and is an **opportunity** that the EU cannot pass up
2. **Clear targets** and **policies** to achieve them are required: environmental **taxation** based on the “**polluter pays principle**” is essential
3. The **electricity sector** plays a **vital role** in achieving an **efficient and fast decarbonisation** with widespread penetration of **renewables**. **Technical changes must be solved** and **new policy arrangements** be applied.