Just E-volution 2030

Conceptual Map

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There are 7 reasons why the **electric carrier is pivotal** for energy transition

1. It allows to **reduce CO_2 emissions** when electricity is generated through an energy mix integrating a significant share of renewables and it enables the reduction of pollutant emissions **improving air quality**, in particular in urban areas

2. It reduces **noise pollution**, limiting annoyance, stress and sleep disturbance limiting the risks of hypertension and cardiovascular diseases, thus improving the quality of life, in particular in urban areas

3. It offers several opportunities to **improve the resilience and the security** of supply of the overall energy system

4. It promotes **higher levels of energy efficiency** reducing the energy demand and the GHG emissions

5. It can be easily integrated with **digitalization**, enabling more effective energy consumption management and higher energy efficiency

6. It stimulates **innovation and sustainability** in lifestyles and industrial processes

7. It can play an important role in favouring **Circular Economy**, thanks to the innovation brought in renewable energy production, energy storage and structural changes in the system

Policy objectives concerning energy transition are agreed at global, European and national level

Global

- United Nations Sustainable Development Goals (SDGs) implying a new development paradigm
- Objectives set by COP21 and Paris agreement, i.e. holding the increase in the global average temperature to well below 2°C above pre-industrial levels, while pursuing efforts to limit it to 1.5°C
- COP24 implementation strategy (Katowice rulebook)

Policy targets set at the EU level in the Energy and Climate framework

EU

32%
Share of renewables (RES) on final energy consumption at 2030

At least 40%
GHG emissions cut with respect to 1990s levels

At least 32.5%
Improvement in energy efficiency by 2030

Transposition of the EU policy targets in the **National Energy and Climate Plans**

Italy

29.7%
RES share

-40%
GHG emissions vs. 1990

Final energy consumption reduction by **0.8%** per year from 2021 to 2030

Spain

42%
RES share

-21%
GHG emissions vs. 1990

39.6%
Improvement in energy efficiency by 2030

Romania

27.9%
RES share

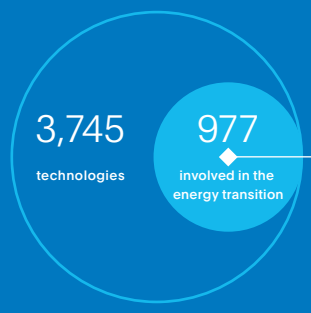
-43.9%
GHG emissions vs. 1990

37.5%
Improvement in energy efficiency by 2030

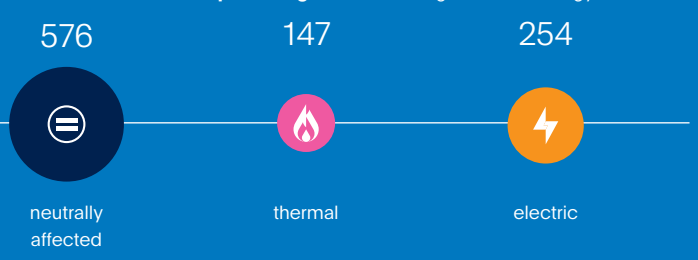
A brand-new econometric model allows to estimate the **impacts of energy transition in EU28, Italy, Spain and Romania**

1. Exploitation of ProdCom database embedding **3,745 technologies** and representing the whole industrial production of the EU28 and its Member States

2. Identification of **977 technologies** involved in the energy transition enabled by electrification and entering in the estimation model



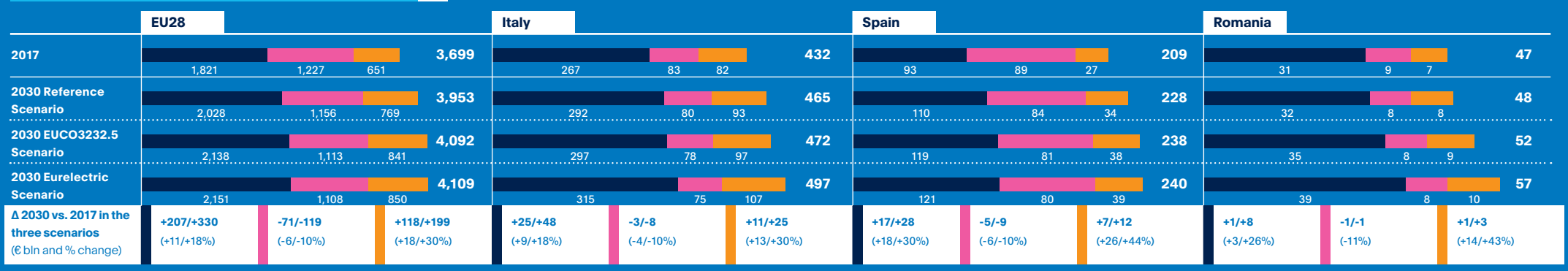
3. Assessment of their **prevailing nature** with regard to the energy transition:



4. Estimation of the **production values** of electric and thermal technologies at 2030 according to the evolution of final energy demand in three different scenarios (EU Reference Scenario, EUCO3232.5 Scenario and Eurelectric Scenario), implying a different growth of electrification with an *ad hoc* analysis for electrification bundles

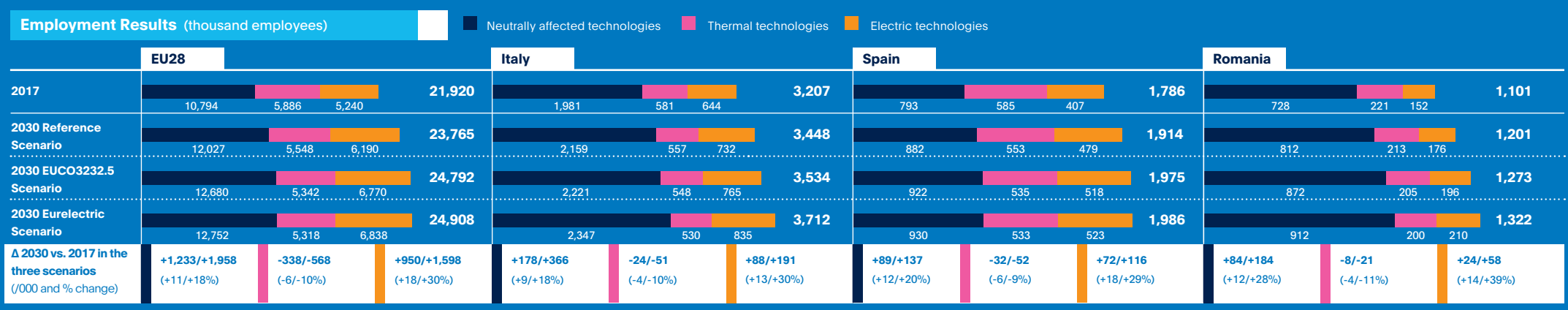
5. Reconciliation of the **employees'** number (from Eurostat) corresponding to 977 technologies and estimate of their variation at 2030

Production Values Results (billion Euros)



PRODUCTION VALUE OF ELECTRIC, THERMAL AND NEUTRAL TECHNOLOGIES IN EU28, ITALY, SPAIN AND ROMANIA IN THE REFERENCE, EUCO3232.5 AND EURELECTRIC SCENARIOS (BILLION EUROS), 2017 VS. 2030. SOURCE: THE EUROPEAN HOUSE – AMBROSETTI ELABORATION ON PRODCOM AND EUROSTAT DATA, 2019.

Employment Results (thousand employees)

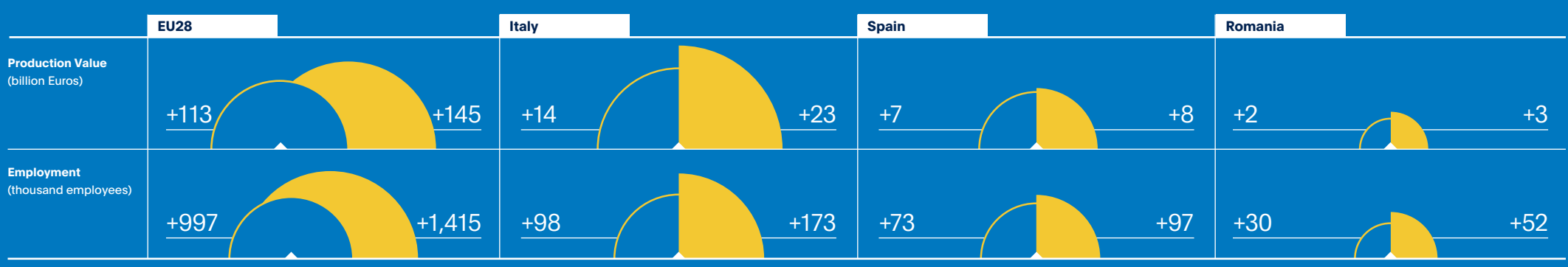


EMPLOYMENT ASSOCIATED WITH ELECTRIC, THERMAL AND NEUTRAL TECHNOLOGIES IN EU28, ITALY, SPAIN AND ROMANIA IN THE REFERENCE, EUCO3232.5 AND EURELECTRIC SCENARIOS (THOUSAND EMPLOYEES), 2017 VS. 2030. SOURCE: THE EUROPEAN HOUSE – AMBROSETTI ELABORATION ON PRODCOM AND EUROSTAT DATA, 2019.

Estimation of the **additional services** than can be activated by electrification and that are not fully grasped by the existing extended value chains

65 billion Euros in the European Union, **6 billion Euros** in Italy, **4 billion Euros** in Spain and **1 billion Euros** in Romania at 2030.
The impact of the energy transition on additional services is added to the net differential effect generated by the increase of electric technologies and the decrease of thermal ones between 2017 and 2030. These values might be underestimated. The fact that some digital services are still in a preliminary phase of development and the literature on this topic is limited might lead to an overall underestimation of the value of digital services at 2030

Net impacts* of the energy transition at 2030 on prodcution value and employment in the European Union, Italy, Spain and Romania



(*) All the effects are ranging between the minimum level (i.e. the EU reference scenario) and the maximum one (i.e. Eurelectric scenario)

The **impact of energy transition on air quality** has been assessed with regard to transport and residential sectors (accounting for >50% of total emissions in the EU)

The substitution of thermal technologies with electric ones in transport (electric vehicles) and residential sectors (heat pumps) can reduce premature deaths in the EU28, Italy, Spain and Romania, respectively by more than **5,000, 1,000, 500** and **170 units** at 2030. Yet, costs related to air pollution in the EU could be reduced from **1 billion to 2.9 billion Euros at 2030**

Energy transition has to face two key challenges

Industrial competitiveness

(Preserving today's industrial competitiveness and creating the conditions for tomorrow industrial competitiveness)

- **Reduction of industrial production** related to thermal technologies and "**absorption**" of the **negatively impacted value chains**
- Strengthening the **present electric technologies value chains** and positioning on **new technological productions**
- Guaranteeing adequate **investment levels** to face the challenges set by energy transition
- Managing **skills mismatch and integration of the workforce**

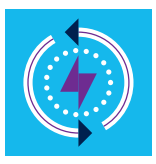
Distributive effects

(Avoiding negative distributive effects across different socio-economic dimensions)

- Effectively ensuring **social assistance and support** to people who will be negatively affected by the transition
- Guaranteeing **equal access to the benefits** generated by the energy transition
- Avoiding **unfair distribution** of costs related to energy transition
- Creating **cost-reflecting and efficient energy markets**

CHALLENGES ASSOCIATED TO THE ENERGY TRANSITION. SOURCE: THE EUROPEAN HOUSE – AMBROSETTI ELABORATION, 2019.

Four policy matters have been identified in order to tackle the challenges related to energy transition and redistribute its benefits



Policy matter 1
Supporting the deployment of electric technologies by promoting an effective value chains conversion toward electric technologies along the overall value chain

- Launching "**Energy Transition Investment Bonds**" to sustain investment with a social impact and economic return
- Setting up **National Energy Clusters** with a specific focus on electrification technologies and, in this context, creating a national **Tech Transfer Lab** focused on electrification technologies
- Introducing **innovative financial schemes for mature technologies** able to deliver high energy efficiency gains with mid-long-term payback period
- Promoting **campaigns to raise awareness of the advantages associated to electric technologies**

Policy matter 2
Managing job losses, increasing job opportunities and addressing the issue of re-skilling and up-skilling

- Envisaging **social measures for workers**, setting up early retirement schemes or providing allowances
- Establishing a "**European Energy Transition Fund**" helping Member States workers who have lost their jobs
- Introducing **new educational programs** explicitly targeting the needs emerging from energy transition
- Introducing **Circular Economy Chairs in top-notch EU universities**
- Implementing a "**Green Apprenticeship Erasmus Program**", aimed at increasing the mobility of apprentices and trainees in sectors that are relevant for energy transition
- Launching a **communication campaign** on the importance of the acquisition of an adequate set of skills

Policy matter 3
Addressing the issue of energy poverty

- Agreeing on a common definition of energy poverty, introducing an **official composite index for measuring energy poverty in Member States**
- Promoting a target program for **improving the energy efficiency of existing housing stocks**
- Developing a **communication campaign** characterized by measures to support and inform consumers
- Fostering **social tariffs** or **energy subsidies for low-income households**, maintaining cost-reflective tariffs

Policy matter 4
Promoting a fair redistribution of costs associated to energy transition

- **Revising cost items within the electricity bill** by transferring the policy costs from electricity bills to public finance
- Discharging the electricity bills from **unproper taxes and levies**

A final recommendation: identifying best practices put in place at international level and transposing them in the European Union and in Member States