Geoatlantic Virtual conference

May 2020

Outline

- Plan for conference
  - Mics off, use of chat box
  - Sessions will be recorded
  - Send presentations to Ola / GeoAtlantic website
- Project ambitions
- UK Context
- Structure for the conference

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GeoAtlantic

Boosting local ecosystems for energy transition and development of geothermal energy in the communities and cities of the Atlantic Area

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APPROACH AND CHALLENGES

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Analyzing potential

Developing skills through training

Promoting local energy communities

Entrepreneurship in favor of geothermal energy

Favorable local policy frameworks

Support tools

Promoting demonstration initiatives

Raising awareness and increasing social acceptance

Specific Objectives

- **Develop cooperation** between private and public actors and researchers through the articulation of the value chain of geothermal energy in a particular community or local territory.

- Promote the development of **local policy frameworks** and support tools for promoting energy transition and the geothermal energy.

- **Empower communities and local authorities** to provide an effective response from the energy point of view to the climate change threat.

- Increasing **social acceptance of renewable energy**, especially geothermal by local communities.

- Raise awareness about the relevance and business opportunities of geothermal energy.

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Project objectives

The key activities are:

- Promote the knowledge of initiatives, technologies and the latest developments, to boost local ecosystems in favour of the energy transition, and to promote the most suitable geothermal energy solutions at a local level in the Atlantic Arc.
- Support communities and local authorities, through training and advice at different levels, to give an effective response from an energy point of view to the threat posed by climate change.
- Research and skills at the local level will be promoted to strengthen the geothermal energy sector chain.
- Create local policy frameworks and joint support instruments among the different agents and stakeholders in the Atlantic Area to promote geothermal energy.

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Project objectives

The aims include:

- Analyse the potential of geothermal and GSHP technology
- Develop skills through training
- Promote local energy communities
- Promote entrepreneurship in favour of geothermal/GSHP
- Influence local policy frameworks
- Create support tools
- Create & promote demonstration projects
- Raise awareness and increase social acceptance

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UK Context

- Decarbonising electricity
- Decarbonising heat

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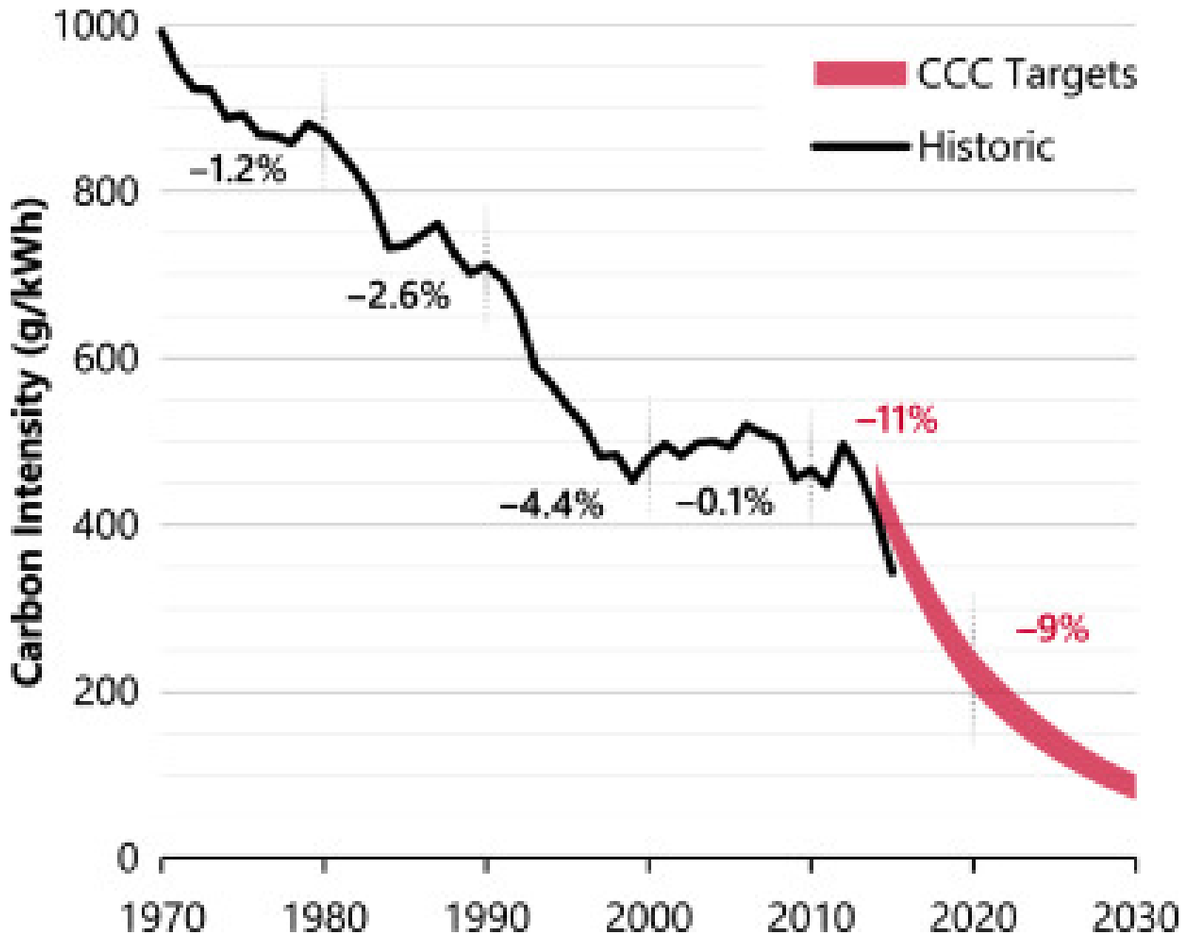
Decarbonising electricity

- Carbon intensity reductions
  - Coal to gas
  - Renewable energy roll out
- Good progress in one sector
  - Little progress in others



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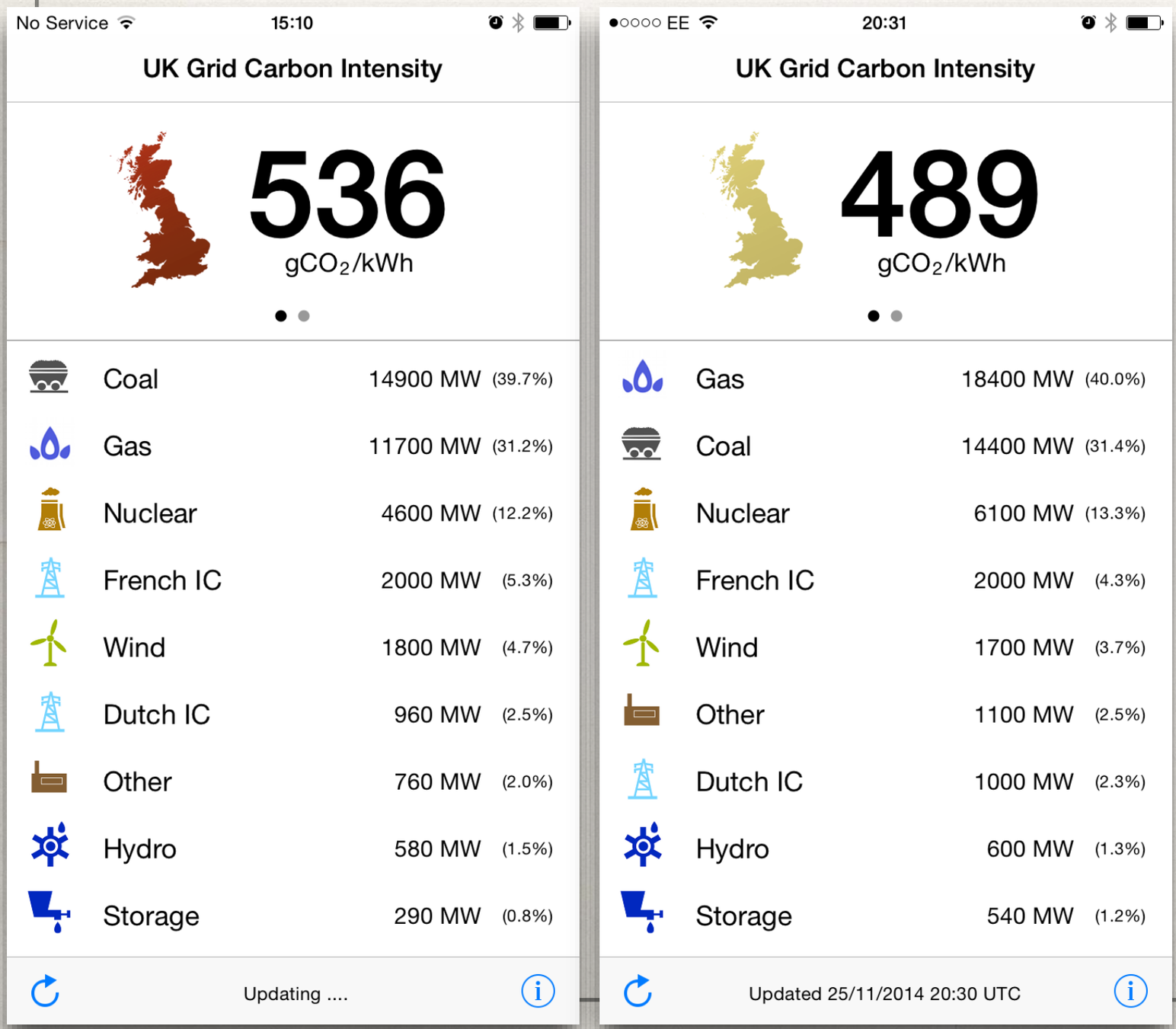
Generation mix



Search 15:32 34%

GB Grid Carbon Intensity

86

gCO_2/kWh

Wind	8600 MW	(32.6%)
Nuclear	6200 MW	(23.6%)
Solar	3300 MW	(12.6%)
Gas	2800 MW	(10.7%)
Biomass	2000 MW	(7.4%)
France	1400 MW	(5.2%)
Netherlands	700 MW	(2.6%)
Belgium	690 MW	(2.6%)
Ireland	470 MW	(1.8%)

Updated 26/05/2019 15:30 BST

EE WiFiCall 10:20 85%

GB Grid Carbon Intensity

195

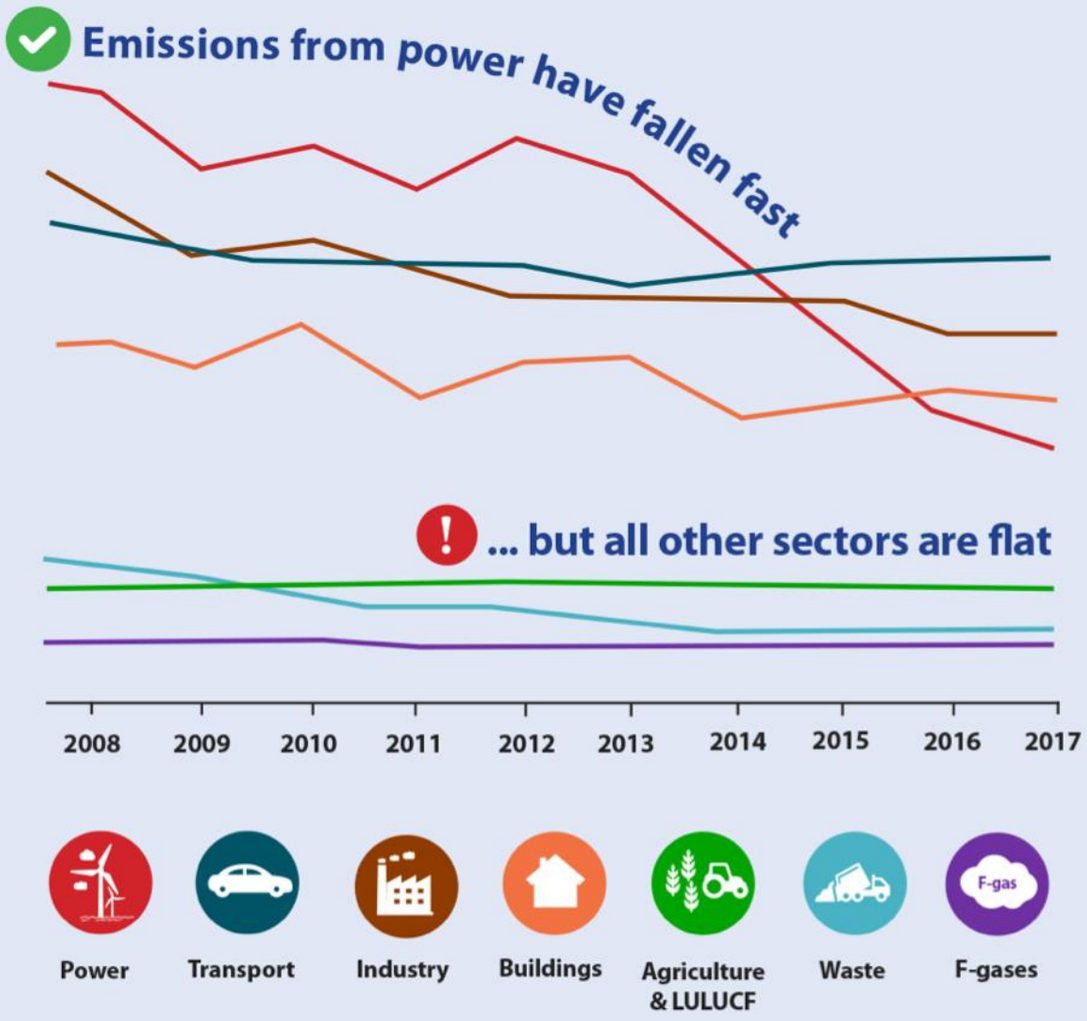
gCO_2/kWh

Gas	13600 MW	(33.1%)
Wind	10200 MW	(24.7%)
Nuclear	5300 MW	(12.8%)
Solar	3900 MW	(9.5%)
Biomass	3000 MW	(7.3%)
France	2000 MW	(4.9%)
Coal	1300 MW	(3.2%)
Hydro	750 MW	(1.8%)
Belgium	630 MW	(1.5%)

Updated 26/02/2020 10:15 GMT

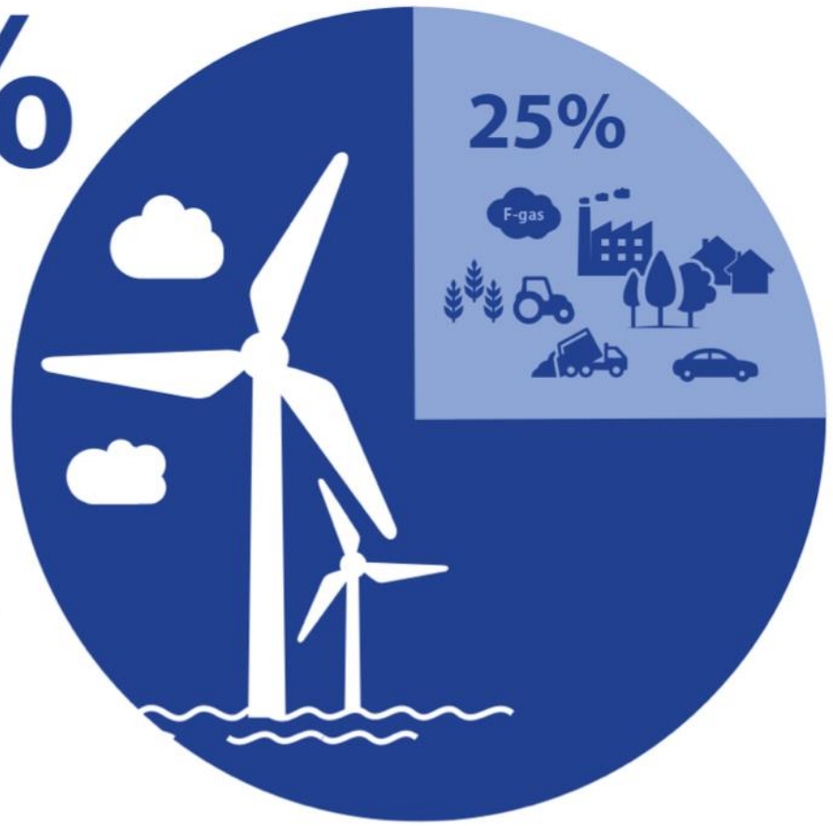
Excellent progress in reducing emissions from electricity generation masks failure in other sectors

The UK's greenhouse gas emissions have reduced by 43% compared to 1990 levels, on the way to a target of at least an 80% reduction by 2050.



75%

of emissions reductions since 2012 have come from the power sector



Clear goals, ambitious strategy and well-designed policies have been effective. These lessons must now be applied to other sectors

Source: CCC-2018-Progress-Report-to-Parliament.pdf

Support the simple, low-cost options

Onshore wind and Solar are likely to be **25% cheaper** than new gas plants by the 2020s

see p68

Efficiency in buildings is an obvious practical step. But insulation rates in homes are **95% lower** than they were in 2012

Tree planting rates are **two-thirds lower** than they need to be

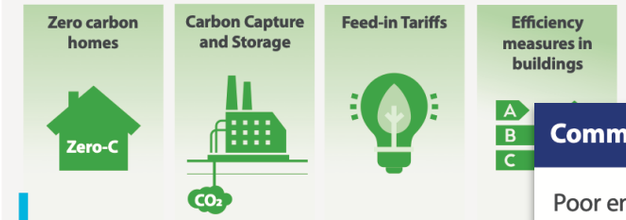
see p202

Recycling food w reduces emissions. E all **food waste** shou be **recycled**

Failure to pursue these options increases energy adds to the cost of decarbonisation

End the chopping and changing of policy

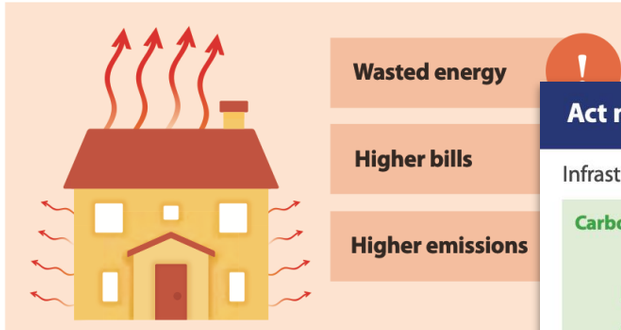
Recent policies to reduce emissions have been cancelled...

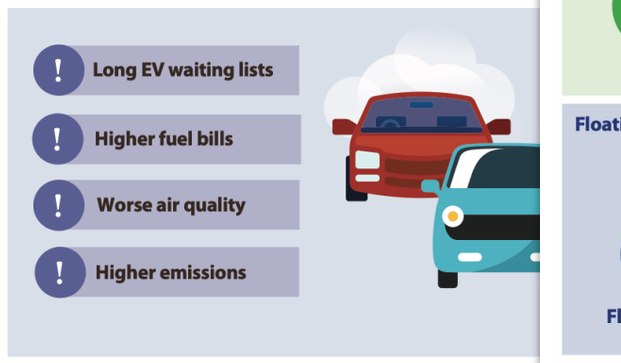


Consistent policies drive investment, cut bills an to build UK business

Commit to effective regulation and strict enforcement

Poor enforcement and low standards result in…

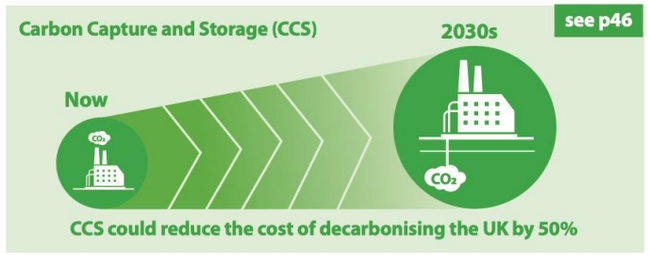


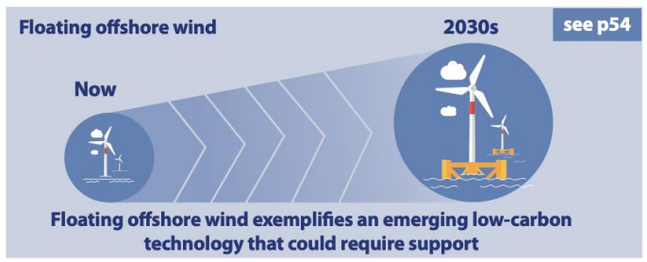


Ambitious, strictly enforced standards drive inno protect consumers from being cheated

Act now to keep long-term options open

Infrastructure requires long-term investment





Further delays will increase costs and reduce options

Source: CCC-2018-Progress-Report-to-Parliament.pdf

Support the simple, low-cost options

Onshore wind and Solar
are likely to be **25% cheaper** than new gas plants by the 2020s

see p68

Efficiency in buildings
is an obvious practical step. But insulation rates in homes are **95% lower** than they were in 2012

see p85

Tree planting
rates are **two-thirds lower** than they need to be

see p202

Recycling food waste
reduces emissions. By 2025 all **food waste** should be **recycled**

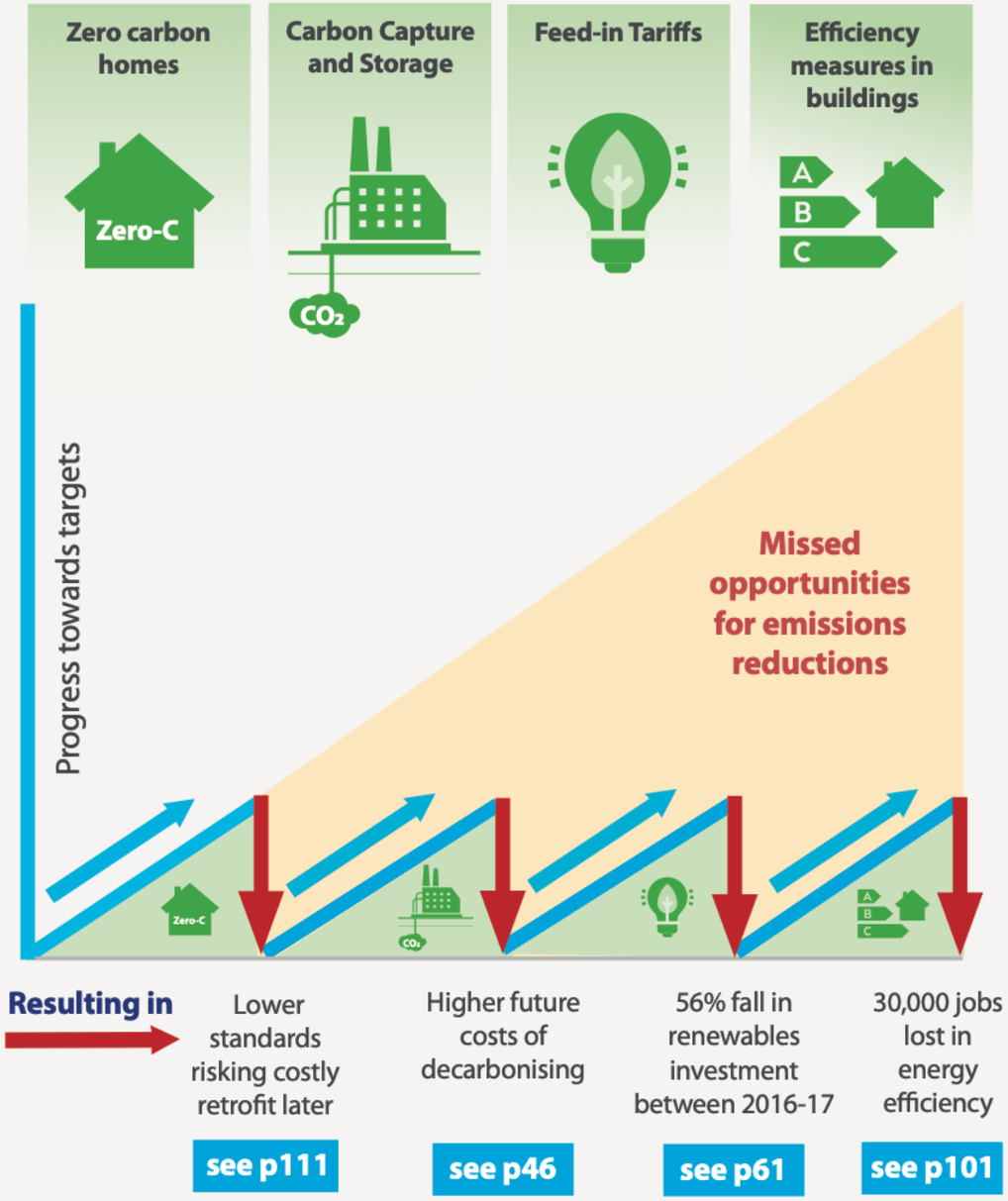
see p211

Failure to pursue these options increases energy bills and adds to the cost of decarbonisation

Source: CCC-2018-Progress-Report-to-Parliament.pdf

End the chopping and changing of policy

Recent policies to reduce emissions have been cancelled...



Consistent policies drive investment, cut bills and help to build UK business

Source: CCC-2018-Progress-Report-to-Parliament.pdf

Commit to effective regulation and strict enforcement

Poor enforcement and low standards result in…

- Wasted energy !
- Higher bills !
- Higher emissions !

see p105

- ! Long EV waiting lists
- ! Higher fuel bills
- ! Worse air quality
- ! Higher emissions

see p164

Ambitious, strictly enforced standards drive innovation and protect consumers from being cheated

Source: CCC-2018-Progress-Report-to-Parliament.pdf

Act now to keep long-term options open

Infrastructure requires long-term investment

Carbon Capture and Storage (CCS) see p46

CCS could reduce the cost of decarbonising the UK by 50%

Floating offshore wind see p54

Floating offshore wind exemplifies an emerging low-carbon technology that could require support

Heat pumps see p104

Heat pumps could be crucial to decarbonising heat in UK buildings

Further delays will increase costs and reduce options

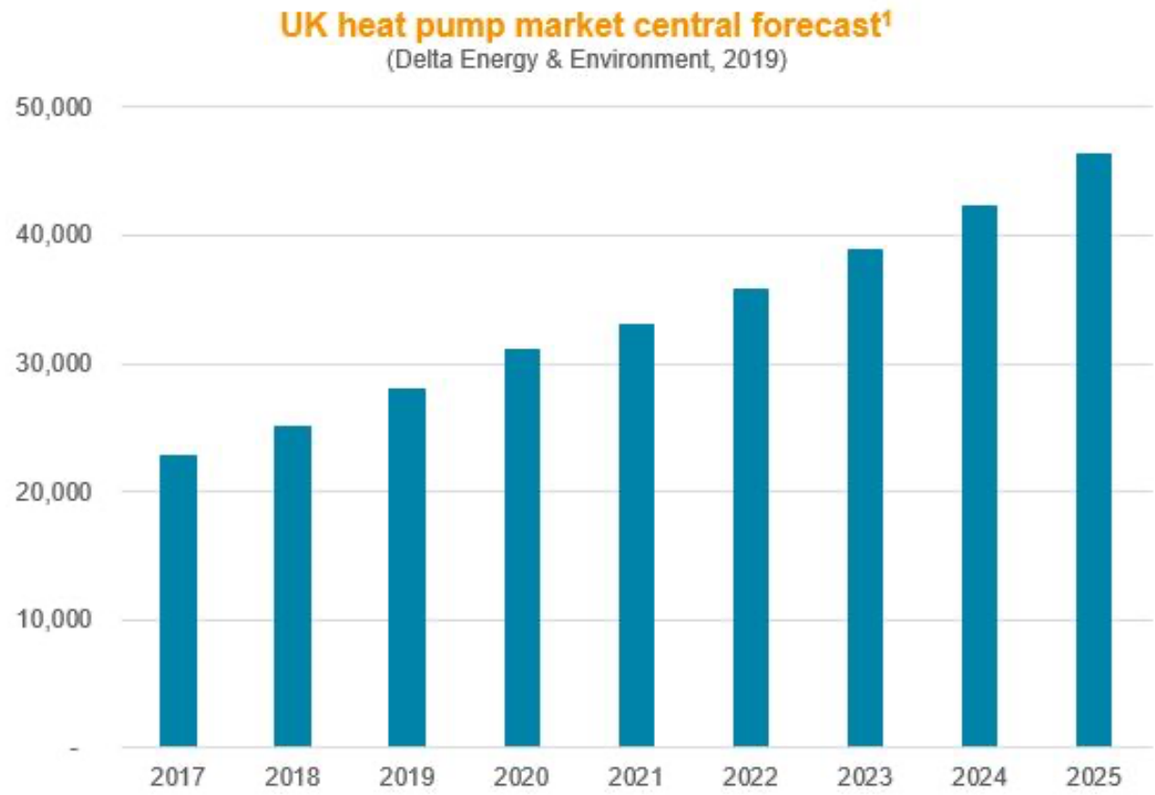
Source: CCC-2018-Progress-Report-to-Parliament.pdf

Decarbonising heat

- Proportion of emissions
- Slow progress to cut emissions from heat
  - RHI
- Clear recommendations e.g. CCC

Heat pumps

- Significant carbon saving
  - COP of 2.6 needed for carbon saving if grid 580g/kWh
  - Emissions now below 1/3 of gas per kWh
- Kensa - doubling capacity at factory
- Policy being developed for future homes 75% to 80% reduction in CO2 emissions



[1]Detailed breakdowns by heat pump type and customer segments under our central forecast and high and low scenarios are available to subscribing organisations

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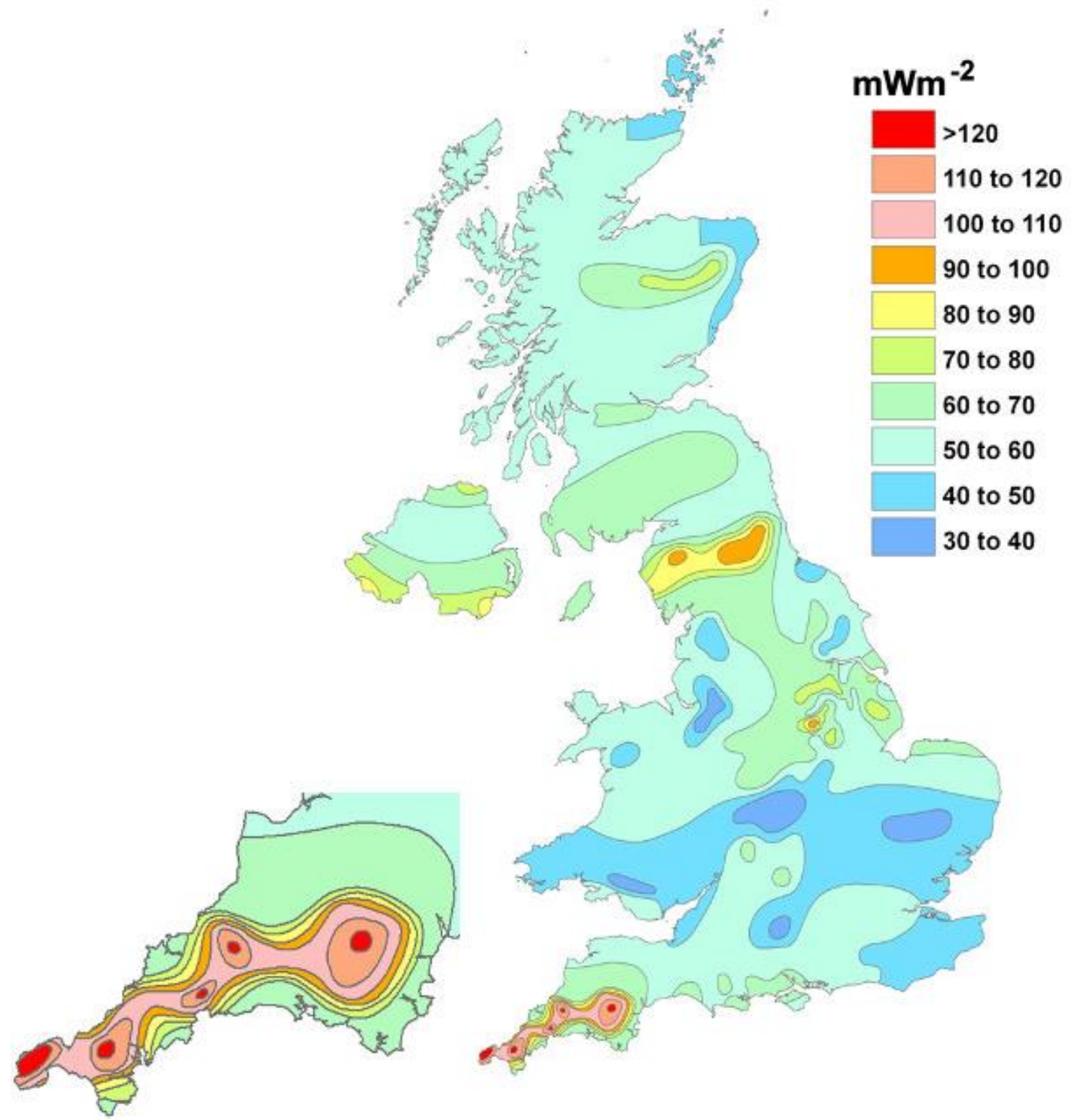
Geothermal

- UK Opportunities
- 70’s 80’s testing at Rosemanowes Quarry
- Drilling complete at first site, about to start at second
- Context heat vs power



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Geothermal in Cornwall

- Opportunity highlighted in the 70’s and 80’s by Camborne School of Mines
- Rosemanowes Quarry site
- 200MWe + 200MWth identified in the region
- Carbon context

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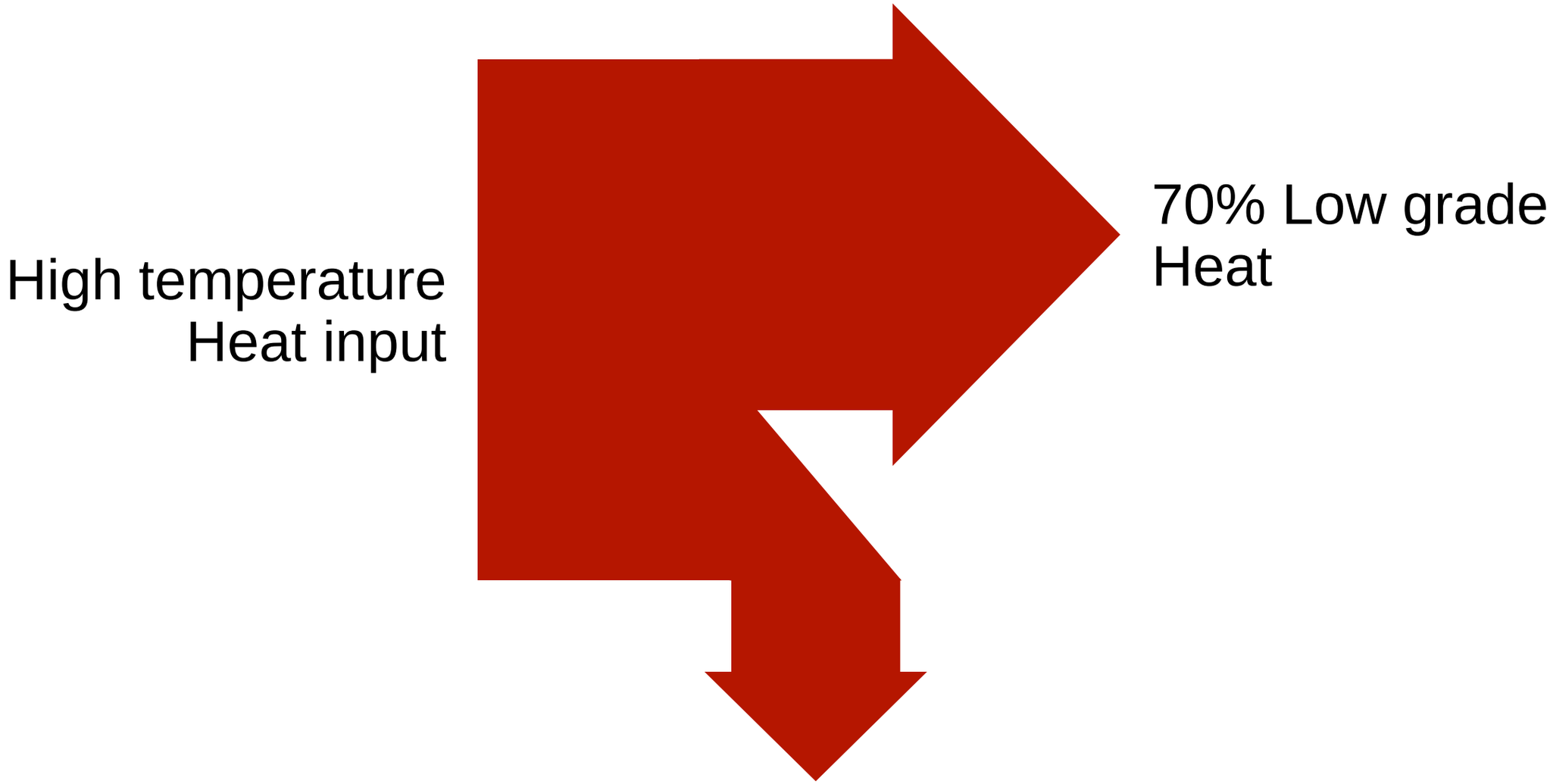
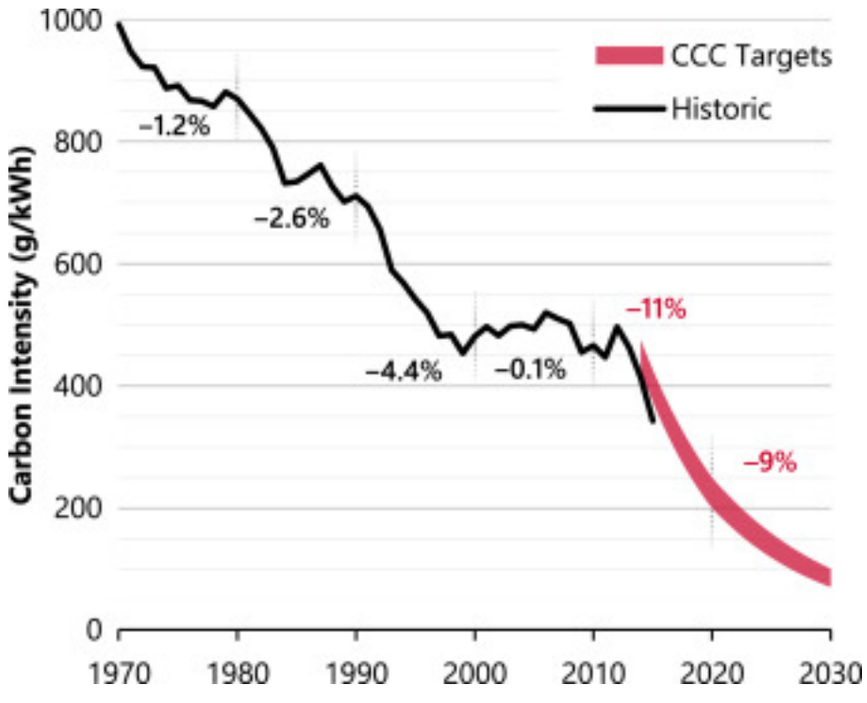


Grid carbon intensity 600g/kWh - each kWh input saves 180g/kWh from electricity

Grid carbon intensity 200g/kWh - each kWh input saves 60g/kWh from electricity

Used directly to offset burning gas - each kWh input saves 192g/kWh



United Downs

- Peter Ledingham presenting

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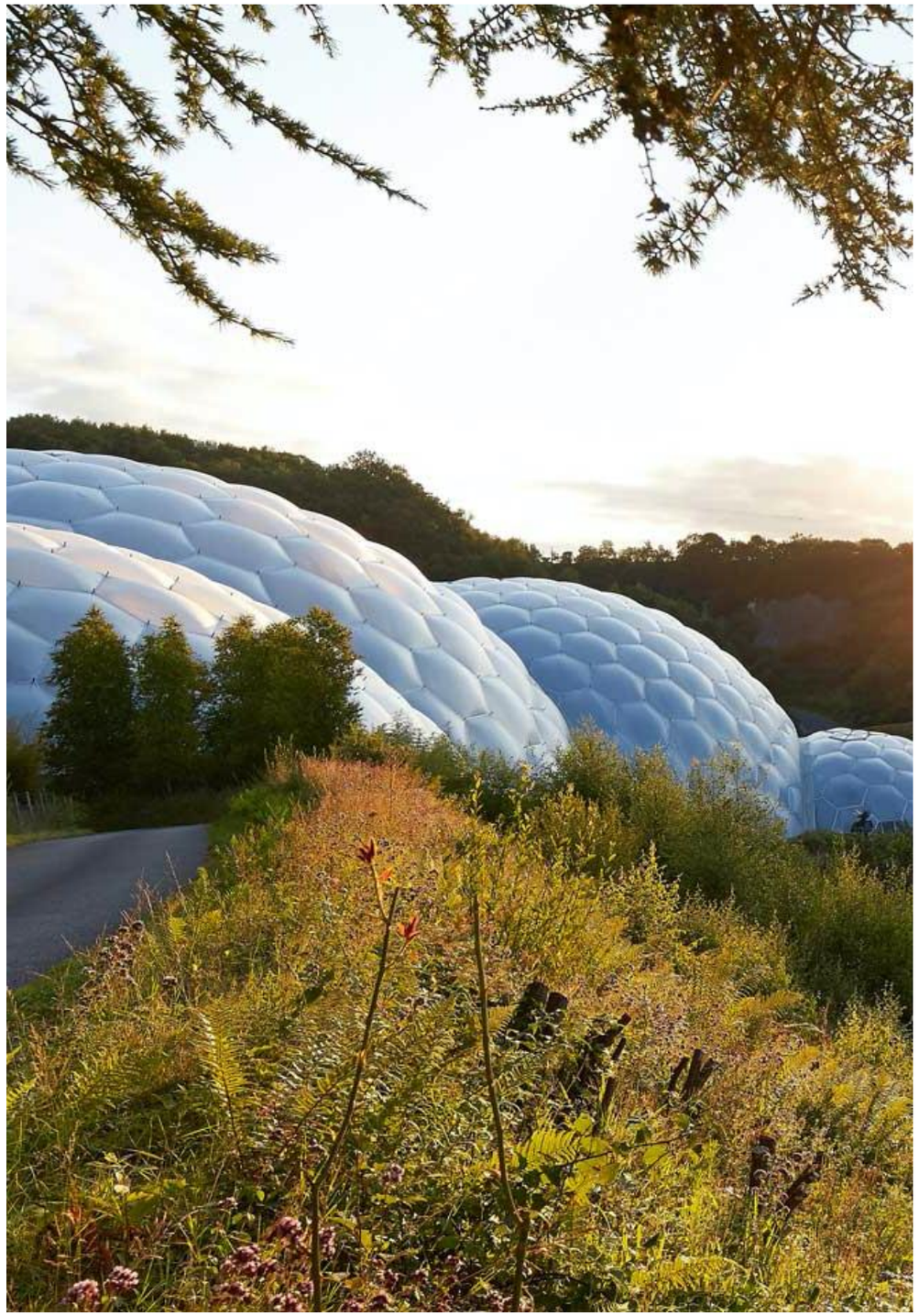
Eden Project

- 2nd UK deep drilling site
- Heat and electricity demand on site
- Planning for 4 MWe plant



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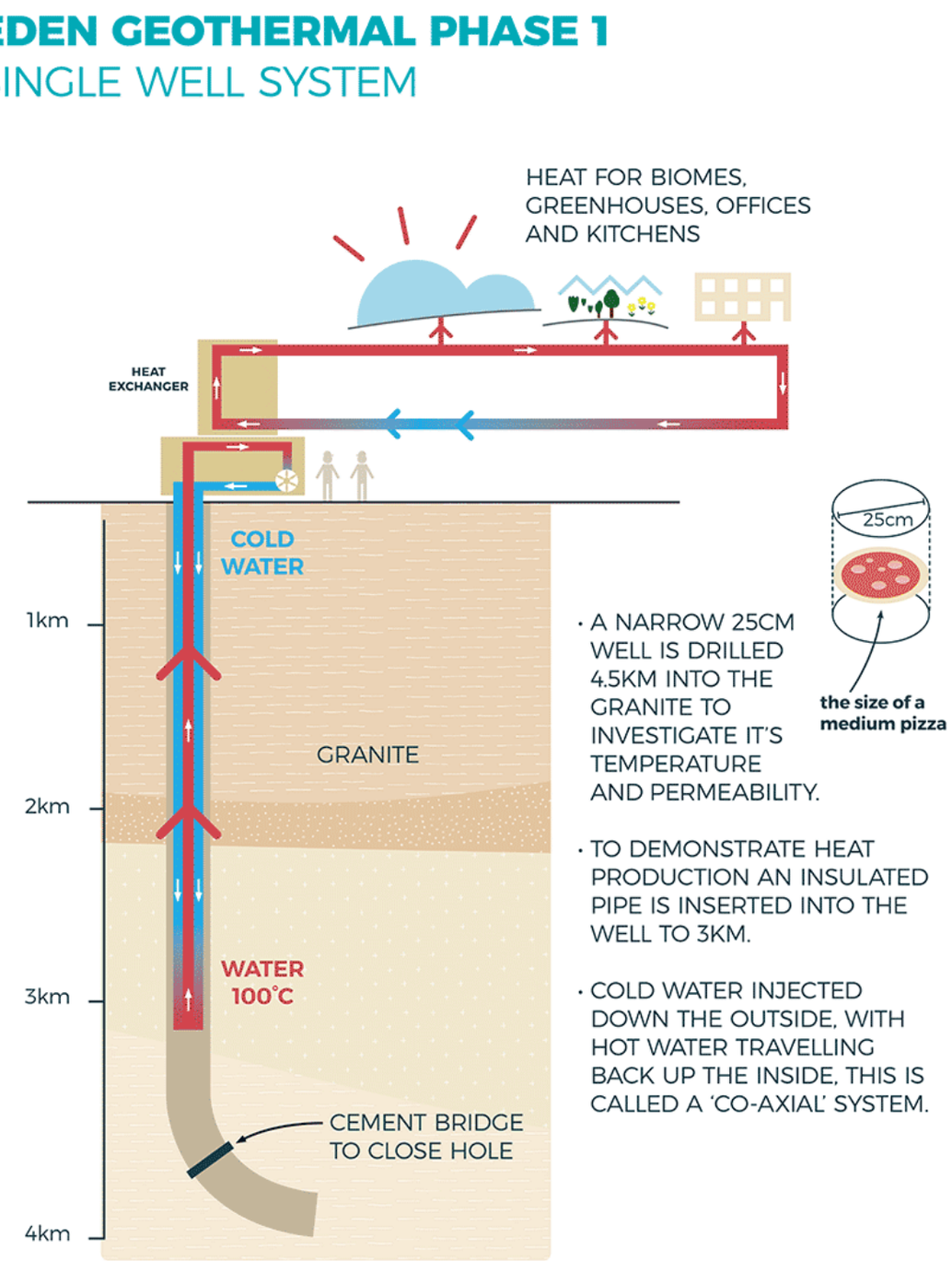
Eden Project

- Single well for Phase 1



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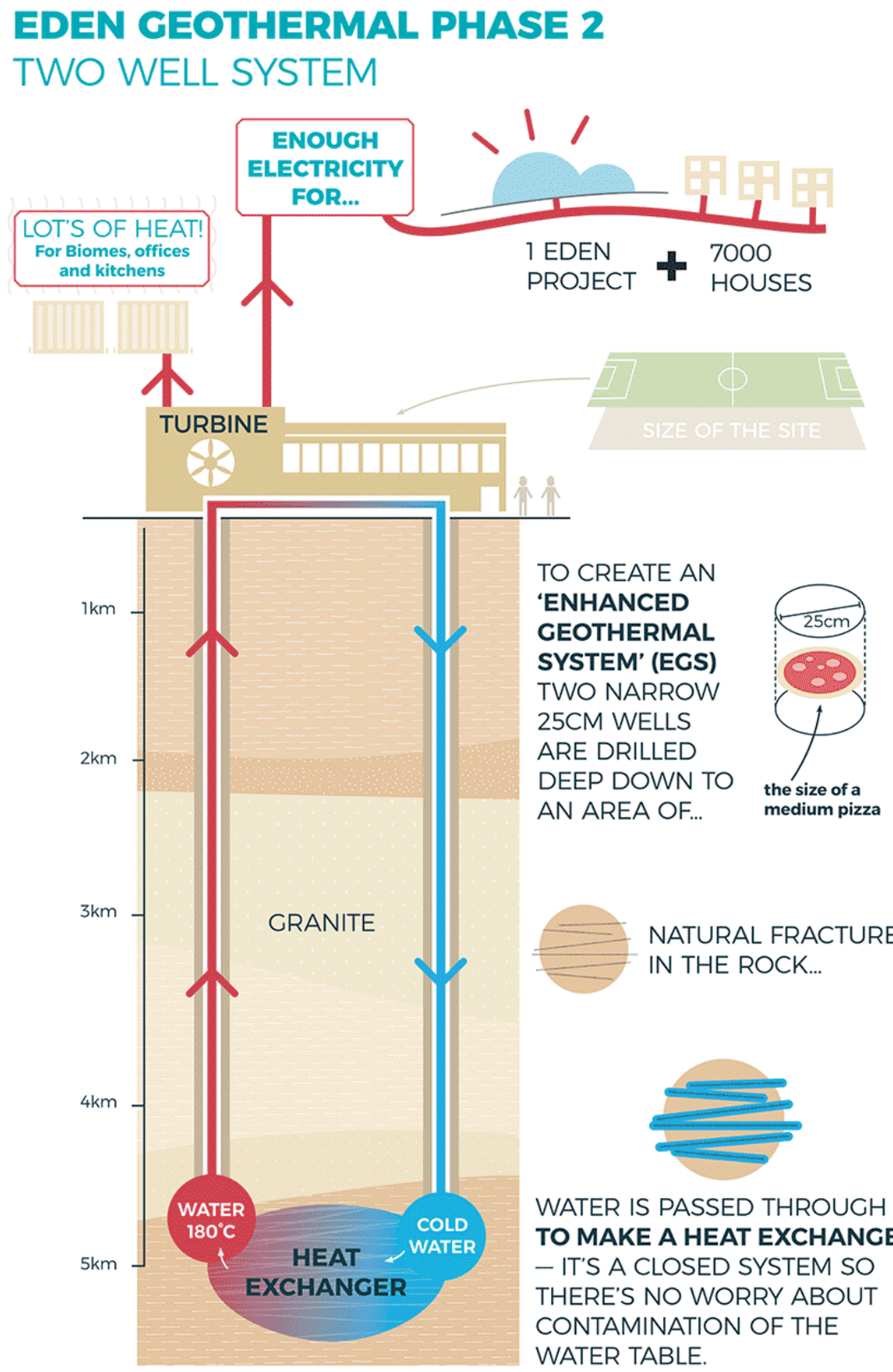
Eden Project

- Two well system for Phase 2



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Virtual conference

Agenda - Wednesday, 20th May 2020 – Public Conference

9:00 – 9:30 Opening session

- 9:00 Richard Cochrane, University of Exeter, Renewable Energy Group, Cornwall, UK
- 9:15 Caroline Carroll (Local Industrial Strategy Manager at Cornwall and Isles of Scilly Local Enterprise Partnership, the Cornwall Council

9:30 – 10:30 GeoAtlantic projects

- 9:30 Raul González (Concello de Ourense) - The main results of GeoAtlantic in the Ourense region
- 9:50 Eduardo Rodriguez (EnergyLab) - EnergyLab: work done and geothermal energy situation in Galicia
- 10:10 Ana Palmero (Universidade do Porto – UPORTO - FEUP) - Good practices of geothermal technologies in Portugal
- 10:30 Robert Gurnett (University of Exeter) – Business Engagement & Technology Transfer

10:50 – 11:05 Break and Chat Room

11:05 – 12:25 GeoAtlantic projects cont.

- 11:05 Fatima Rodriguez (Instituto Tecnológico Y De Energías Renovables ITER) – Exploration of deep-seated geothermal reservoirs in the Canary Islands
- 11:25 Valérie Degrange (Agence Locale de l'Energie et du Climat ALEC) – Remarkable project in Aquitaine and current Geoatlantic activities
- 11:45 Sreto Boljevic (Cork Institute of Technology CIT) – Geothermal energy exploration/utilization in Cork/ South of Ireland Area
- 12:05 Dan Stefanica (European Heat Pump Association EHPA) - Research and Innovation in the Energy sector

12:25 – 13:30 Lunch Break and Chat Room

13:.30 – 14:30 External presentations

- 13:30 Chris Yeomans (GWatt project, CSM, University of Exeter) - Geological characterisation of deep geothermal systems in SW England
- 13:50 Peter Ledingham (United Downs Deep Geothermal Project) - The United Downs Deep Geothermal Power project
- 14:10 David Broom (KENSA) - Ambient loops powered by minewater

14:30 – 14:50 Chat Room

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