#NCRE2022

BIDWELLS

NATURAL CAPITAL & RENEWABLE ENERGY INVESTMENT CONFERENCE

In association with

Pinsent Masons

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NATURAL CAPITAL MARKETS

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#NCRE2022

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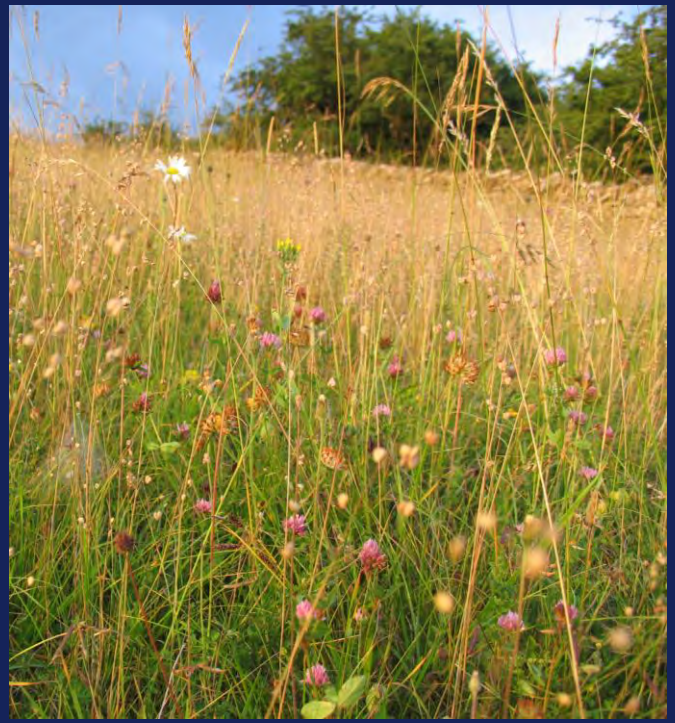
NATURAL CAPITAL MARKETS

AGENDA

- Why care about natural capital?
- The Scottish perspective
  - Market trends
  - Effect on land values
- England’s outlook
  - Biodiversity net gain
  - Nutrient neutrality
- Looking forward
  - Future markets



WHAT IS NATURAL CAPITAL AND WHY SHOULD INVESTORS CARE?

Natural Capital Committee definition

"elements of nature that directly or indirectly produce value or benefits to people"

Threat

- Worldwide biodiversity and climate crisis
- Nature recovery massively underfunded (£44 - £97bn)
- Depletion of natural resources poses a real risk for businesses, their earnings and investors

Opportunity

- Local, national and international policies are pushing for environmental improvements
- Value the benefits nature provides
- Environmental, Social and Governance (ESG) goals
- Existing compliance and voluntary markets
- Drive towards local environmental offsetting

Source: https://www.gov.scot/publications/climate-ready-scotland-second-scottish-climate-change-adaptation-programme-2019-2024/documents/

THE SCOTTISH PERSPECTIVE

A carbon powerhouse

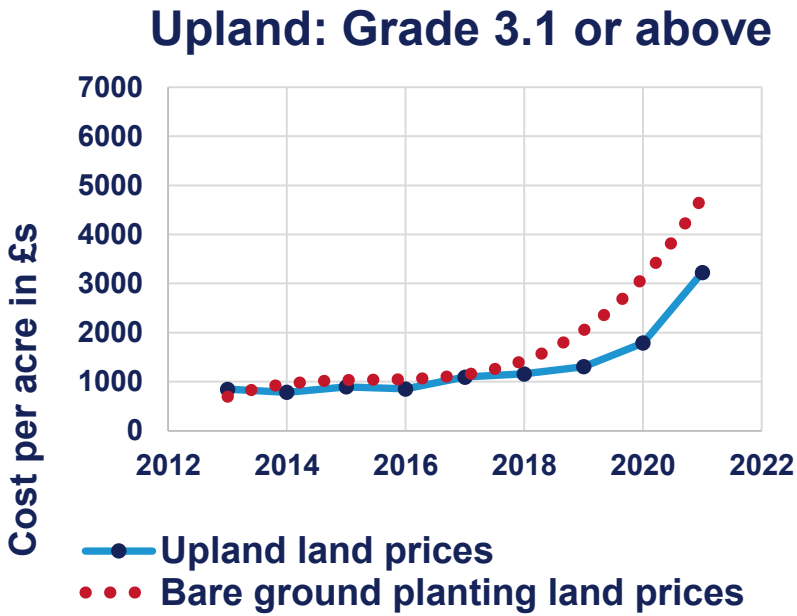
- Scotland provides lion's share of market supply
  - Nearly 70% of Peatland Code projects
  - Over 80% of woodland registered with the WCC
- No compliance market exists for biodiversity in Scotland

Market trends

- Prices for UK-generated carbon credits have increased ten-fold since 2018
- Slower price rises in 2022, large variance in price per credit
- Approaches to monetisation of carbon becoming increasingly sophisticated

Effect on land values

- Has impacted price per hectare of 'rough grazing' land
- Important to acknowledge the impact of commercial forestry, the main driver of increasing land values



ENGLAND OUTLOOK

Biodiversity net gain

- 10% BNG will be mandated by the Environment Act 2021
- Aims to improve biodiversity locally
- Biodiversity Metric uses habitats as a proxy
- Offsetting required for at least 30 years
- Sale of biodiversity units can provide attractive financial returns

Nutrient neutrality

- Aims to protect designated wetland sites
- 74 councils are currently affected
- Focuses on phosphates and nitrates
- Opportunity for landowners in these catchments to partner with developers affected
- Offsetting required for 80-125 years
- Sale of nutrient credits can provide attractive financial returns

LOOKING FORWARD

Future standards

- Expansion of existing codes
  - Peatland Code – lowland fens
  - Environmental benefits for nature
- New carbon and biodiversity standards
- Biodiversity net gain in Scotland

Ecosystem markets – a work in progress

- Huge role for government to provide infrastructure and regulation for new natural capital markets
- Important role for private sector pioneers to keep driving innovation and progress!

Game & Wildlife CONSERVATION TRUST

PLAN VIVO
For nature, climate and communities

Wilder Carbon
Native habitats. Natural solutions.

RENEWABLES OF THE FUTURE
AN ADAPTIVE GOVERNANCE FRAMEWORK

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Prof Nazmiye Ozkan
Head of Centre for Energy Systems and Strategy,
Cranfield University

Cranfield University

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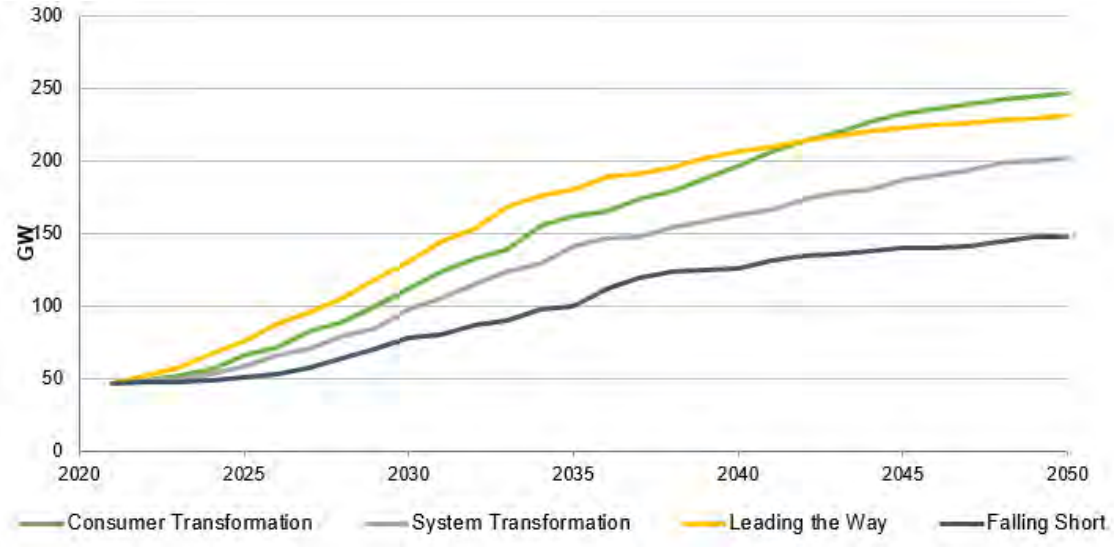
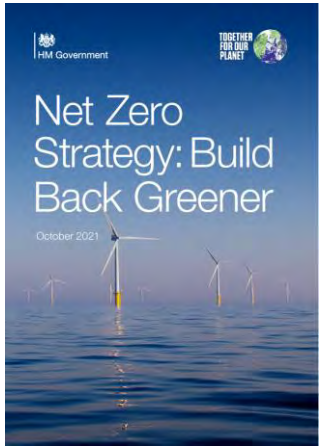
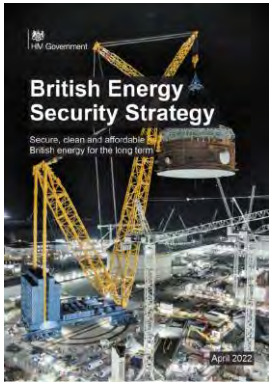
Renewables central to UK's climate change & energy policy goals

- Full decarbonisation of power system by 2035
  - Significant growth in share of renewable energy (50GW by 2030 – Energy security strategy)

Renewable generation capacity





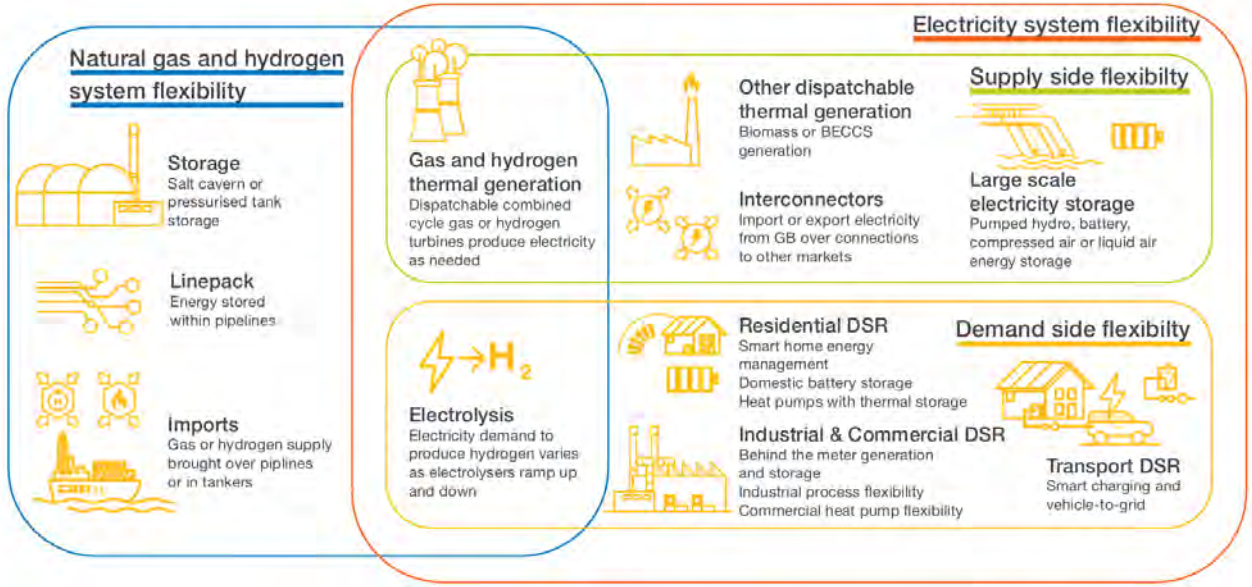


Source: National Grid (2022) Future Energy Scenarios

Flexibility is central to ensure affordability of energy

- How to incentivise consumers to offer flexibility?
  - Individual vs community level
  - Demand side response
  - Technologies
    - Batteries
    - Electric vehicles

Housing developers - innovative business models for low carbon heating

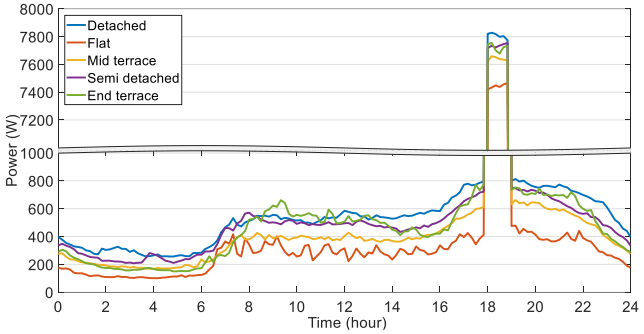


Source: National Grid (2022) Future Energy Scenarios

New housing developments may export power to the grid

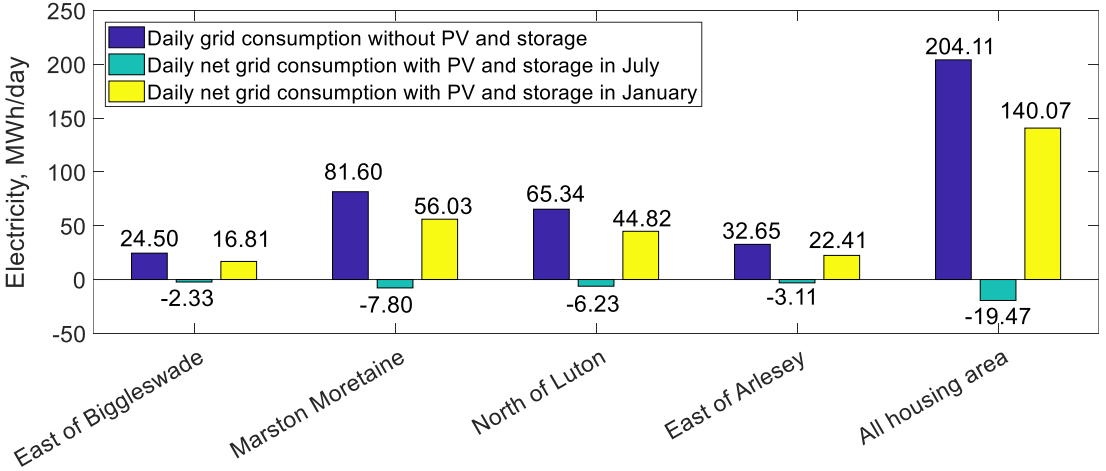
- Power demand – including electric vehicles, batteries and solar panels

Daily average demand per dwelling



Detached	Flat	Mid terrace	Semi detached	End terrace
19%	42%	9%	20%	10%

Daily average demand per dwelling

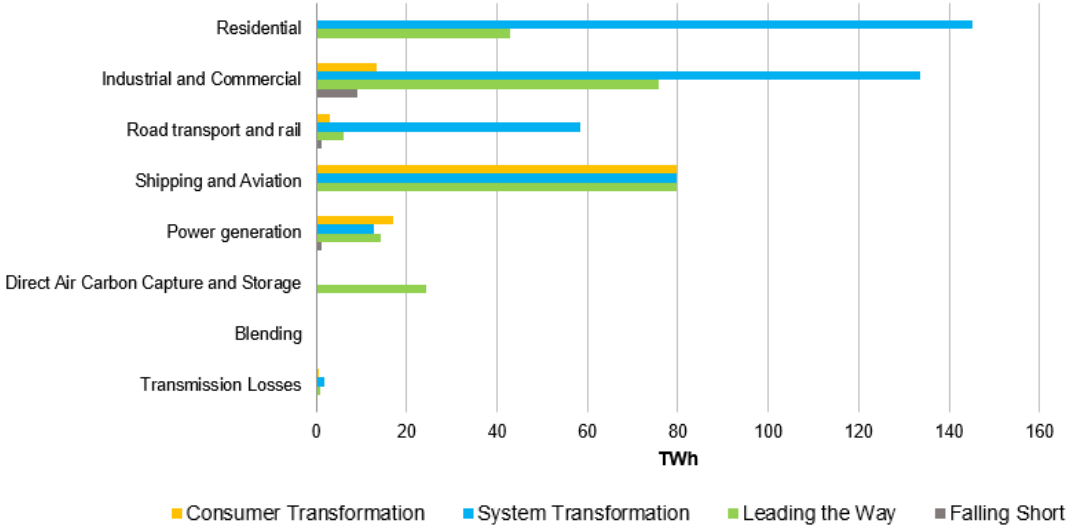


Source: Gil et al (2021) Optimising Renewable Energy Integration in New Housing Developments with Low Carbon Technologies

Energy, water and natural environment.. new interdependencies

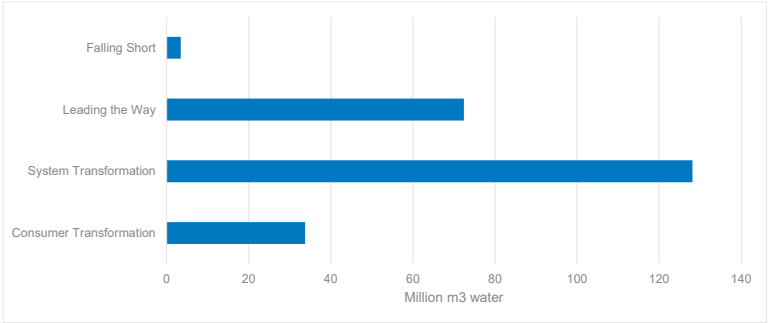
- Hydrogen to contribute to British energy security and decarbonise hard to treat sectors

Hydrogen demand for different uses



Source: National Grid (2022) Future Energy Scenarios

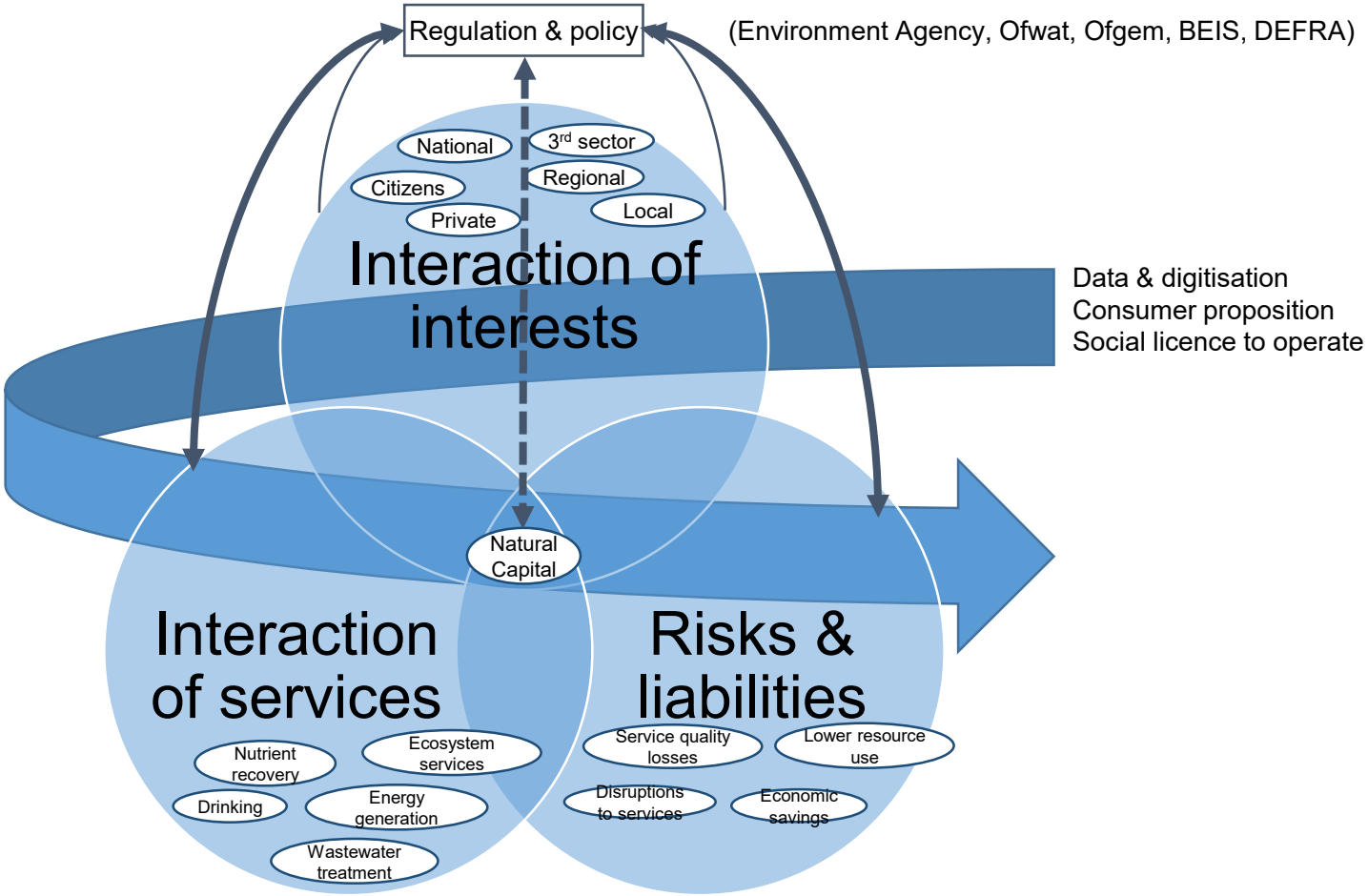
Additional water demand for hydrogen generation



Source: Own calculations

Where? When?
How much?

New approach: Adaptive governance framework



PROJECT CASE STUDY
THE ENERGY TRANSITION

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John Mullen
Country Market Director, Energy
Ramboll

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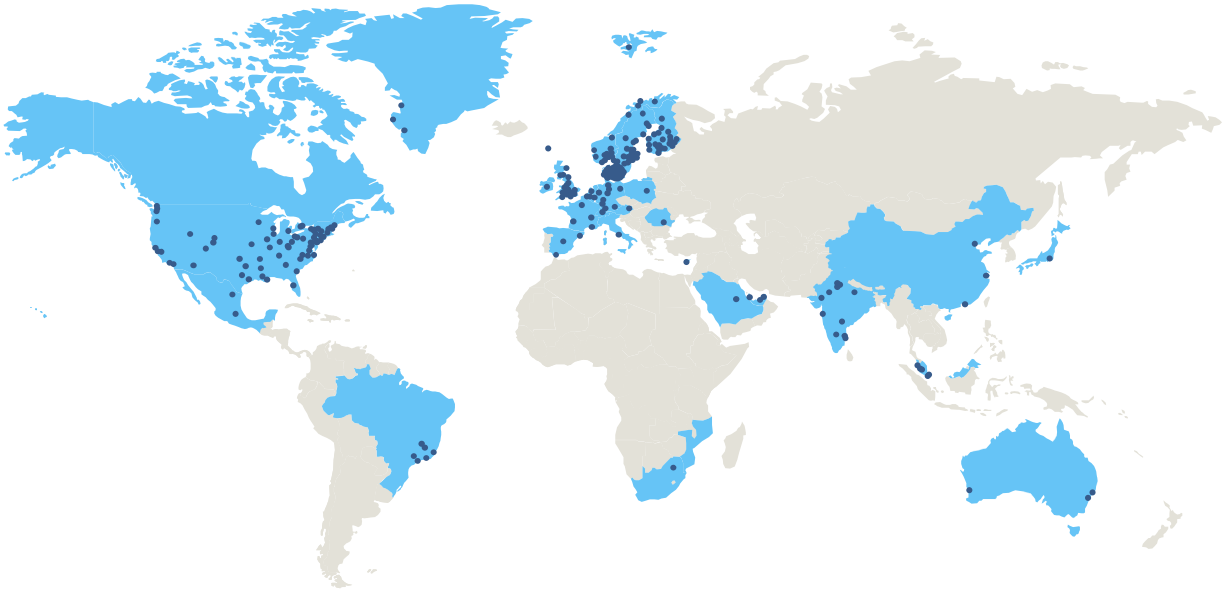
Bright ideas.
Sustainable change.

The energy transition
Location - a critical enabler to integration

The case for Scottish Water

Global independent engineering, architecture and consultancy company



17,000
Engineers, designers, scientists, consultants and digital experts

35
Sharing global knowledge and local insight across 35 countries

1.827bn
Euro revenue

Owned by Rambøll Fonden, The Ramboll Foundation

Markets


Buildings


Transport


Water

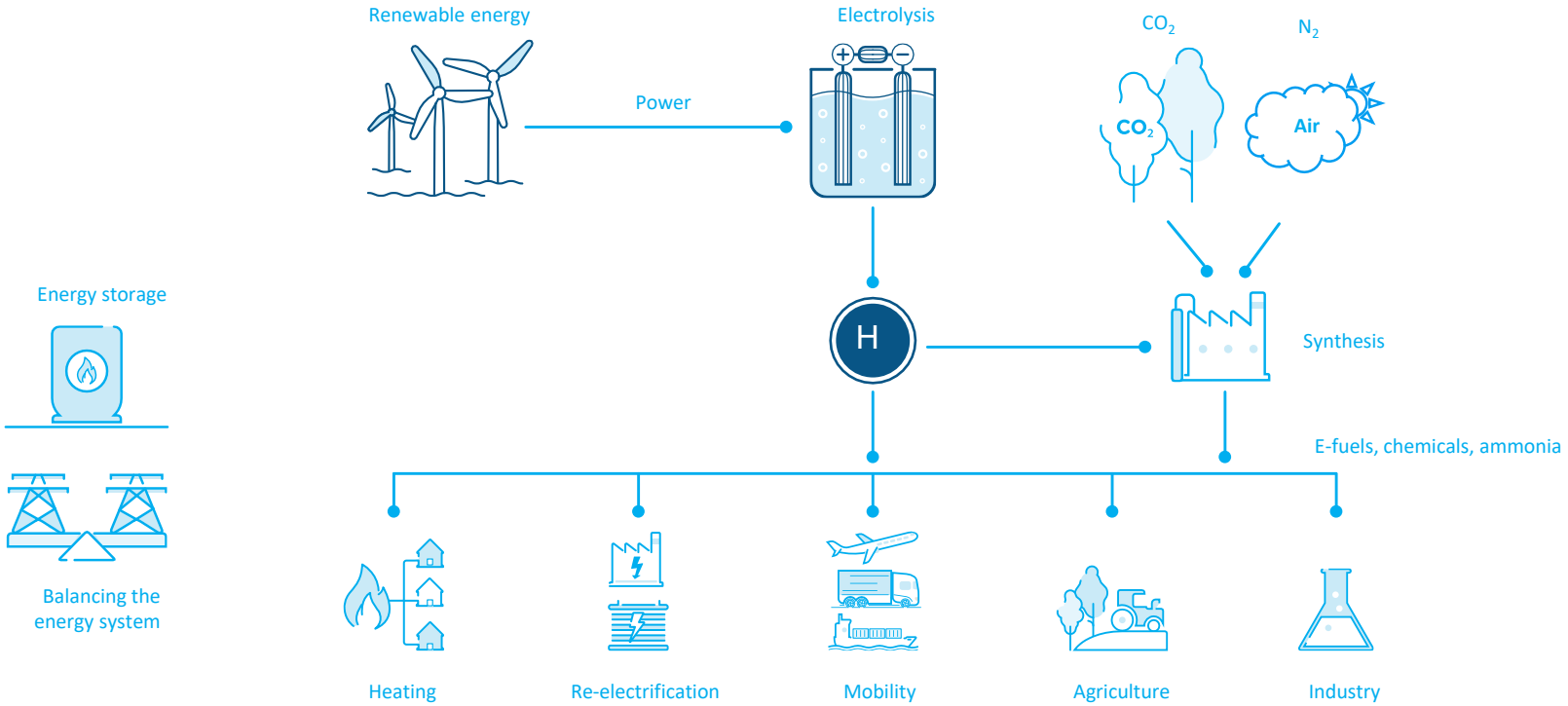

Architecture &
Landscape


Environment &
Health

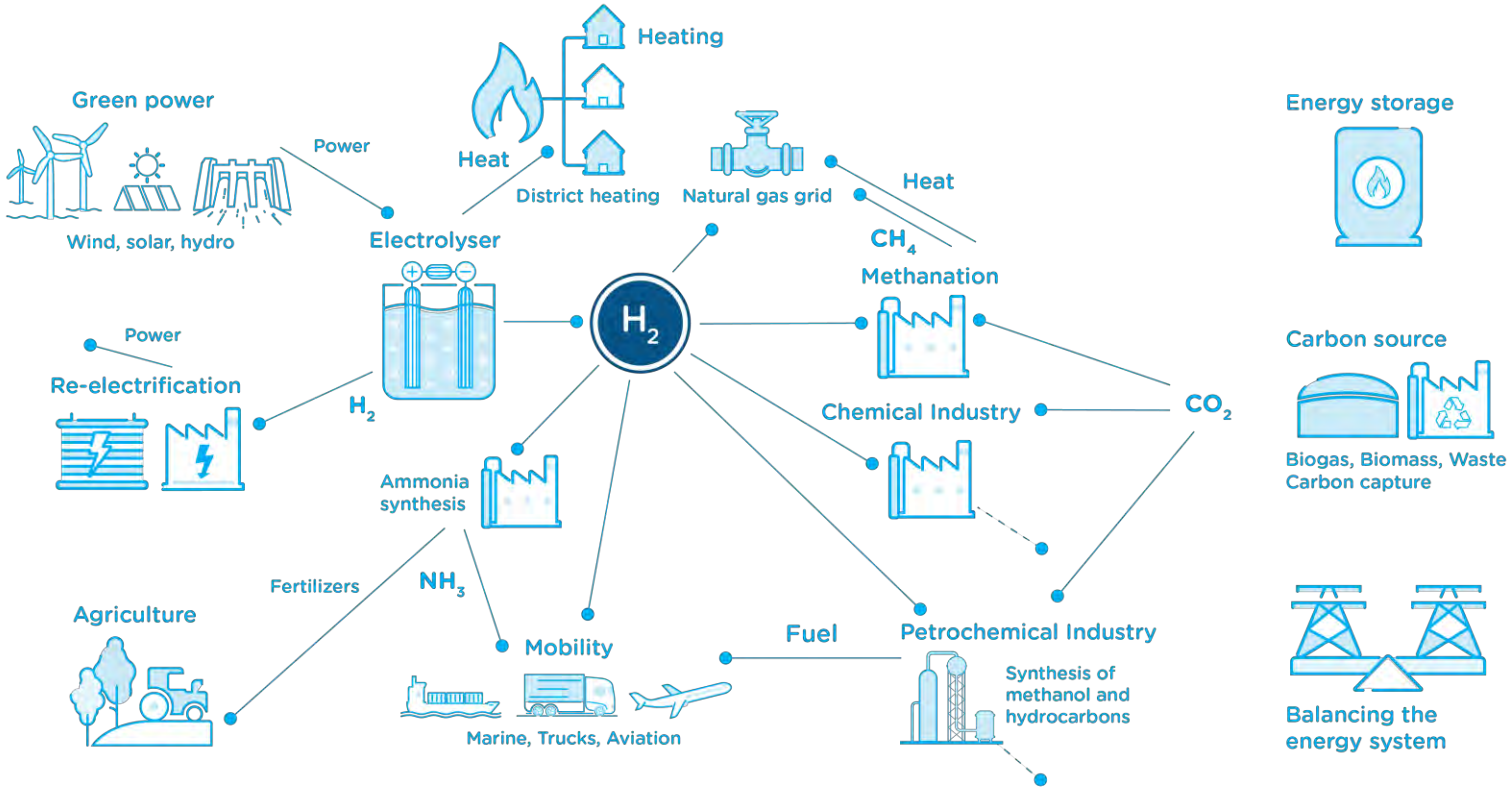

Energy


Management
Consulting

Power-to-X in short



Complexity & sector coupling



Case Study

About Scottish Water

Scottish Water

Trusted to serve Scotland

- Provide water and waste water treatment for Scotland
- 1800 waste water treatment works
- Net Zero Emissions Route Map, committing to net zero emissions by 2040
- Decarbonisation of their large HGV fleet is critical to success

The Brief

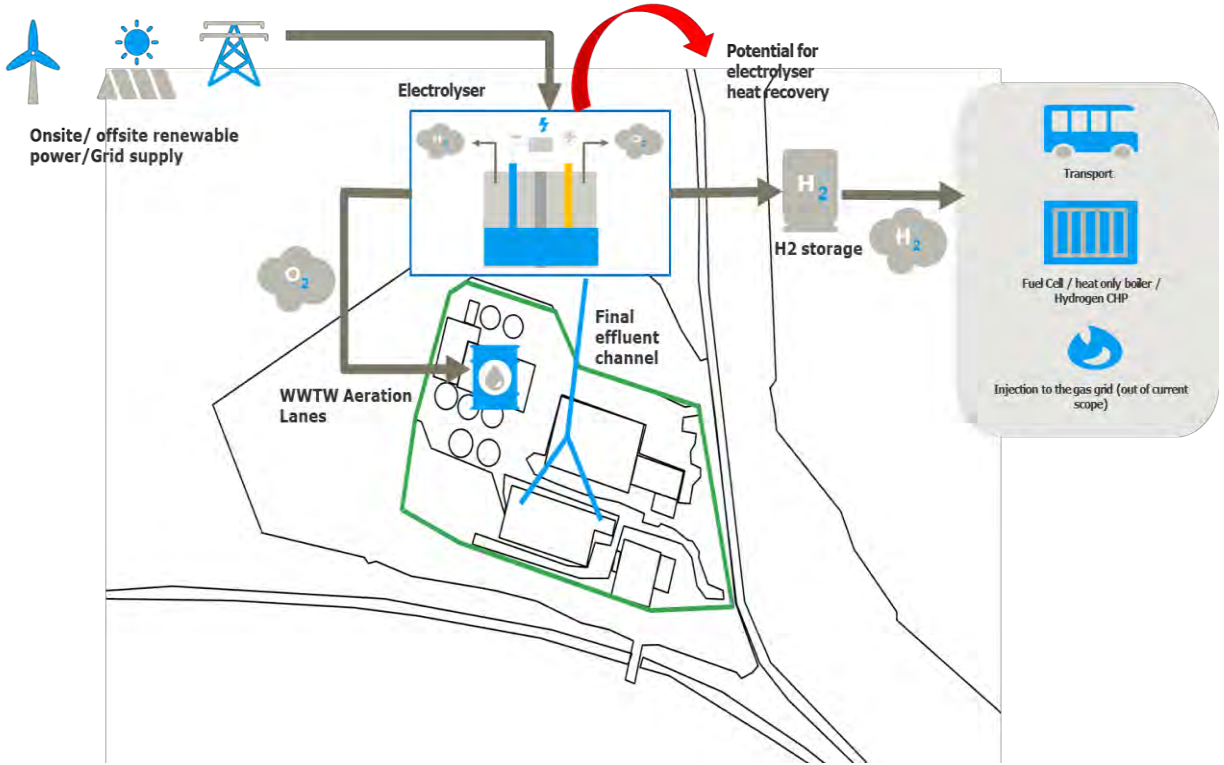
Explore feasibility for hydrogen to power their large HGV fleet

- Explored two of their sites
  - Glasgow
  - Aberdeen

Project Concept

Explore feasibility for hydrogen to power their large HGV fleet

- Explored two of their sites
  - Glasgow
  - Aberdeen



Key Challenges

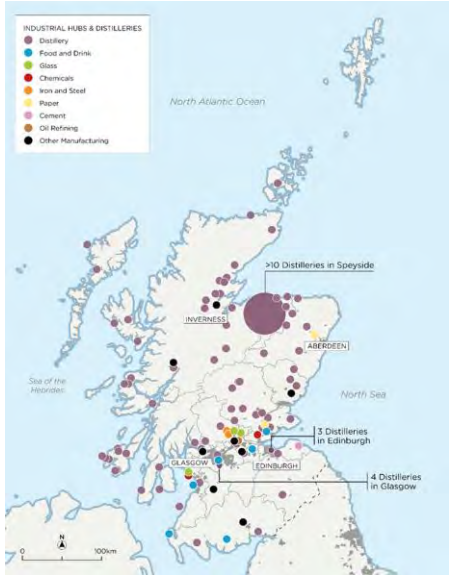
Space and location

- Hydrogen generation
- On site renewables
- Hydrogen storage
- Opportunity to link to hydrogen buyers

Finance model

- Requires a revenue stream
- Where is the demand
- Where is the supply
- Needs to have confidence on market price

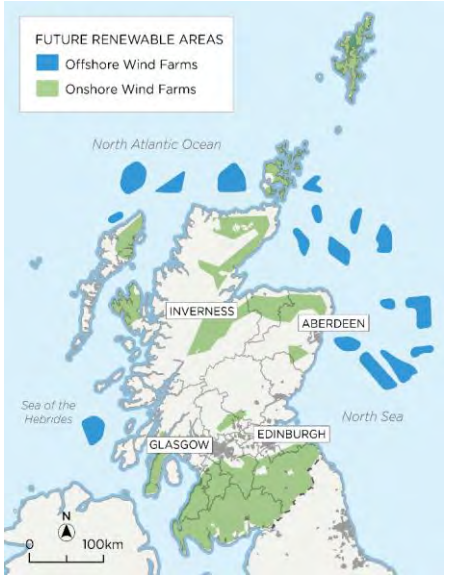
What would have changed the outlook – Hydrogen critical infrastructure



Potential industrial users

Transport hubs

Gas network



Renewable resources

Key to successful hydrogen projects

Key Takeaways

Lands at strategic locations are vital for the development of renewable energy projects.

Without the avalability of lands close to the strategic infrastructure it will be impossible to acheive the UK's net zero targets.

Revenue generation

In the current energy climate the business case for the renewable energy projects is stronger than ever.

Social acceptance

Most decarbonisation initiatives have strong public backing and favorible policy support from the local and national governments.

Increased profitability

Lands located at the strategic locations e.g closer to the hydrogen offtakers or renewable energy sources can substantially reduce the cost and increase profitability.

Wider opportunities

Good avalability of land at strategic locations can enable exploiting wider befits from the project such as:

- Battery storage coupled with renewable power generation
- Hydrogen refueling stations
- Integration of heat networks and hydrogen
- Circular economy opportunities

Bright
ideas.
Sustainable
change.

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KEYNOTE

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Juliet Davenport OBE

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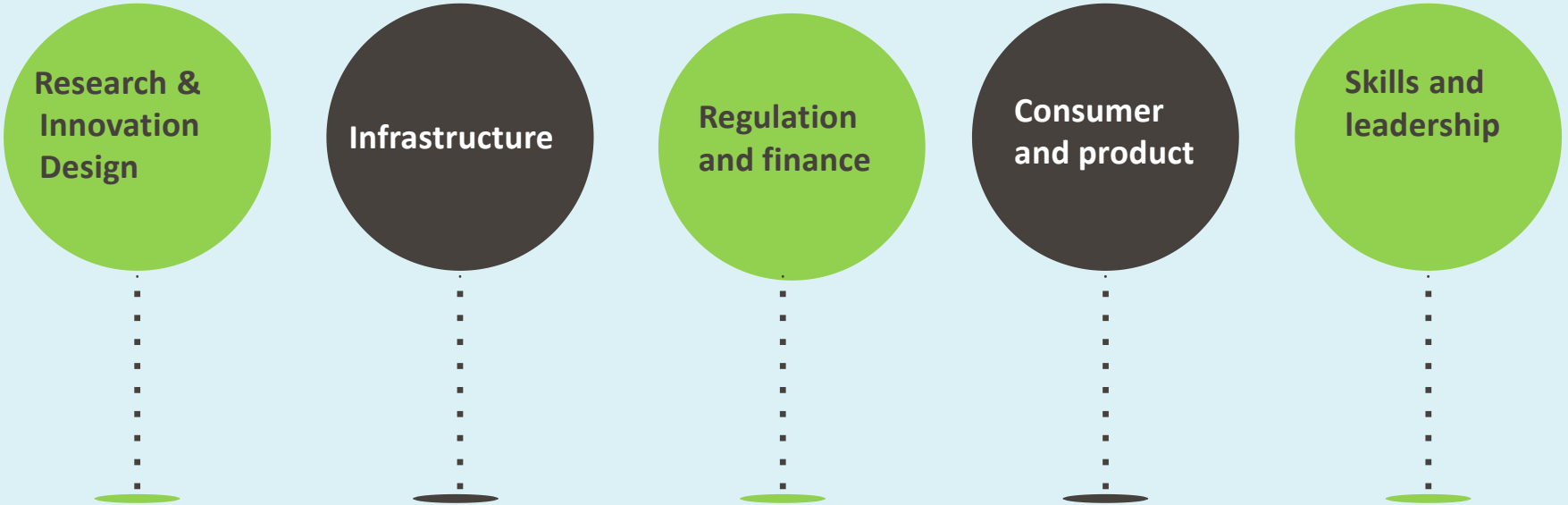
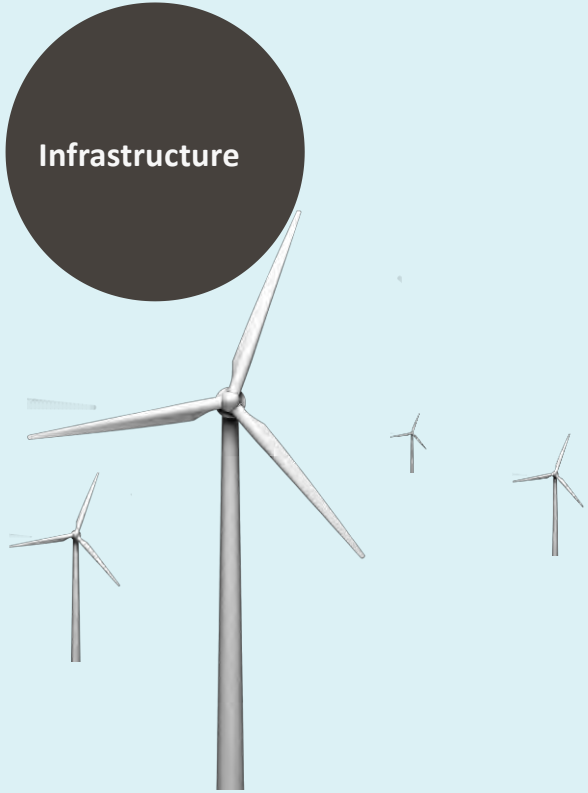
Bidwells Natural Capital & Renewable Energy conference

Juliet Davenport

The urgency of net zero

To tackle climate change and support the transition to net zero we need to consider the wider context.





- The UK's infrastructure was built for a high carbon world. The leadership challenges are how do we adapt to a low-carbon one.

- **Power Networks** – centralised systems build to support around 40 power stations, requires adaptation flexibility support, demand side response, decentralised generation
- **Heat Networks** – 80% of the UK's housing stock is connected to the gas grid. Hydrogen can be used in localised systems, in particular for high temp, but longer distance not really an option (in my opinion).
- **Transport infrastructure** – build around the internal combustion engine. Significant improvement in the EV charging system, but a long way to go. There are some hydrogen for HGV transport.

This transformation is probably one of the major barriers to shifting to zero carbon. The investment required in all areas is significant, and needs long term investment, and a method to decommission existing assets where they become redundant.

Infrastructure

Power

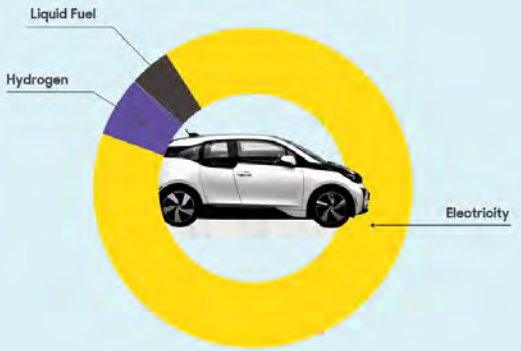
- OFGEM review published this summer, August 2022
- Independent expert, Future Energy system operator to oversee the networks and investments is to be appointed to replace the existing structure of operation by National Grid.
- Facilitation of more strategic network planning for local, national and international infrastructure
- Review of the governance of infrastructure pricing reviews
- Ambition to speed up consent on large high voltage infrastructure planning approvals, key if offshore wind targets are going to be met

Transport

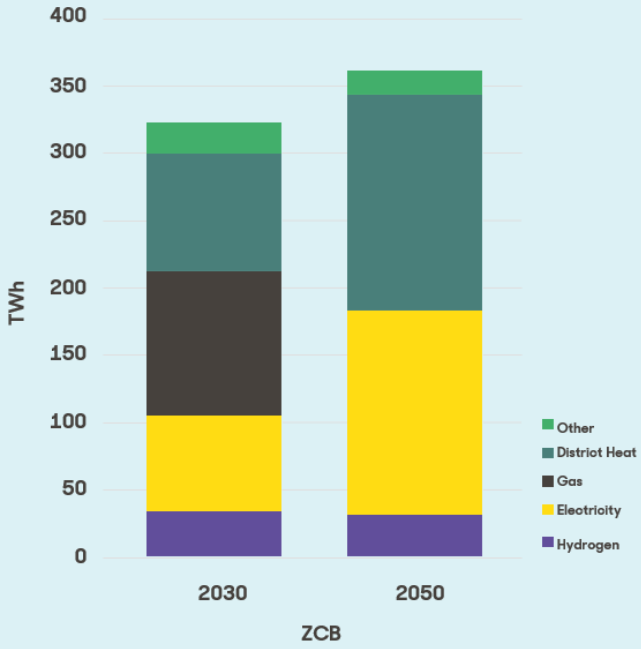
DoT published its EV infrastructure strategy in March 2022 looking to deliver some key outcomes:

- Access to public charging point
- Effortless charging for commercial and private drivers
- Fairly priced and inclusive
- Infrastructure works seamlessly with Smart Charging
- Continued innovation

There are two funds that government is focused on supporting this roll out a) £950 m Rapid Charging fund and b) Obligation on Local Authorities and funded by the £500m local infrastructure fund.



Infrastructure



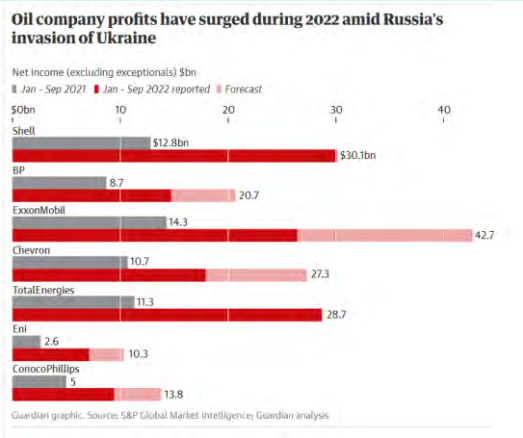
Heat Networks

- Government Runs The Green Heat Network Fund (GHNF) which is a three year, £288m capital grant fund that opened to applicants in March 2022.
- Phasing out of new Gas Boilers from 2035 and Householder Boiler scheme allows for a £5k grant for heat pumps
- Householders not connected to gas grid will be encouraged to switch away from fossil fuel boilers
- 10 Point Plan for Hydrogen heating, but this is still challenging as hydrogen is seen by main not as a domestic heating fuel but as a fuel for high temperature industry

Regulation and Finance

Challenging times for regulation and finance

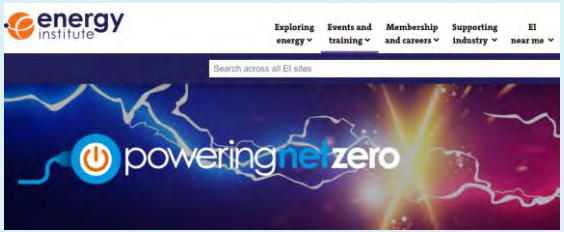
- Big external pressure from COVID initially and then Ukraine war, we have see a massive swing in the fortunes of the major energy market players
- Policy interventions around security of supply, windfall taxation and adaption of old mechanisms to new (i.e. ROCs to CFDs), and then the “mini-budget” – very unsettled period
- This has meant that there are challenging times for raising capital for net zero projects
- IPOs have significantly reduced, if not completely stalled, and discount rates are the highest we’ve seen in a while in the renewables sector, plus the increased cost of debt, has meant that although renewables technologies are still attractive, financial models are finding investment cases more challenging
- However, we are seeing the continued pressure for funds and investments to consider the range of ESG in their portfolios and campaigns such as Make My Money Matter impact the pension industry



Skills and leadership

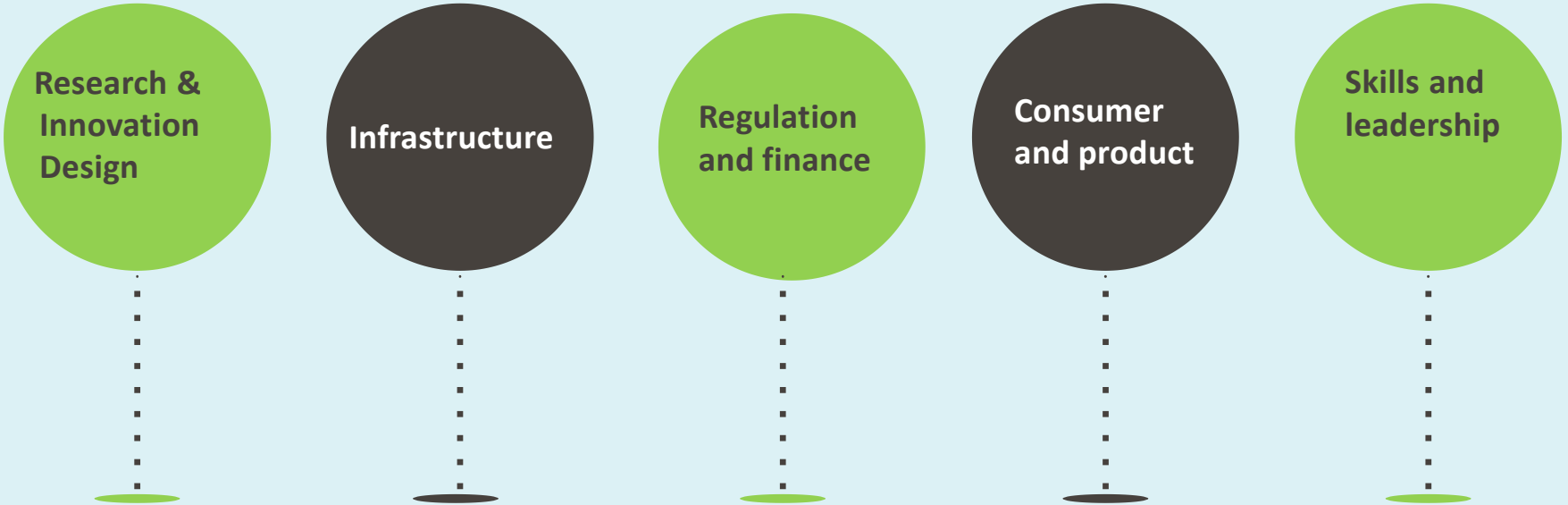
Skills and leadership

- In a report by the Green Skills Taskforce in 2021 highlighted the need for action to ensure that the right skill sets were in the UK workforce, and the need in particular for STEM capability.
- Despite the highlights in the report, and the findings of the select committee, there still seems to be little action in this area.
- Energy Institute is working with leading universities to accredit them for energy, and in particular the energy transition
- ELC working on a campaign to encourage more people into the industry. Major challenges in recruitment and longer term hiring.
- Recent IEA report recognises that nearly 65 million people worldwide work in the Energy sector, and 50% of those are now working in clean energy, and there is a significant focus in SE Asia. Competition for talent will be intense.



The urgency of net zero

To keep the planet from heating over 1.5 degree, we need urgent action and delivery. This in my view can only be achieved if we have action across the board in business, government, academia and consumers – if we deliver that, then we still have a chance.



Thank you for listening

About the The Green Start-Up - published in October 2022 it explores how, as the issues around climate change and environmental impact become more urgent, businesses and start-ups must work harder than ever before to operate in a greener, more sustainable way, for the benefit of both themselves and the planet. Juliet leads us through the most pressing questions facing any company, from how to fuel the business to how to hire ethically; from how to market sustainably to delivering your product in an environmentally friendly way.