Enterprise. Innovation. SMART. Energy positive technology to ensure climate resilience: Facts and figures

Emissions and targets

- **UK Climate Change Act** target of cutting emissions by 80% by 2050 BUT
- **Paris Agreement**: governments committed to keep global warming 'well below 2 degrees Celsius', and 'make efforts' to keep it below 1.5°C. BUT generally non binding AND
- **IPCC Special Report** on the 1.5°C target, published on 8 October 2018 requires annual emissions to fall by about 50% between now and 2030, and reach net zero by 2050
- **UK will not meet its own, lower, targets** Committee on Climate Change UK housing: Fit for the future?(21 February 2019-today!) without the near-complete elimination of greenhouse gas emissions from UK buildings
- So we need to drastically reduce emissions now to avoid catastrophic global warming
- **Homes account for 14- 15% of CO2** emissions and is going up
- Transport 27% (energy supply 24%, agriculture 10% business 17%, waste management 4% (2017 figures)
- We need to build houses resilient to the impacts of the changing climate: for higher average temperatures, flooding and water scarcity

Constraints: Housing construction standards

- **Energy efficiency has fallen** since abolition of the Code for Sustainable Homes and the Zero Carbon Homes policy were scrapped in 2015
- **Building regulations** do not require the best standards
- **Local Plan** was not allowed to require higher standards and developers challenge if they do; LAs cannot ask for more than Code 4 (Code 5 and 6 are possible)
- **Cost: not really a constraint** Building a home to Zero Carbon (ie zero carbon in energy use) standards adds very little – 1-2% of the overall cost – and would be recouped through energy bill savings within years. (The impact on price from the Help to Buy scheme is much greater; it has been estimated to add £50,000 to the cost of a new house (Energy and Climate Intelligence Unit February 2019)
- **Cost: Passivhaus** 12-15% but goes down with volume
- **More CO2 savings** can be made from reducing embodied energy in materials, form and layout
- It may not be possible to require **higher standards than Building Regulations**
- **Performance and compliance** the way new homes are built and inspected falls short of stated design standards
- **Developer's viability assessments** may try to reduce standards
- **Skills gap** frequent changing of UK Government policy has led to a skills gap in housing design, construction and in the installation of new technologies

Constraints: energy generation

- **Lack of government incentives** and changes in policy
- **Building regulations** do not require on site energy generation

- **The government plans to end the export tariff**- if you produce more energy than you use, you give the electricity to the grid for nothing!
- Need to be **flexible** as technology changes
- **Grid capacity** for renewables- local grid could answer this
- **Complexities** of energy supply and demand management
- **National grid inefficiency** loses on average 8% electricity
- **National grid is not smart**- generation has to cater for peak demand; lack of storage
- **Finance and funding:** there are urgent funding gaps which must be addressed, including secure UK Government funding for low-carbon sources of heating beyond 2021, and better resources for local authorities
- **Reliance on gas** for home heating and much electricity generation
- **Smart grid** needs technical development

Opportunities: homes

- **Zero carbon housing will save at least £200** a year and add to comfort and wellbeing
- **Passivhaus** even better than zero carbon- saves about £450 a year (75%)
- **Building new homes** we know how to build low-carbon, energy and water efficient, climate resilient, healthy comfortable homes
- **Extra cost marginal** and reduce with greater uptake
- **Local skills development**

Opportunities: Energy supply

- **Opportunity to be net exporter of clean energy**
- Could be site for **world leading local grid to power whole Eynsham area**
- **Electricity is decarbonising fast**- we have technology to produce low carbon energy
- **Oxford is world centre for research and innovation;** opportunity to put research into action and stimulate education
- **Cost competitive:** renewables such as onshore wind and large scale solar are completive with gas generation**:** onshore wind is the cheapest from of generation(BVG Associates 2018, BEIS projections 2016)
- **In 2018 renewable sources generated about 33%** of the UK total. With nuclear, low-carbon electricity rose to 53% of UK generation. (Carbon Brief 2019)- and demand is falling
- **Community energy for community benefit** - Eynsham the first community solar for **Low Carbon Hub** a leading organisation
- We already have **Agrivert and Barnard** gate solar nearby
- Greater **security and resilience** supply from local grid and storage could avoid power cuts (If you are connected to the National Grid, have pv panels and do not have storage, you still have no power if there is a local or national power cut)
- Reducing dependency on natural gas will have positive impacts on **energy imports and energy security** and encourage new technologies and processes
- Could power **sustainable transport**

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