

# THE BENEFITS OF ELECTRIFICATION

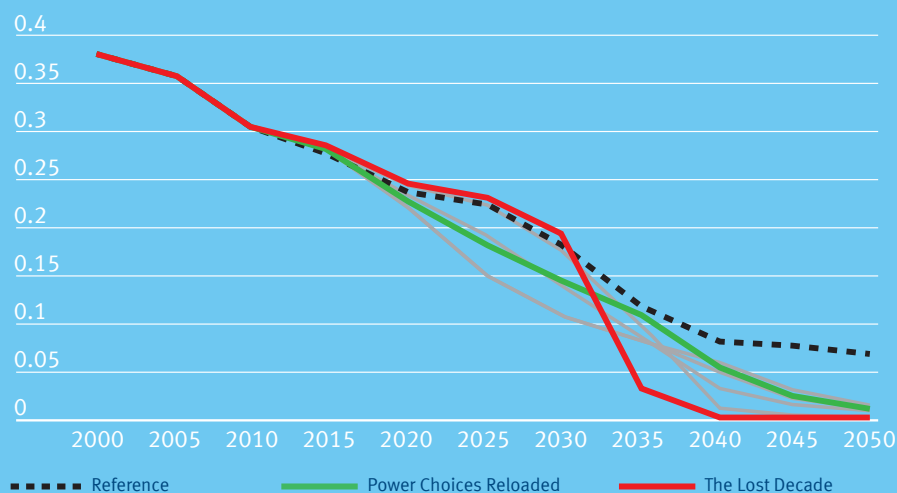
ELECTRICITY'S CONTRIBUTION TO  
SUSTAINABLE ENERGY USE



Decarbonising electricity generation will make a major contribution to meeting Europe's climate change targets.

Electricity is on track to becoming a carbon neutral energy carrier and, if used more widely, will open the door for many more positive changes; spill-overs in sectors which currently have no prospect of becoming fully sustainable.

CARBON INTENSITY OF POWER AND HEAT PRODUCTION ( $\tau\text{CO}_2 / \text{MW}_H$ )



Source: Power Choices Reloaded: Europe's Lost Decade?, EURELECTRIC, 2013

## KEY MESSAGES

### Future prospective benefits of increased electrification include:

- 1 Meeting the world's energy needs with less carbon.**  
Major reduction of CO<sub>2</sub> emissions from local heating in buildings, specifically in urban areas, which traditionally run mostly on fossil fuels. Switching the energy carrier in these sectors to electricity also caps their emissions by effectively bringing them under the EU ETS;
- 2 More electricity can mean more energy efficiency.**  
Technological developments have completely reshaped the comparative efficiency of electricity use versus the use of other energy vectors. Changing an oil burner with a heat pump can save almost 50% of annual primary energy consumption on average. In road and rail transport the numbers can be just as impressive;
- 3 Improving ambient air quality, especially in our cities.**  
Electricity produces no emissions at the point of use and produces ever less emissions when generated. It also implies a significant reduction in noise pollution;
- 4 Strengthening security of supply through diversification and storage.**  
Since power can be produced from many different sources, switching to electricity in sectors such as heating, cooling and transport will help reduce the dependency on fossil fuels. The use of electric vehicle batteries or electric appliances (e.g. water heaters) as flexible demand and decentralised energy storage further opens the energy system to very high renewable penetration;
- 5 Empowering the European customer through choice.**  
Demand response options for consumers make electric solutions more valuable compared to fossil fuelled alternatives. These electric solutions increase the customers' ability to influence their bill with demand response, effectively giving the final customer more power and value.

## TIME TO REVEAL ELECTRICITY'S REAL VALUE

European policy makers are gearing up to take the next steps in setting European energy policy on track towards a nearly carbon neutral economy in 2050. EURELECTRIC, the European electricity sector association, is fully supportive of this path. Already six years ago, the power sector made a pledge to achieve carbon neutral electricity supply by 2050, and has also shown how to do it most cost-effectively. While some of the opportunities for carbon neutral electricity are well known, such as the potential of electric vehicles, much more is possible as the key messages of this document show.

The electrification of transport and heating is therefore a very promising pathway. The good news is that the technologies enabling electrification are no dreams of the future – they already exist on the market or are getting ready for mass deployment (e.g. electric vehicles, heat pumps, smart technologies controlling energy consuming appliances, and direct heating based on low carbon generation). Our current task is to ensure that these technologies can live up to their potential and do their part in transforming the energy system. While there have already been some positive policy signals, much more and much faster progress is possible in the right policy landscape. Therefore the policy obstacles indicated above need to be addressed as soon as possible.

The choices we make today will determine whether we reap the potential benefits from electrification in 10 years, or whether we continue to consume large quantities of fossil fuels in our buildings and means of transport for another generation. If we are serious about decarbonisation, and the power sector is, unlocking electrification in parallel will multiply its benefits for society and the environment.

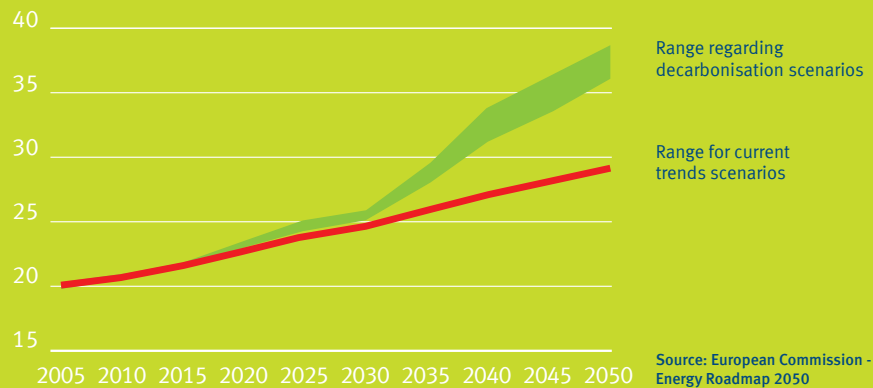
For more information on specific technologies, the full report on the benefits of electrification contains several case studies, which are explained in more detail.

The full report on the benefits of electrification is available at <http://www.eurelectric.org/publications/>



Picture above: Glen Dimplex - Glen Dimplex Smart Electric Thermal Storage System (SETS)

### SHARE OF ELECTRICITY IN FINAL ENERGY DEMAND (%)



Our current task is to ensure that the enabling technologies can live up to their potential and play their part in transforming the energy system. A key enabler to making this transition happen is of course a strong EU Emissions Trading Scheme (EU ETS) with a CO<sub>2</sub> price that drives investments in sustainable and cost effective technologies. However, electrification is being hampered by a number of policy obstacles, notably:

- › **Additional energy policy costs** added disproportionately to power bills compared to gas or oil bills, making electricity more expensive to customers in comparison to fossil alternatives;
- › **Financial barriers**, which slow the progress of new technologies replacing old ones. Innovative financing models require more recognition;
- › **The way different energy carriers are compared in current policies** which maintain a preference for favouring fossil solutions for our energy using appliances & heating systems;
- › **Further factors enabling electrification** (such as innovation and smart grids) can significantly increase the speed and benefits brought about by electrification. The current policy obstacles in these fields must therefore be addressed and removed.



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