

The Changing Energy Landscape and the Role of Communications

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Agenda

- The Changing Context
- The Increasing Importance of Communications
- Industry / JRC Observations

Recent Headlines

UK sets new renewable energy record as wind and solar surge

Daily Telegraph, 7 June 2017

London Solar Auctions Aim to Make City Greenest on Earth

BNEF, 11 August 2017

All forecasts signal accelerating demand for electric cars

Bloomberg New Energy Finance, 19 July 2017

Electric-only car plan would require 10,000 new wind turbines

Daily Telegraph, 27 July 2017

UK to power industrial strategy with battery funding 'revolution'

Daily Telegraph 24 July 2017

Energy watchdog sparks debate with its plans to overhaul network

Daily Telegraph, 5 August 2017

France to 'ban all petrol and diesel vehicles by 2040'

Daily Telegraph, 6 July 2017

Diesel car ban to cut pollution

Daily Telegraph, 26 July 2017

National Grid warning: Using kettle while charging electric car may blow fuses

Daily Telegraph, 22 August 2017

Energy Sector – Paradigm Shift



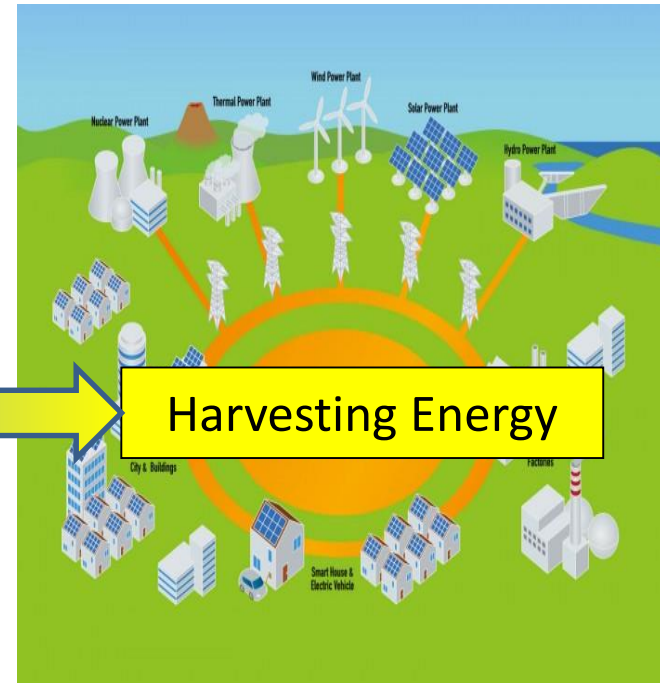
Energy Extraction



Energy Sector – Paradigm Shift



Energy Extraction



Harvesting Energy

Resiliency

Diversity

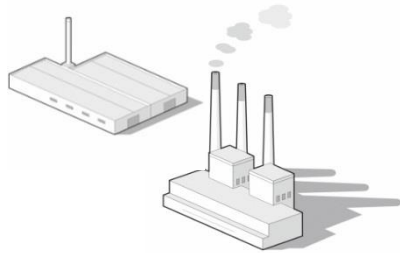
Reliability

Standardisation

Efficiency

Renewables and diversity of supply in the energy sector is transforming from a top-down linear model to dynamic self organised platform enabled by Smart Grid

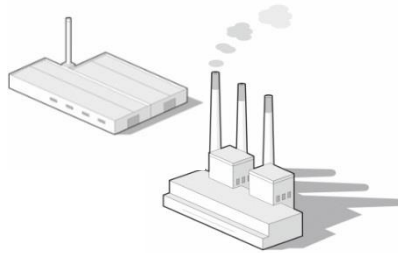
Megatrends drive changes within the energy world



Centralistic Energy System

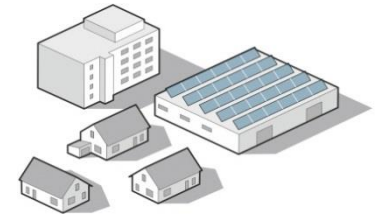
- Centralized power production
- Centralized gas supply
- Equal serving of all customer
- Pricing, reliability of supply and environmental standards driven by government
- Significant economies of scale regarding efficiency leading to large scale assets

Megatrends drive changes within the energy world



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Individual Solutions

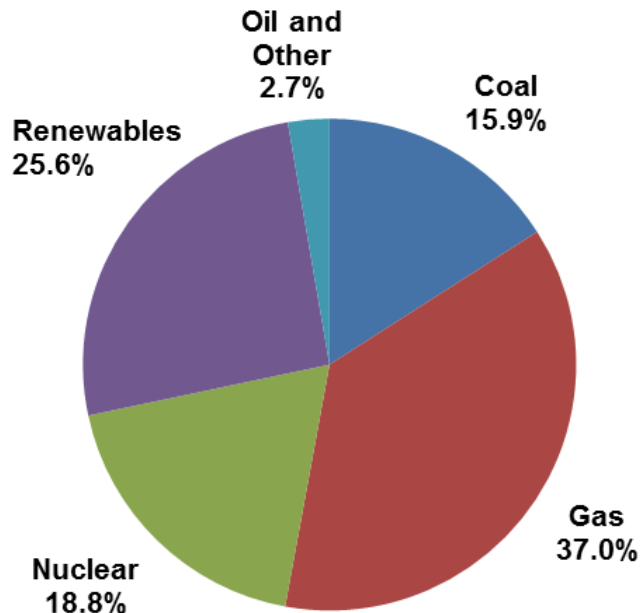
- Global technologies with local adaptations (glocalization):
- Distributed generation (PV)
- Distributed / mobile IT
- Distributed flexibility (batteries)
- Combined with services
- Individual sales channels

1. Centralistic energy supply is no longer significantly more efficient than distributed energy solutions.
2. Scalable technologies are allowing individual energy solutions to disrupt the centralistic energy system.

A Changing Energy Mix

Q1 2016

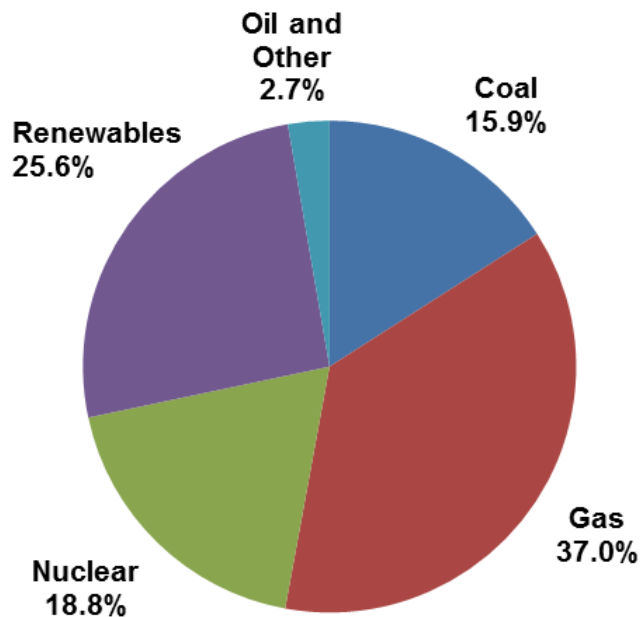
Q1 2017



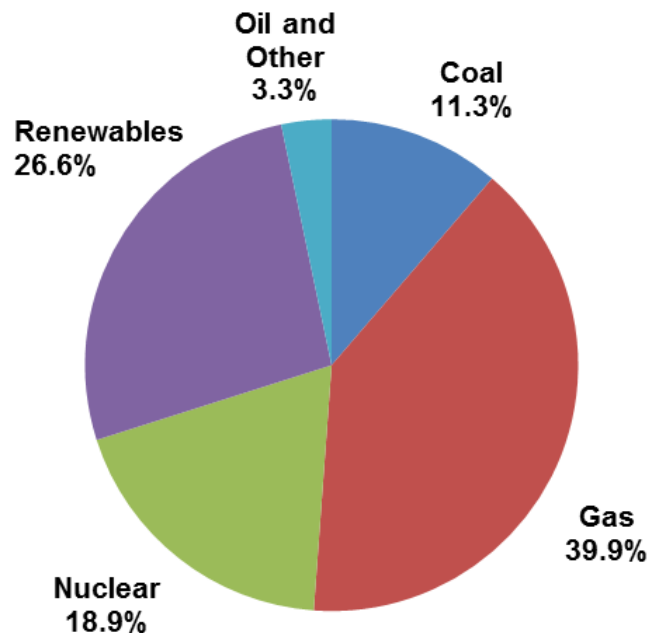
UK share of Electricity Generation, Energy Trends – June 2017

A Changing Energy Mix

Q1 2016



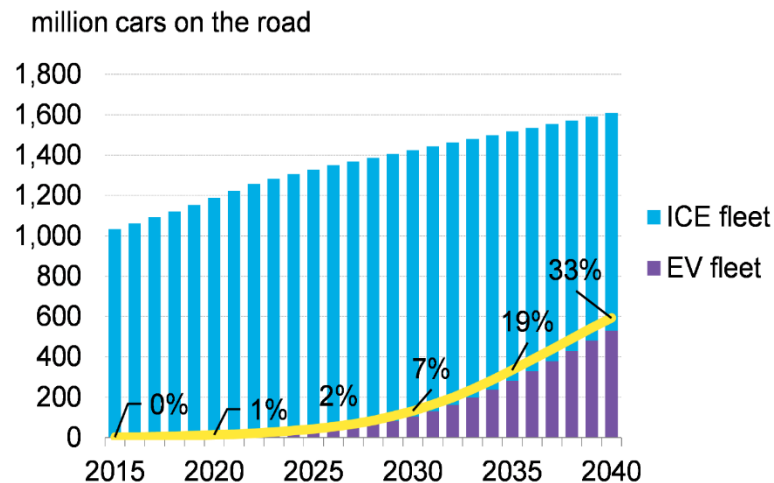
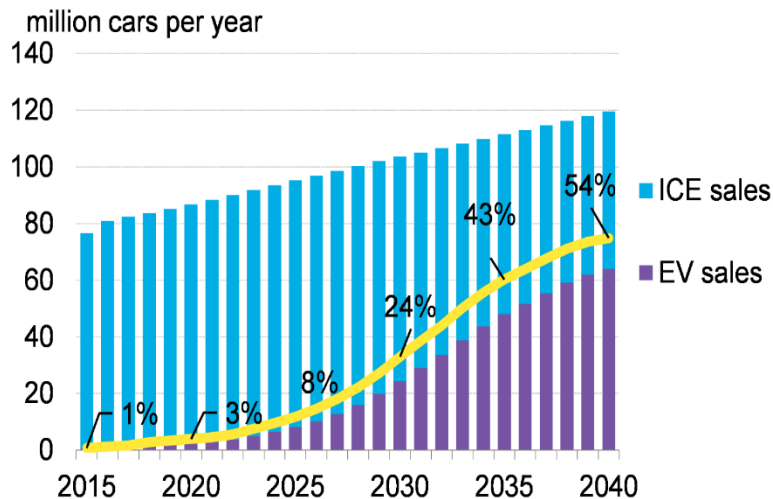
Q1 2017



UK share of Electricity Generation, Energy Trends – June 2017

Dramatic Demand Side Changes

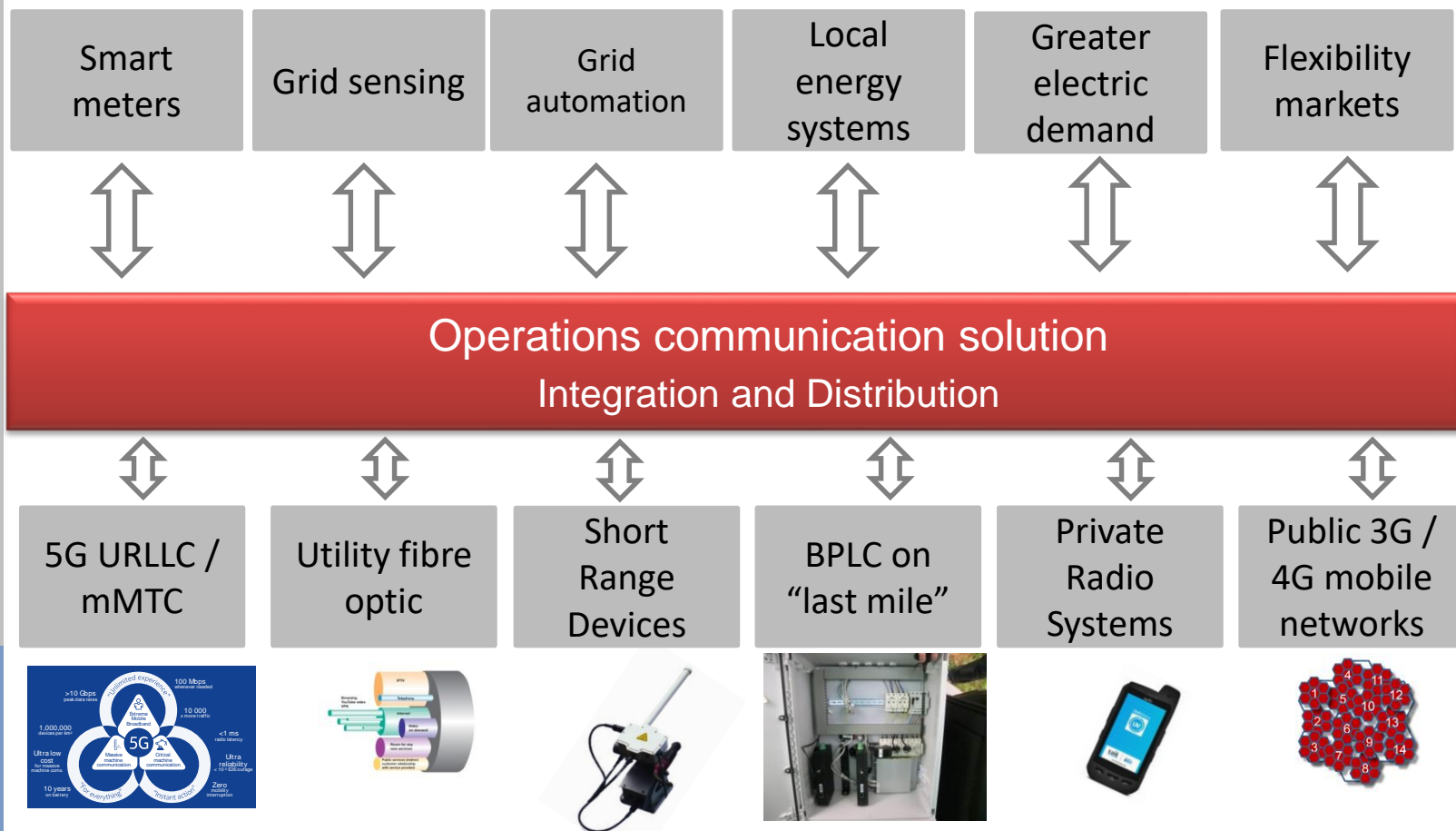
Electric Vehicles to accelerate to 54% of New Car Sales by 2040



- EVs - add 5% to global electricity consumption by 2040, 6TWh today to 1800TWh by 2040.
- EVs - 67% of New Car Sales in Europe by 2040
- BEVs overtake PHEVs from 2025

BNEF Electric Vehicle Outlook 2017

Future data communication portfolio



→ Integration of different data communication technologies is key for success

Industry / JRC Observations

Energy Sector Summary

- Greater diversity of supply, distribution and demand
- Shift to local Infrastructure investments
- Maintain / enhance established solutions & expand capability to manage embedded supply
- Enhanced resilience / redundancy through DIVERSITY of control systems
- Scale EVs and the need for public access networks
- Enhanced automation enabled by new standards / technology capability

JRC Perspective

- Maintain established systems
- Oversight / Effective Implementation of new solutions
- Increased complexity alongside greater expectations from consumers – effective Data Management will be key
- Operational efficiencies & Enhanced Resilience subject to investments in additional / complementary telemetry / switching

Wrap-up

