



Challenges and opportunities in our local energy system

Show the Love for Cornwall, 15 Feb 2019

Iain Soutar

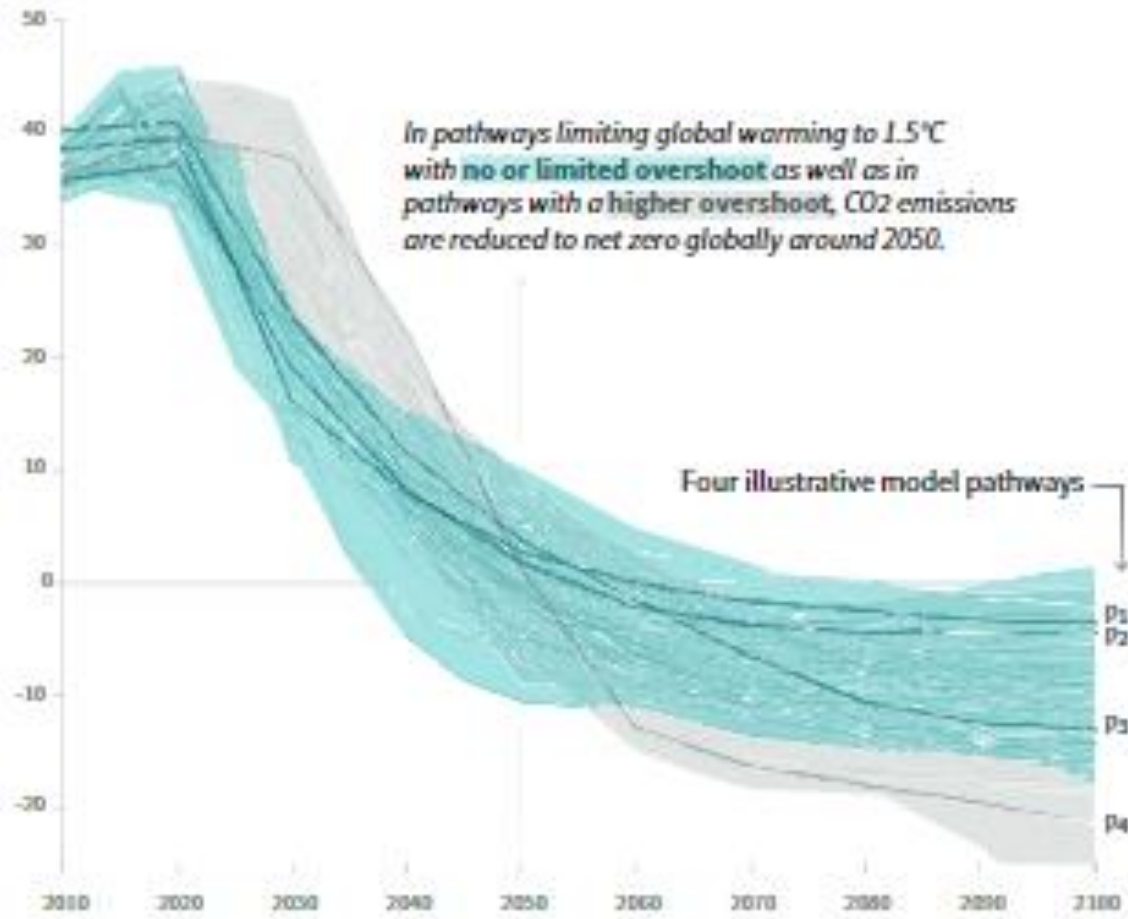
Energy Policy Group, University of Exeter



Some (international) context

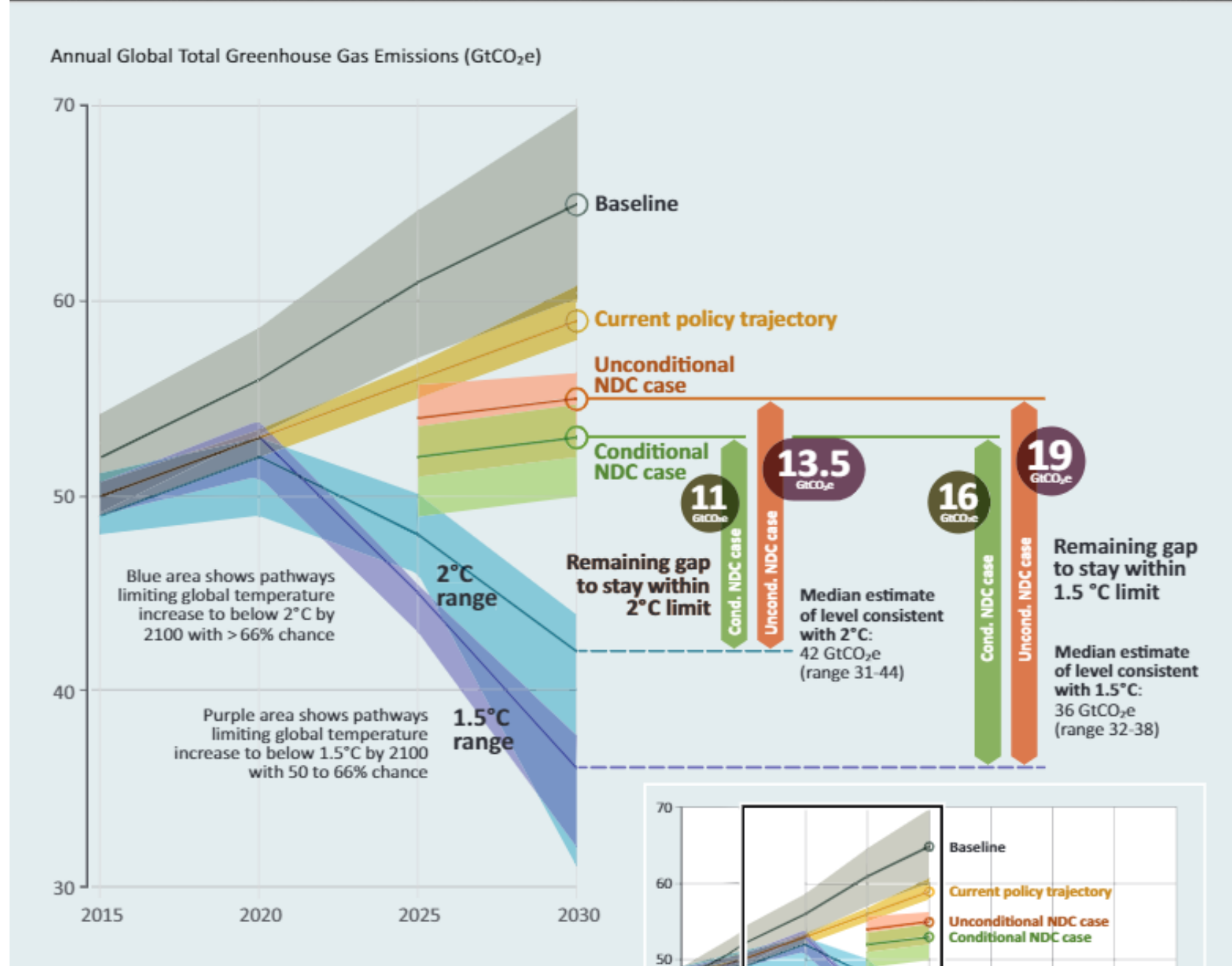
Global total net CO₂ emissions

Billion tonnes of CO₂/yr



- IPCC's pathways compatible with keeping under 1.5°C limit
- Emissions need to decline rapidly across all of society's main sectors, including buildings, industry, transport, energy, and agriculture, forestry and other land use (AFOLU)
- For energy in particular this means
 - Increased electricity share in final energy demand
 - Reduced carbon intensity of that electricity
 - Rapid transition in first half of century and slower transition thereafter

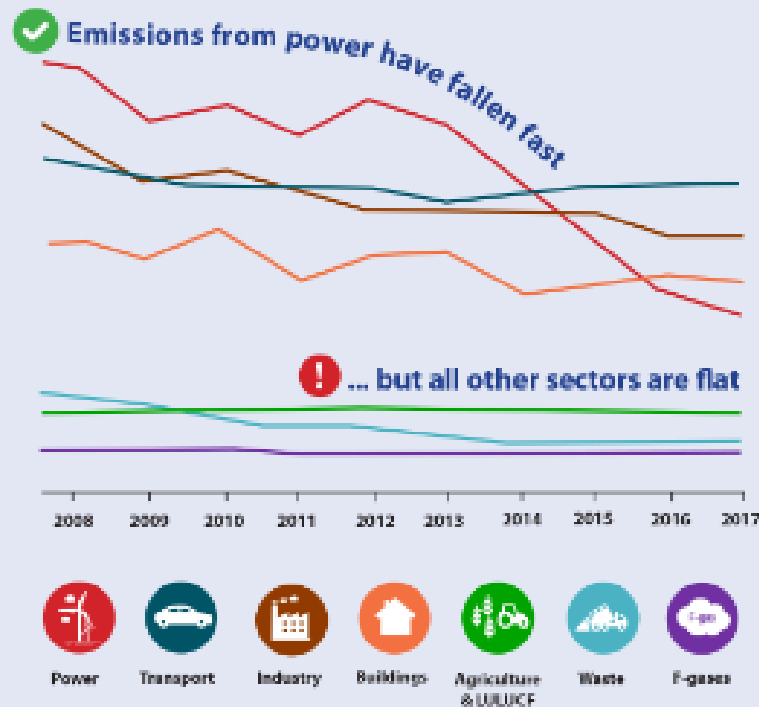
- The planned global contributions (NDCs: Nationally Determined Contributions) to emissions reduction are only about a third of what is needed to be on a least-cost pathway to keep us below 2°C



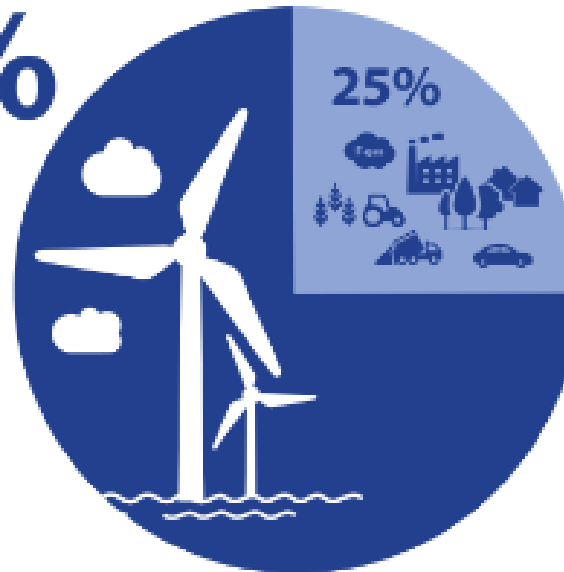
The (UK) context

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

- Much of the low hanging fruit (decarbonising power) has already been picked
- Much more attention needed on transport and heat
- Policy focus on competitive innovation to drive changes across sectors

Cornwall: Local challenges and opportunities?

- Superb low carbon resources
 - 4th out of 56 Local Authority areas in terms of RE generation
 - 72% from solar; 17% from wind
- Grid constraints in Cornwall mean that continued growth of low carbon sources of energy is challenging
- Housing stock means decarbonising heat will be challenging, although lots of potential to improve off-gas grid properties
- Lots of innovation going on around overcoming these constraints, although at present this is somewhat disconnected



Key principles moving forward...

- We need to act swiftly
- There need to look after those at risk of losing out from move to low carbon economy
- Energy system challenges are collaborative challenges
- Political leadership will be key
- But, bottom-up action is increasingly important



Email: i.soutar@exeter.ac.uk

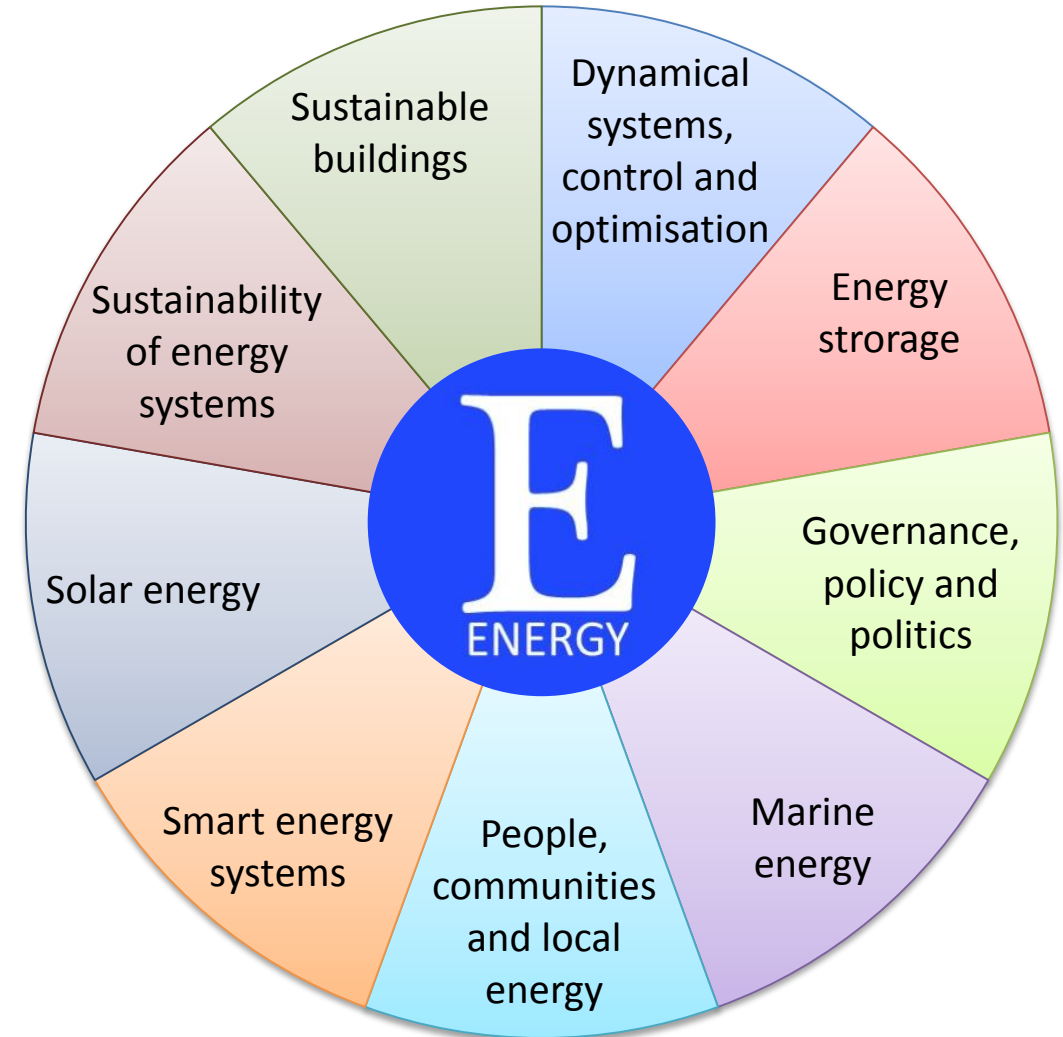
Twitter: [@isoutar](https://twitter.com/isoutar)

@exeterepg

@exeterenergy

ExeterEnergy

- Formally launched in Sept 2018
- 140 researchers across nine themes
- Collectively focused on *making sense of and facilitating transformation and resilience in energy systems*
- Cornwall and Exeter campuses
- Research across all colleges & disciplines
- Not just research, but also education and 'impact'



Today's energy challenges are 'whole system' challenges

- Moving away from the energy 'trilemma'
 - Cheap power is now green power
- Moving from the generic to the specific
 - Towards diverse solutions that fit local contexts
- Moving beyond power
 - Towards decarbonisation of heat and transport
 - From deployment to integration of multiple technologies
- Transformation in the energy system is fundamentally a societal challenge
 - New forms of leadership, governance, business models & behaviours

