

DIGITALISATION OF ENERGY

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5 September 2018

WHAT IS 'DIGITAL' AND WHY IS IT SO TRANSFORMATIONAL?



Explosion of Existing and New Data Sources



Decision support: Data Visualisation, Analysis & Evaluation



Strategy, Digital Readiness & Change Management

Game Changing Potential for Control & Automation



Greater efficiency | Sustainable business | Unlock hidden value

HOW WILL IOT / DIGITALISATION AFFECT UTILITIES

***Change in
barriers to entry***

***Shifts in value across
the supply chain***

***Cultural change/
competition for talent***

***Consumer
empowerment***

***New tools to manage
resources and
emissions***

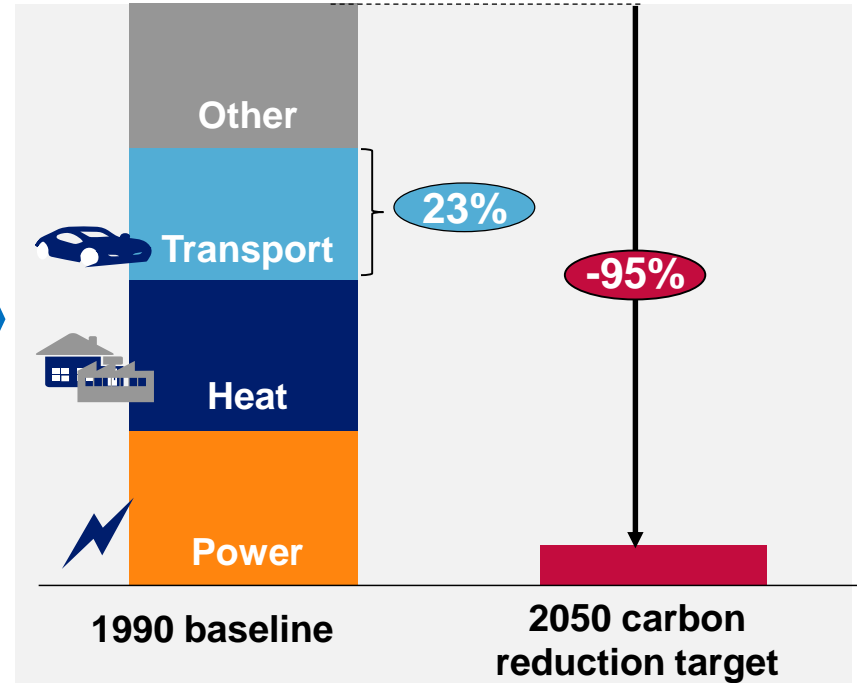
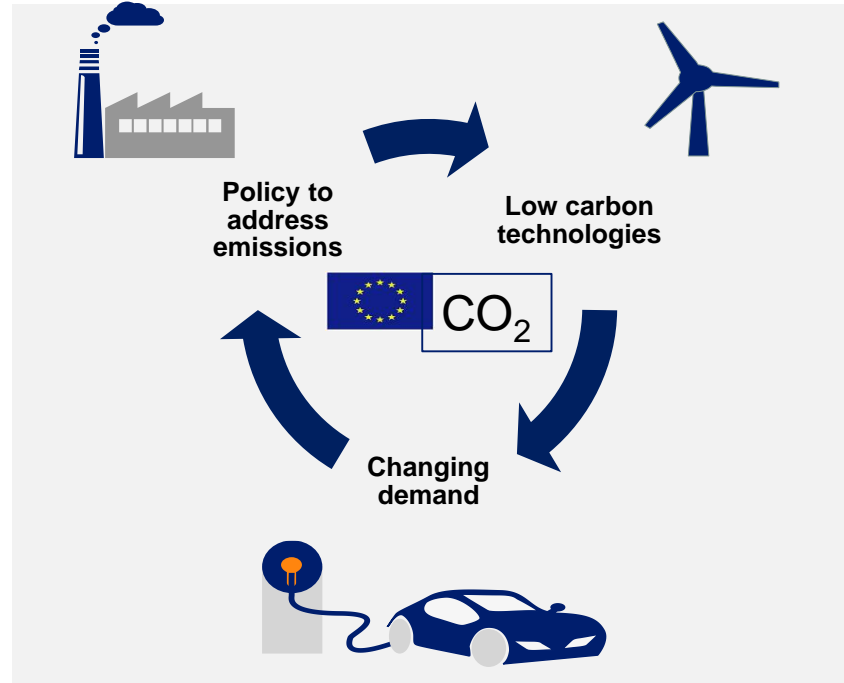
***New enablers, e.g.
blockchain contracts***

***Fast-moving efficiency
frontiers***

***Alignment between
sectors***

HEAT AND TRANSPORT SECTORS ARE ESSENTIAL ELEMENTS OF FULL DECARBONISATION

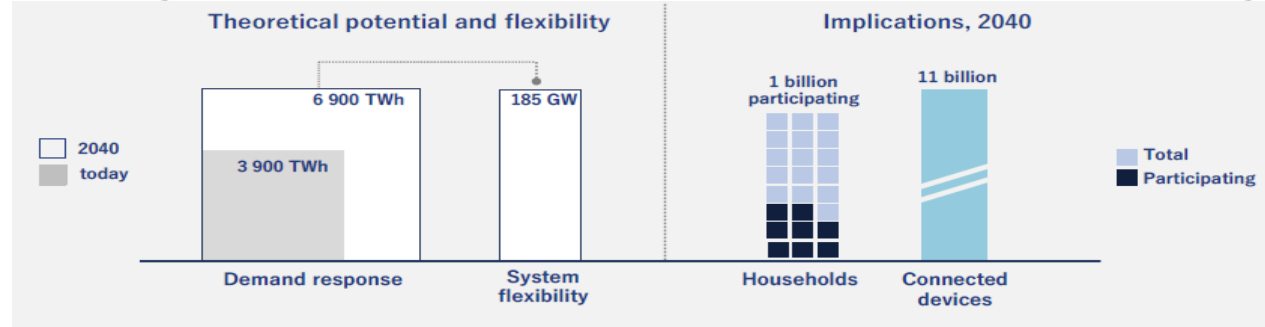
Decarbonisation will be the result of reduction policies, technological shifts and consumer pressure(s)



Source: UNFCCC

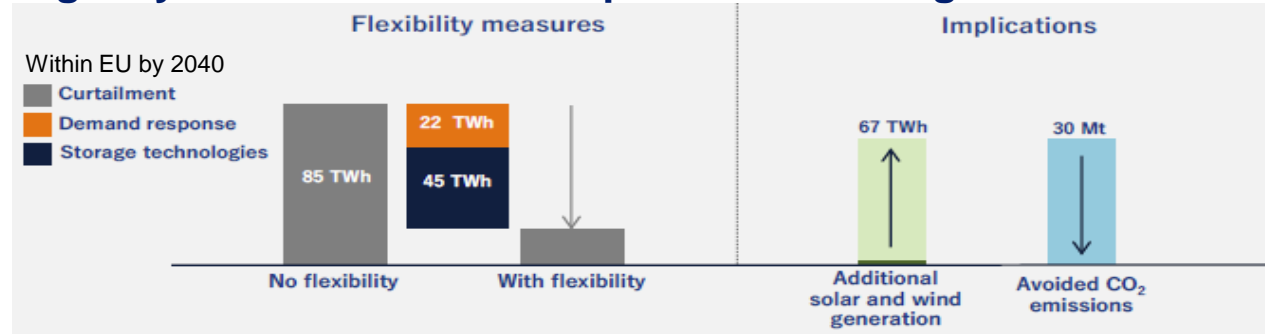
SMART DEMAND RESPONSE WILL HELP THE INTEGRATION OF RENEWABLES

The largest potential for demand response lies in the buildings sector



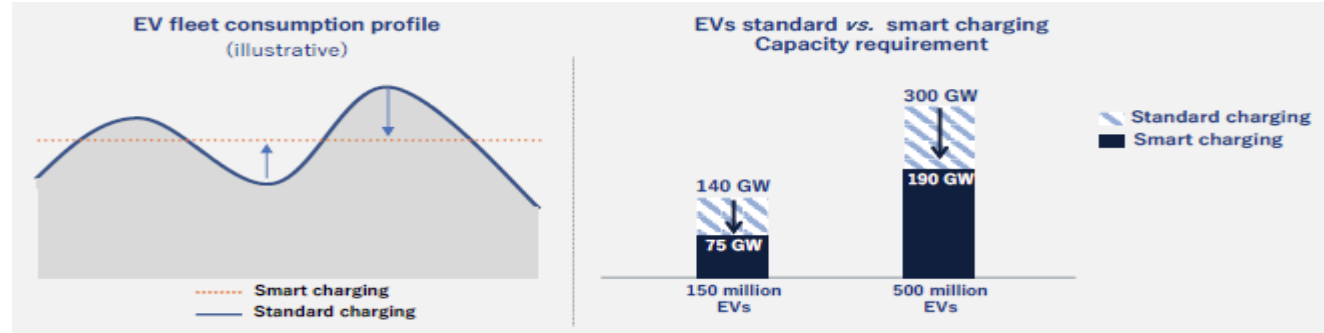
- Greater automation
- Diffusion of Internet of things (IoT) devices in the residential and commercial sector
- e.g. smart thermostats directly connected to the power market and to weather forecast providers

Digitally enabled demand response and storage will reduce renewable curtailment



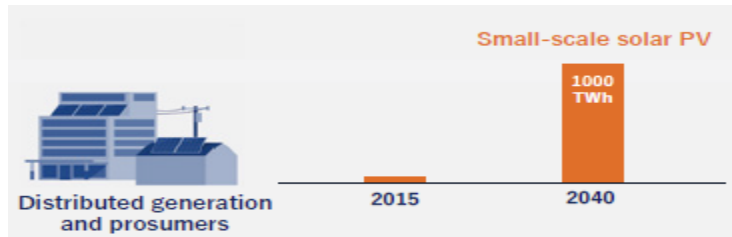
THE ROLE OF EVS & THE RISE OF PROSUMERS ARE GROWING

Smart charging infrastructure can reduce peak demand from EVs = avoided costs



- Smart charging requires digital infrastructure to permit communication between charging points and back-end systems
- V2G?
- Autonomous vehicles?

Small-scale renewables, batteries, & smart appliances

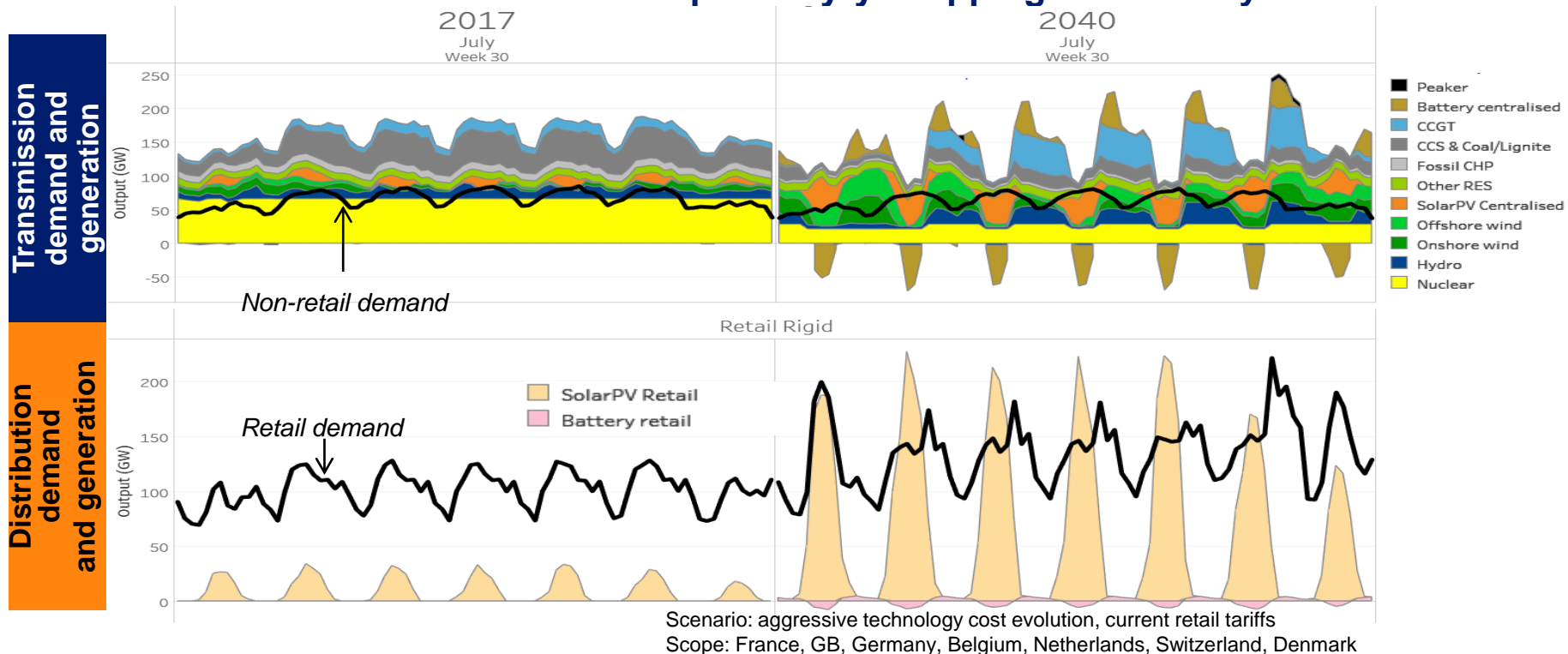


- Not just about declining technology costs
- **It's about the way the technology is adopted – by consumers not regulated companies**
- Consumers will buy smart appliances, batteries, solar etc, because they think it improves their lives
- And these consumers may relish the opportunity of trading energy with their digitally enabled neighbours P2P

Source: Digitalization and Energy, IEA (2017)

IN A DECENTRALISED RENEWABLE-POWERED WORLD RETAIL GENERATION MAY COME TO EXCEED RETAIL DEMAND

A summer week in Central West Europe – Pöyry's Tipping Point Study





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