DEVELOPMENTS IN ELECTRIFICATION AND IMPLICATIONS FOR THE EUROPEAN ELECTRIC INDUSTRY

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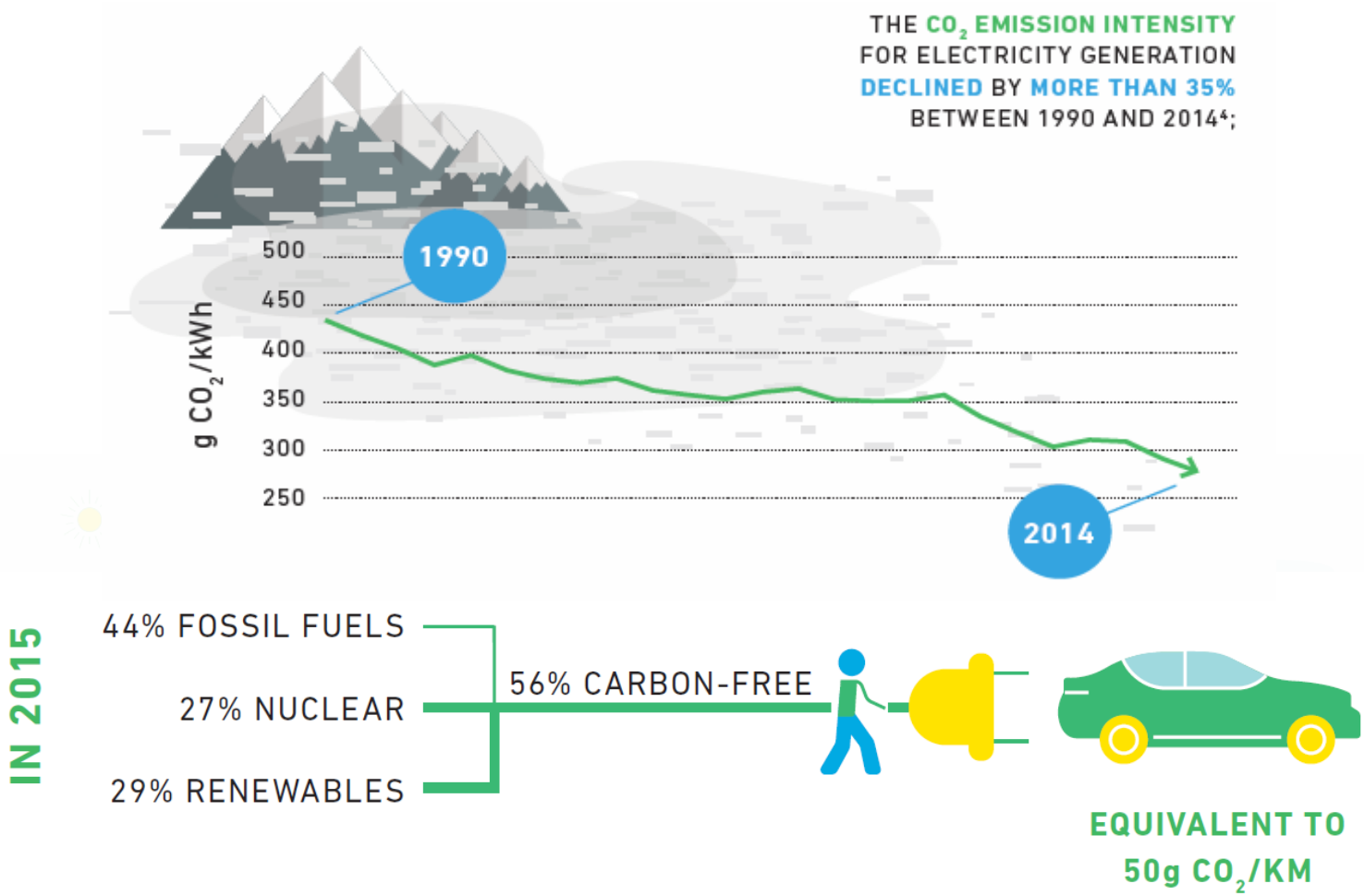
The power sector's value proposition today



Source: EURELECTRIC

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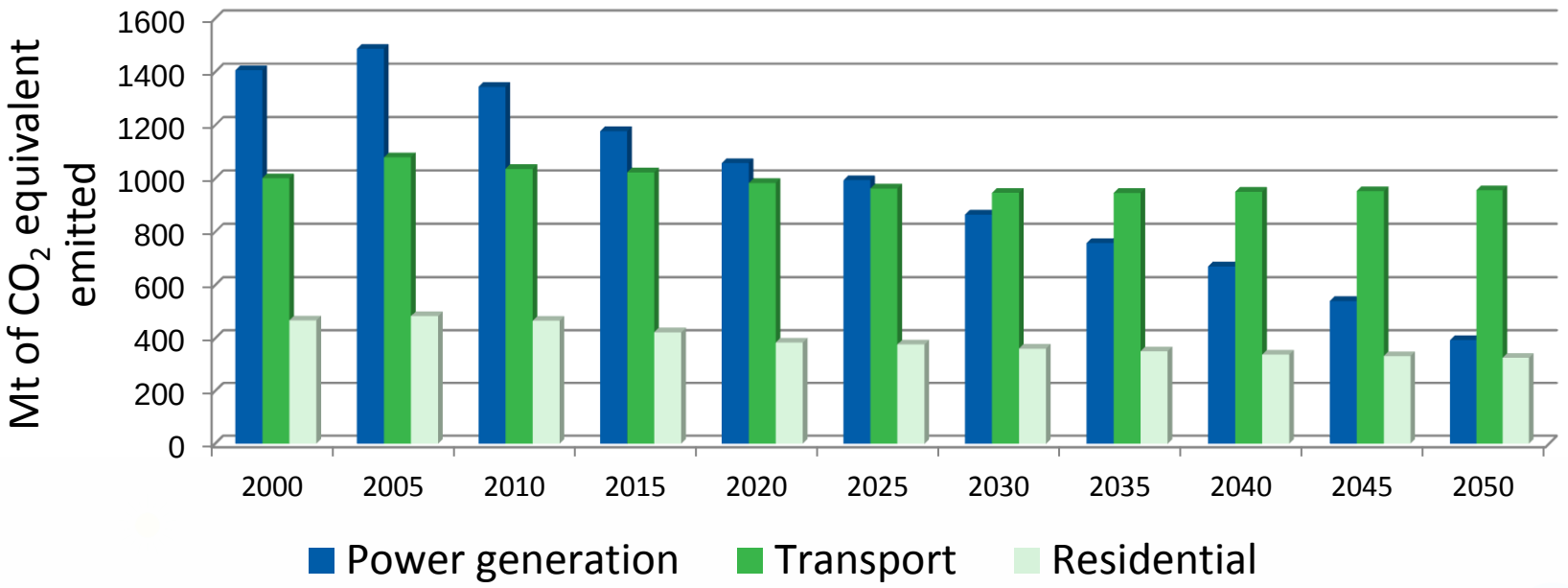
Expanding value through the transport and heating and cooling sectors

1. Enabling system integration
2. Empowering active customers
3. Improving security of supply
4. Improving air quality
5. Increasing efficiencies

Policy enablers to ensure efficient electrification & decarbonisation



Source: EU Ref Scenario 2016

- Strengthen the EU ETS
- Ensure a system approach (smart charging etc.)
- Levelling the playing field of energy carriers
- Recognise & address energy pricing issues
- Overcome the investment gap

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Interlinking transport and electricity networks

Bringing down the TCO for EVs

- One of the main obstacles (along with availability of charging stations) for electro-mobility to take of, is the total cost of ownership (TCO)
- While EVs are more expensive at purchase, fuel cost savings can help to offset this these costs
- Smart charging can generate revenues for EV owners, further reducing the TCOs

Integrating more renewables

- Power prices are usually low during high feed-in of RES
- If smart charging algorithms optimise the charging process with view of lowering costs, EVs will mainly charging during peak RES hours

Keeping additional investment into the grid to a minimum

- Smart charging can also optimise the use of the grid
- If EV owners are compensated for grid-friendly behaviour, EV charging will take place during off-peak hours

Electrification of Heating & Cooling

Decarbonisation

- Firm decarbonisation commitment & timeline for power sector
- No emissions at point of use (better air quality in cities)
- Emissions from generation brought under ETS umbrella
- Reduced energy import dependence via domestically produced power

Unlocking energy system benefits through new technologies

- Modern electric technologies (e.g. heat pumps) are extremely energy efficient, but investment gaps slow their rollout
- High demand peaks for heating requires system solutions, sector coupling (power to x)
- Smart electric tech. & decentralised storage allow higher RES penetration – system efficiency central to reaping the benefits

Providing value to customers

- An active role via demand response, decentral. generation & storage
- Potentially less volatile energy prices due to less imported energy carriers
- Electrification goes hand in hand with digitalisation – policy must foresee this