

A Review of UK Energy Policy

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22 October 2012

UK Government Policy – Sustainability Drivers

- The Stern Report (Nov 2007)– (5% pa GDP per year at risk)
- WWF Living Planet Report shows globally we are using 30% more resources than planet can replenish (October 2008)
- Climate Change Act legally binding carbon budgets (from April 2009) and independent Committee on Climate Change
- In 2009 research revealed UK *consumption* carbon footprint not shrinking -> imported footprint has more than doubled since 1990 ->more pressure on power to decarbonise.
- 2011 £3bn for Green Investment Bank, Green Economy Council set up
- 2012 Electricity Market Reform, Green Deal for tackling home energy efficiency

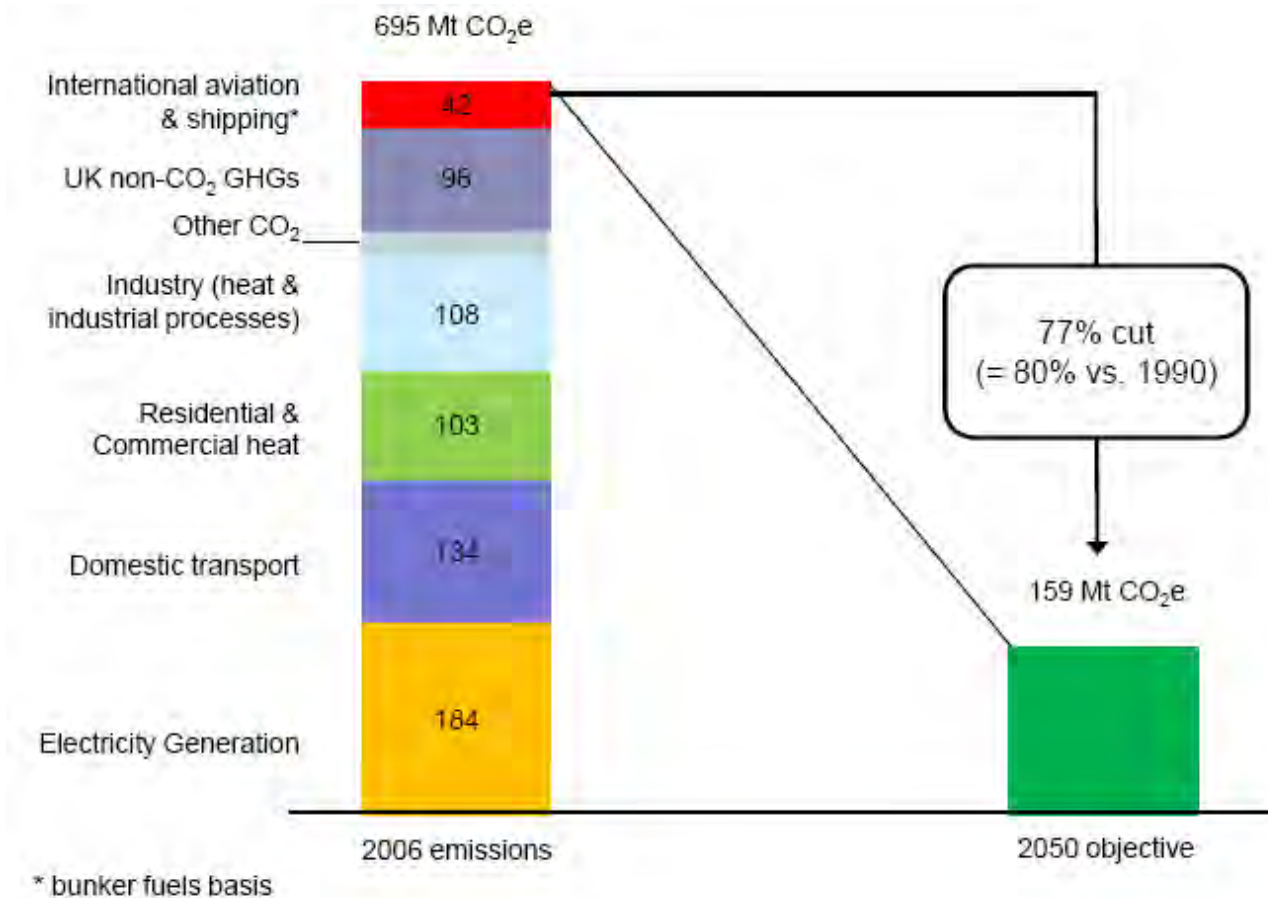
UK Govt has set some Challenging targets

1. 80% CO₂ reductions by 2050
2. 50% CO₂ reductions by 2025
3. 15% energy from renewables by 2020 (unlikely)
4. Zero carbon homes by 2016
5. A zero-waste economy; and
6. Smart meters in every home by 2020



All underpinned by Carbon Budgets

The 2050 targets have implications across whole economy...



- Not only de-carbonising electricity generation
- But also requires plan to reduce energy use and emissions across the economy

Source: CCC Building a Low-Carbon Economy –The UK's Contribution to Tackling Climate Change

..but are most dramatic for electricity sector

- Demand doubles by 2030
 - Peak in 2010 = ~45GW
 - Peak in 2030 = ~85GW
- New loads heat pumps / plug in vehicles
- Better storage vital
- Potential cost £110 billion over decade:
 - £75bn on generation
 - £35bn on distribution (>double last 10 years)

Figure taken from Energy White Paper

Figure 16: Illustrative example of a seven-day demand profile in 2010

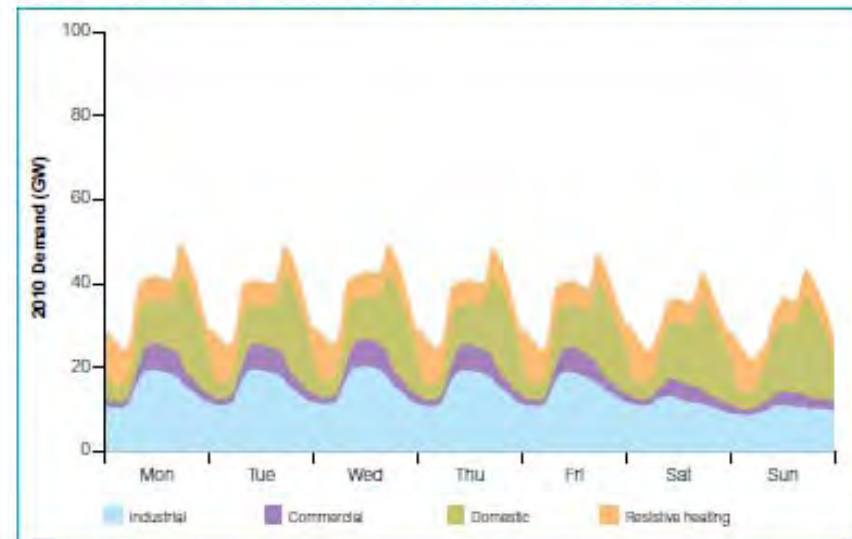
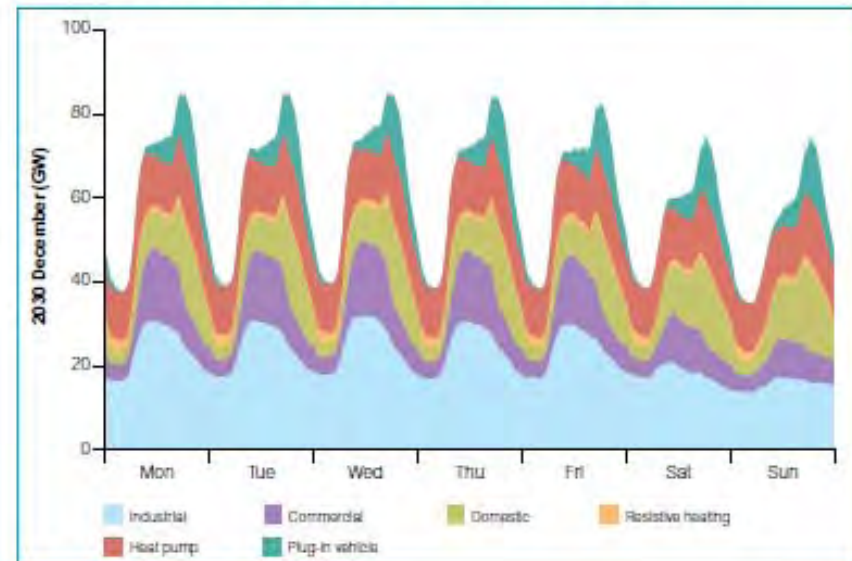
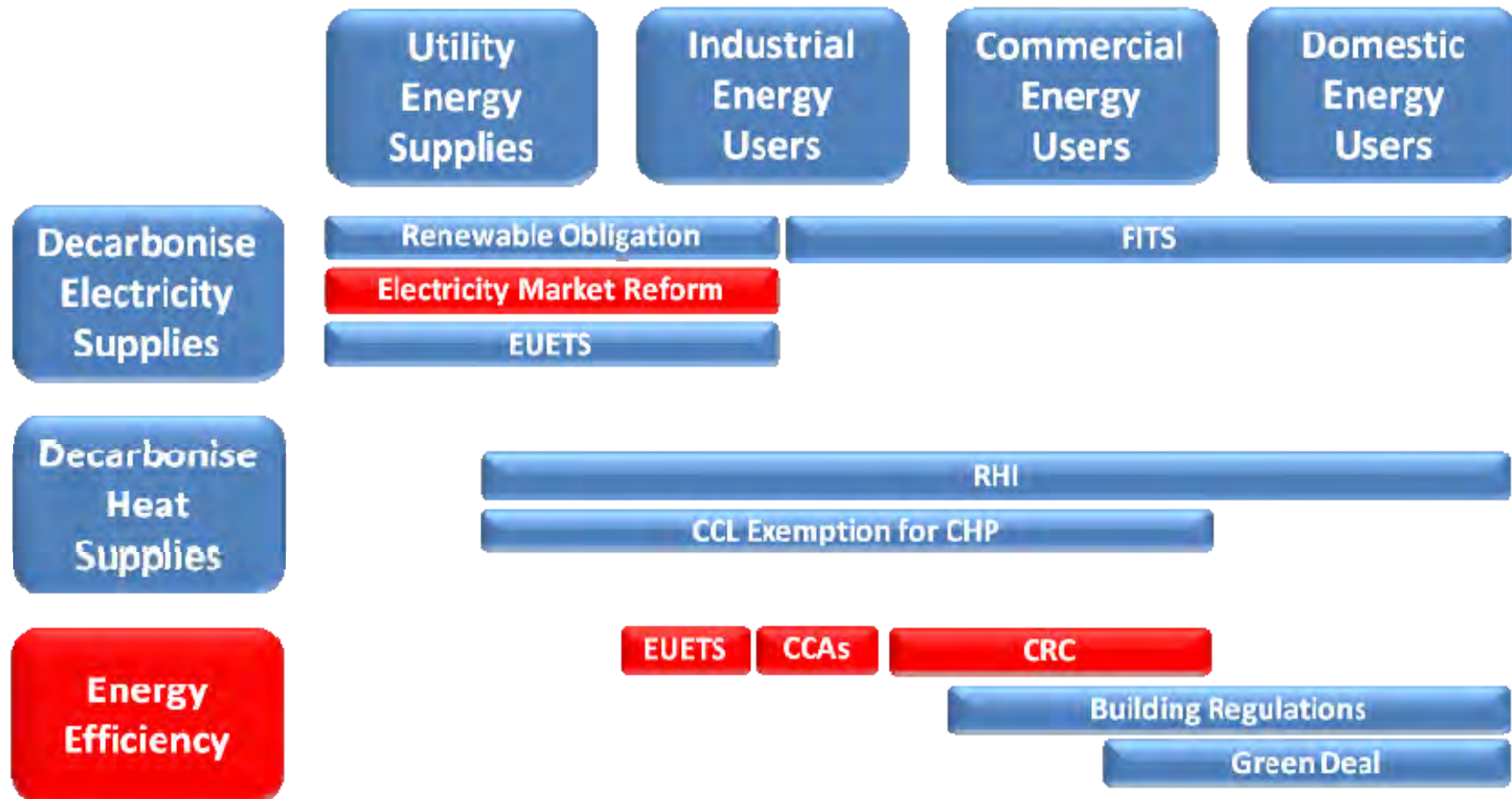


Figure 17: Illustrative example of a seven-day demand profile in 2030



UK Decarbonisation of Energy Supplies: Policy Framework



Electricity Market Reform, Key Elements

1. Carbon Floor Price (CFP)

provide certainty on carbon price from £13 (2013) to £30 (2020) to £70 (2030) / tonne CO₂

2. Feed in Tariffs – Contracts for Difference (FiTs – CfD)

Incentives for low carbon generation

3. Emissions Performance Standard – CO₂/kWh

emission limits for new build power plant

4. Capacity Mechanisms

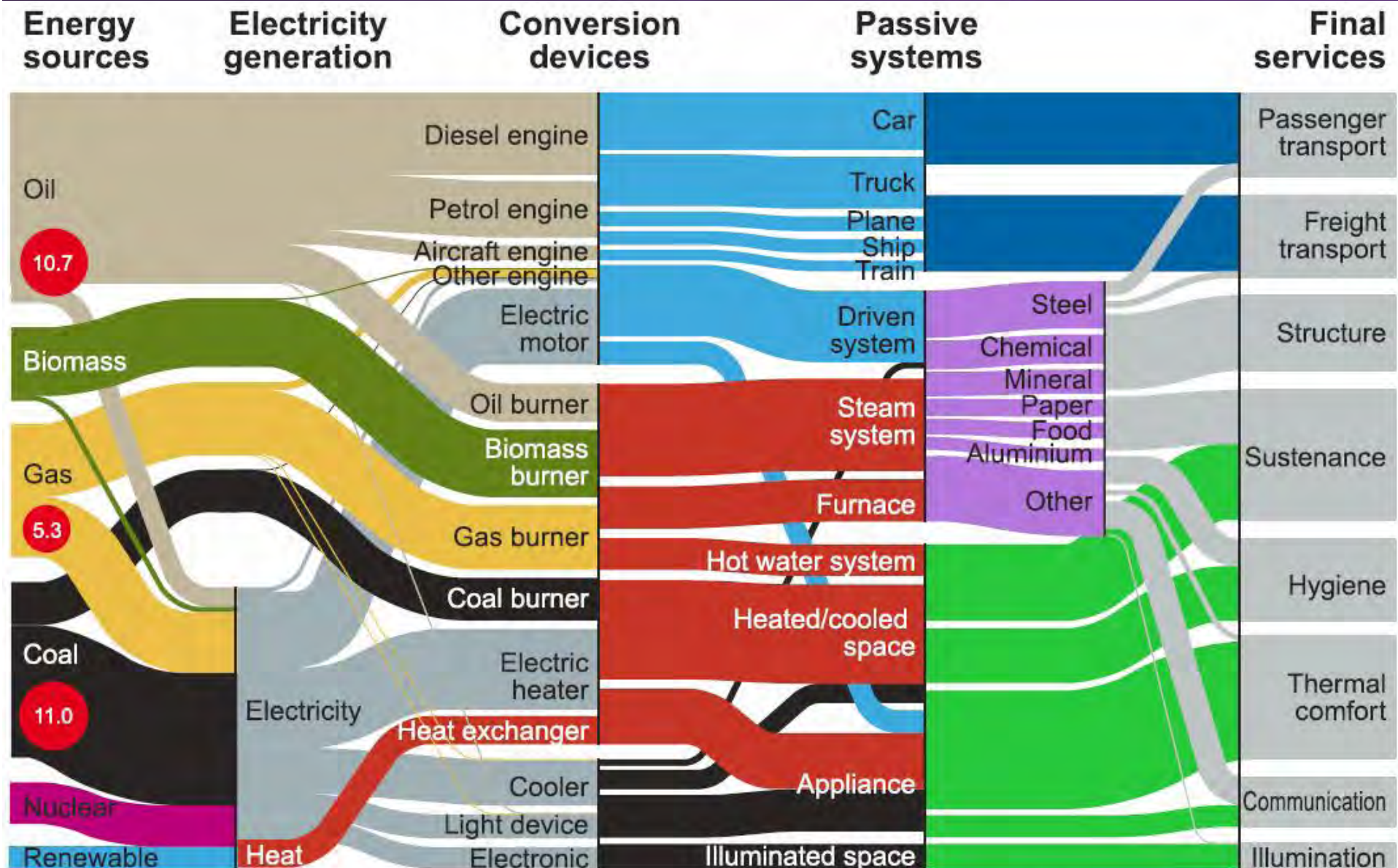
ensure security of supply

Electricity Market Reform - Timeline

| YEAR | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|--------------------|----|---------------------|----------------|----|--|--------------------------------|----|-------------|----|----|
| Legislation | | Primary Leg. | Secondary Leg. | | | | | | | |
| FITS with CfD | | | | | *First CfD signed | *possible first payments | | | | |
| Capacity Mechanism | | | | | | *Capacity procured as required | | | | |
| CFP | | | | | *CFP rising incrementally (£16 to £30) | | | | | |
| EPS | | | | | *EPS in force | | | | | |
| Transition to CFD | | RO open to new gen. | | | Choice RO or CfD. | | | RO vintaged | | |

FiTs - Feed in Tariffs; **CfD** - Contracts for Difference; **CFP**- Carbon Floor Price;
EPS - Emissions Performance Standard; **RO** - Renewable Obligation

Global Energy Demand

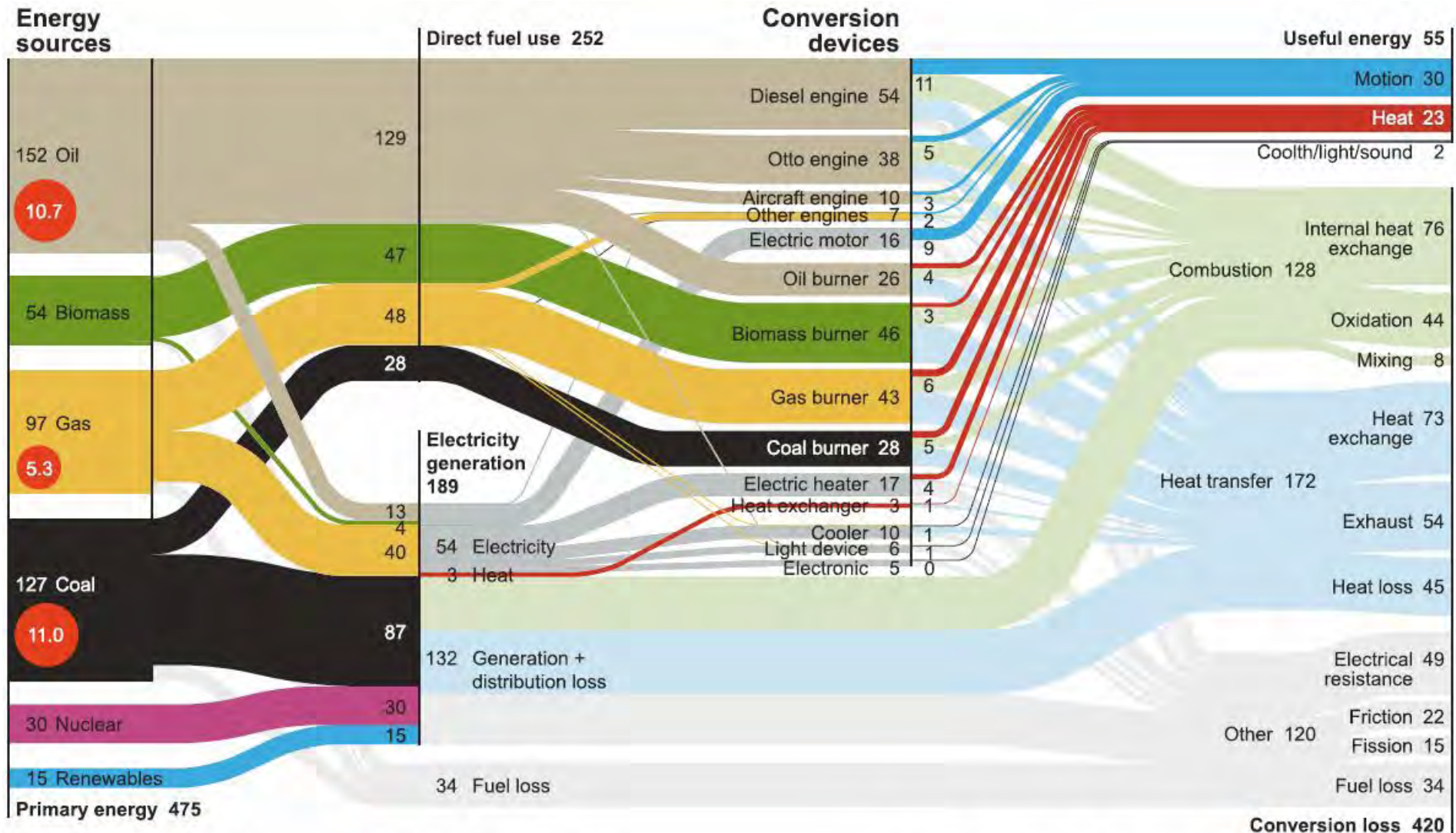


Global energy demand in 2005, total = 475 EJ

● Global carbon emissions in 2005, total = 27 Gt CO₂

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Submitted to *Energy Policy*

= Global Energy Inefficiency



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Energy Efficiency – a crucial policy

- the most cost effective policy for reducing CO₂ emissions
 - and reduces cost of decarbonisation policies
- UK has energy efficiency policies for all sectors
 - domestic sector via Green Deal
 - Climate Change Levy (non-domestic / non-transport)
 - tax of approx £10 per tonne CO₂
 - various transport policies including high fuel taxation
- EU ETS, CCAs and CRC
 - address industry and large building owners

Energy Efficiency Policies for Industry and Large Buildings

EU ETS

- 1,000 largest sites (power stations dominant)
- EU level cap and trade scheme

CCAs

- 10,000 energy intensive industrial sites
- Site level energy efficiency or carbon targets

CRC

- >100,000 sites in private + public sector bodies
- Purchase of CO2 allowances (quasi-tax)

EU ETS

- Started 2005
- First 2 phases had problems with “grandfathering”
 - Phase 1, 2005 – 2007: over-allocation of CO₂ allowances
 - Phase 2, 2008 – 2012: impact of global financial crisis
 - Allowance price very low in both phases
- Difficult to set up cap & trade emissions trading scheme
- Phase 3 may overcome these difficulties via auction and benchmark allocation methods

CCAs (1)

- started 2001, recently extended to 2023
- voluntary “carrot and stick” mechanism
 - 80% discount on Climate Change Levy
 - in return for signing agreement to improve efficiency
- performance measured against targets
 - every 2 years
- 55 sector agreements
- targets take sector circumstances into account
 - reviewed every 4 years to ensure fair / challenging

CCAs (2)

- Voluntary mechanism
 - but very popular – very high uptake (100% of large sites, >95% overall in most sectors)
 - key to popularity is [relatively small] tax discount
- Each CCA operated via a Sector Association
 - very beneficial process
 - allows specialised energy efficiency initiatives in sector
- Detailed annual data now held by Sector Associations
 - allows benchmarking studies
 - supports target negotiations

CRC

- started 2010
- aimed at “large non-energy intensive” organisations
- original design:
 - cap and trade scheme, with revenue recycling
- change of design in 2010
 - no cap; fixed price allowance sales; no recycling
- equivalent to an additional tax of £12 / tonne CO₂
- effectiveness not yet known
 - but concerns that tax driver will not be strong enough

Some Key Messages

Tax only mechanisms

- need very high tax level to work

Trading Schemes

- difficult to ensure delivery of savings

CCA “carrot and stick” mechanism most successful

- popular even with small tax “signal”
- flexible; sector specific targets
- well suited to all industrial sectors

Data collected becomes very valuable

- e.g. for benchmarking, understanding saving potential etc.

Conclusions

- 1. UK Policy is (over?) complex**
- 2. New generation investment of >£100bn by 2020 needs inward investment**
- 3. Changing the incentives for low carbon generation and EMR has stalled investment**
- 4. Energy Efficiency still has massive untapped potential, tax incentive carrot and stick best**
- 5. Interconnectors will deliver flexibility/insurance if domestic policy fails**



Thank You

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