How data, onsite generation and leadership strengthen energy control

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Head of Central Marketing
Centrica Business Solutions

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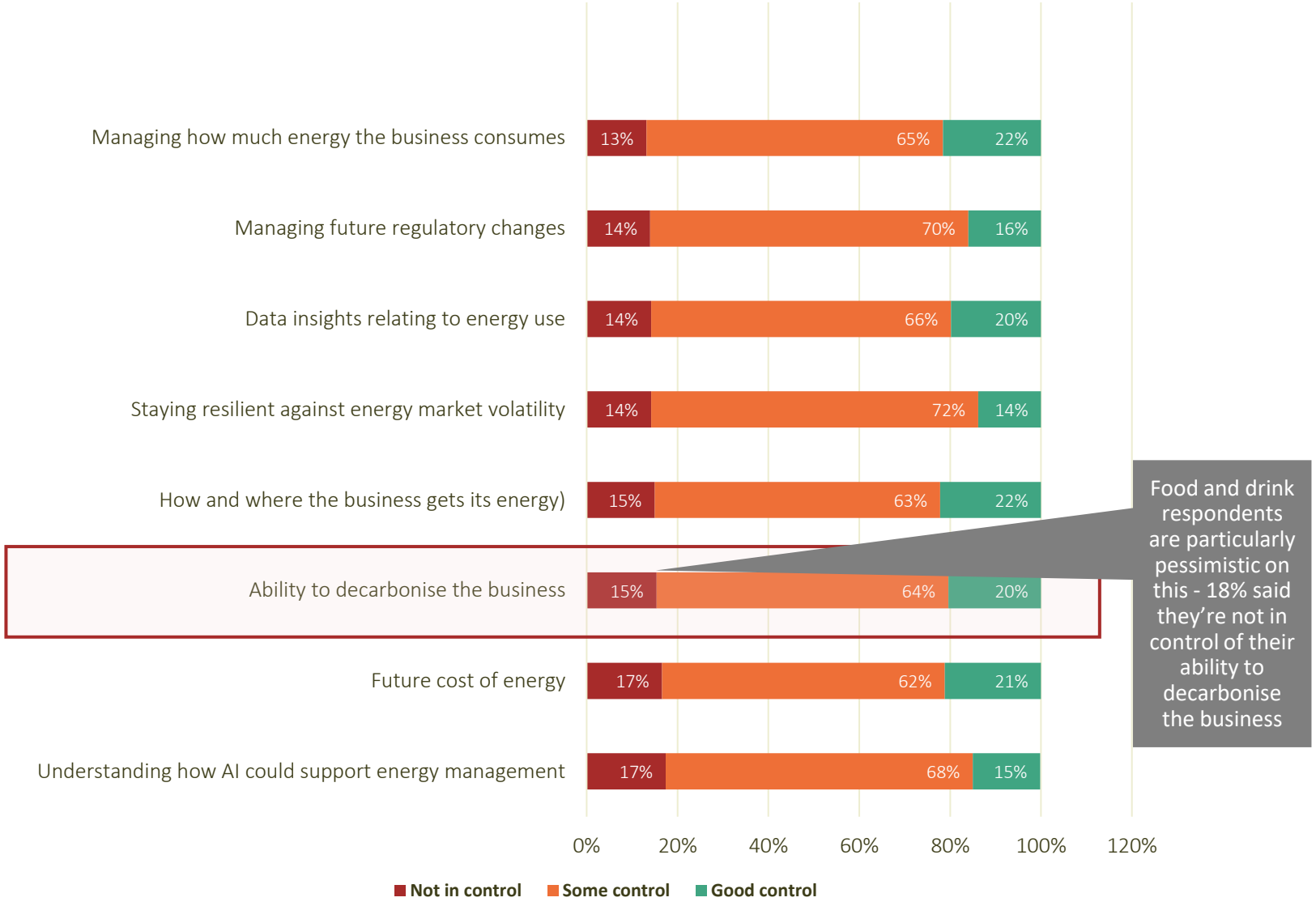
Organisations are struggling to control their energy use.

How in control is your business when facing these factors relating to energy use?



Food and drink respondents are particularly pessimistic on this - 18% said they're not in control of their ability to decarbonise the business

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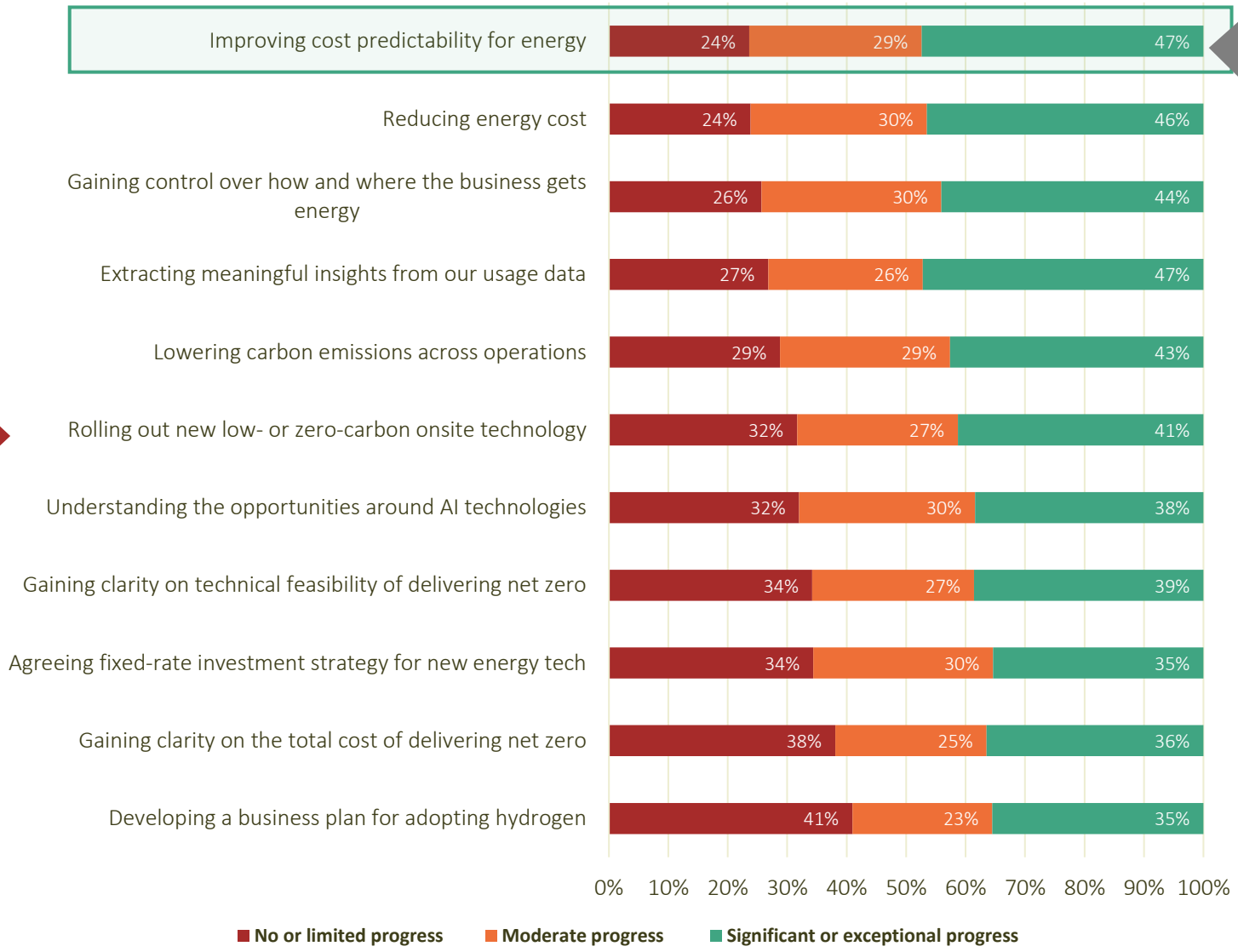
Energy volatility is stunting growth

How much progress has your company made in the following areas relating to energy management over the last 12 months?



Food and drink respondents feel even more positive on this - 53% have made significant progress in getting energy cost predictability

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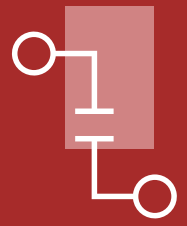

There's an organisational disconnect between the workforce and leadership.

- 24% of senior managers feel their organisation has good control of its energy supplies, but only 8% of those working on the ground in the energy procurement function agreed.

And external pressures add to the challenges, too.

- Alongside market volatility, organisations struggle to keep up with legislative changes: only 16% believe they have good control over their response to legislation. And distanced workforce makes it even harder to predict and respond to energy demands: 43% of organisations agree that this is a challenge.

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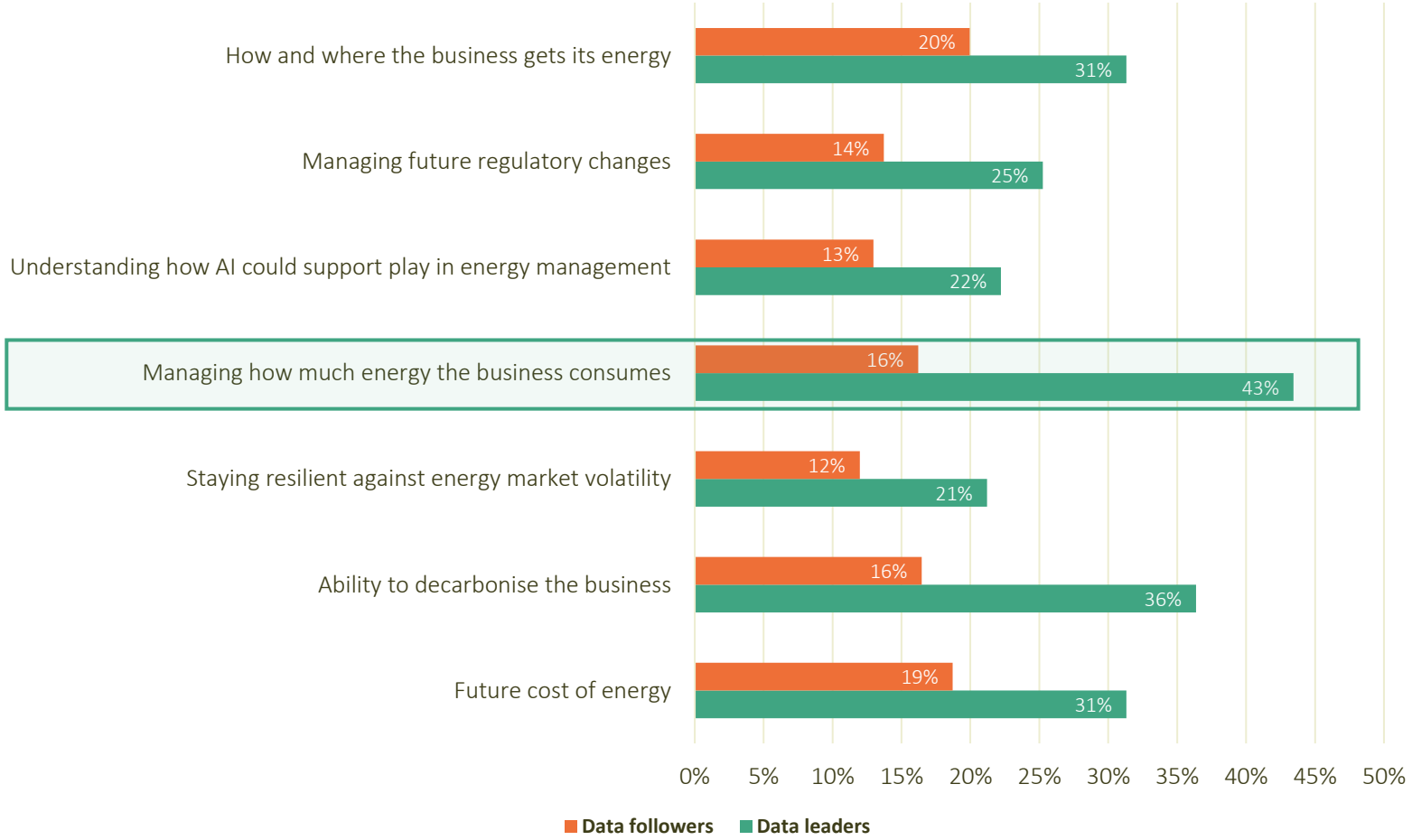
When organisations have confidence in their data, they have a better handle on energy management overall.

- We compared the views of data leaders who feel in control of data insights (99 respondents) vs. those who think they lack control of their energy-use data insights (401 respondents)



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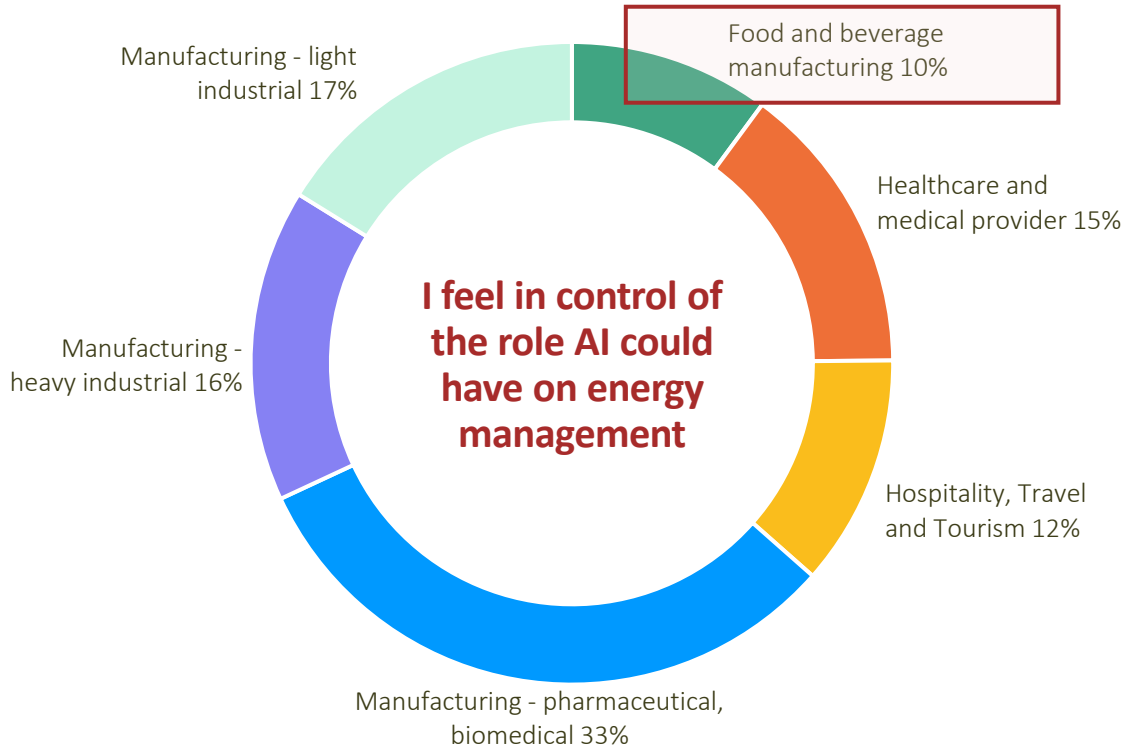
Artificial intelligence could be an important part of the solution.

- Artificial intelligence (AI) could help, by making faster and more accurate predictions of supply and demand, and identifying inefficiencies and consumption patterns that might be missed by the human eye.
- But the food and drink sector is lagging:



There's still time for data followers to catch up: 78% of data leaders have spent the past 12 months focusing on extracting meaningful insights from their data.

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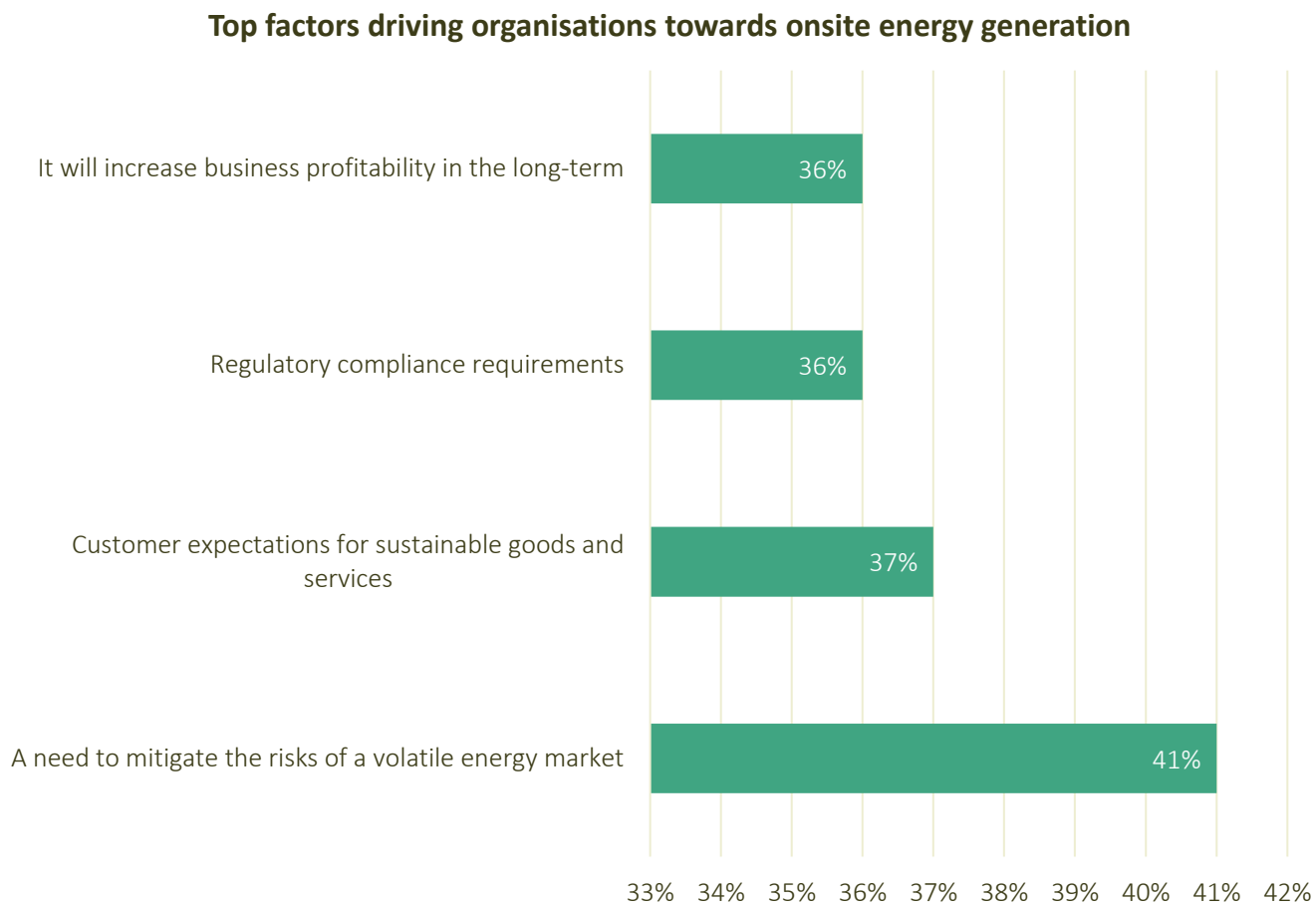
Interest in onsite generation continues to grow.

63% of businesses plan to invest in onsite generation in the next two years

Food and drink manufacturers are slightly more muted - 58% plan to make these investments

What could you miss out on?



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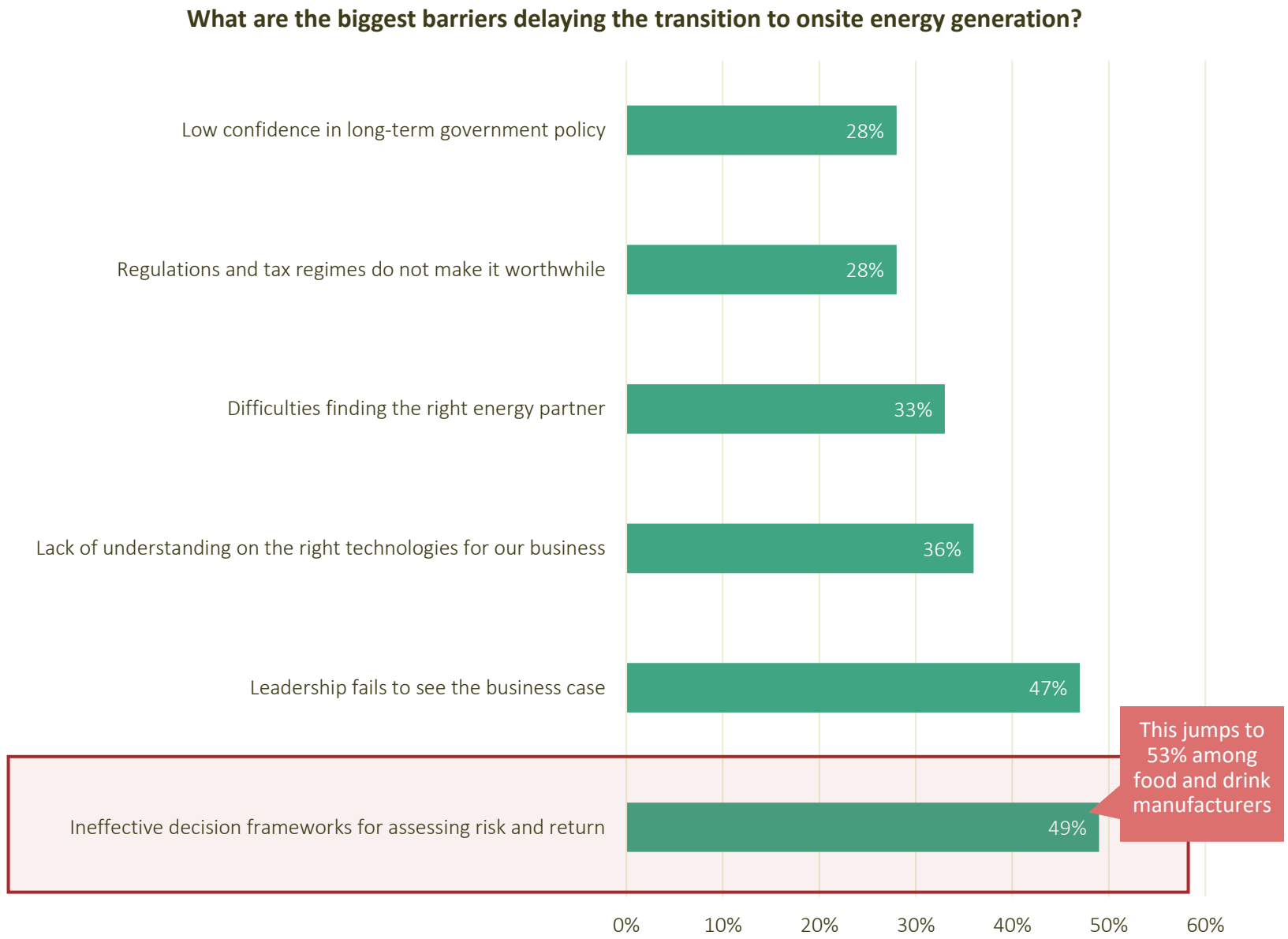
Uninformed leaders are struggling to make energy decisions.



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Carbon vs. costs: striking the right balance, and getting your board on-board

Nebin Babu
Net Zero Consultant
Centrica Business Solutions

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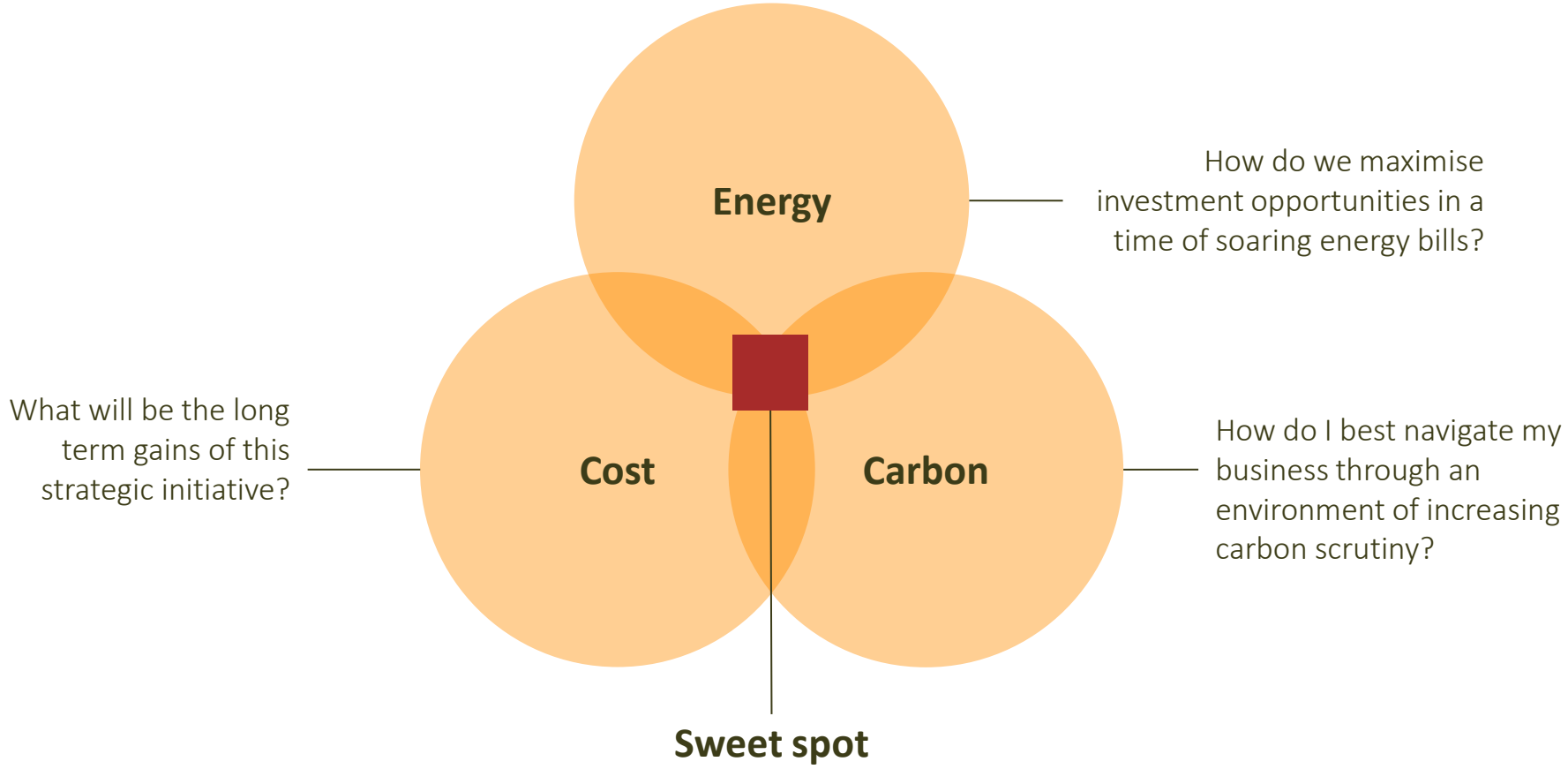
Navigate through the three trilemmas: energy, carbon and cost

Challenge: keep pace with your decarbonisation progress in response to soaring energy bills, rising inflation and ongoing global uncertainty



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Identify the best technologies and create solutions adapted to your requirements

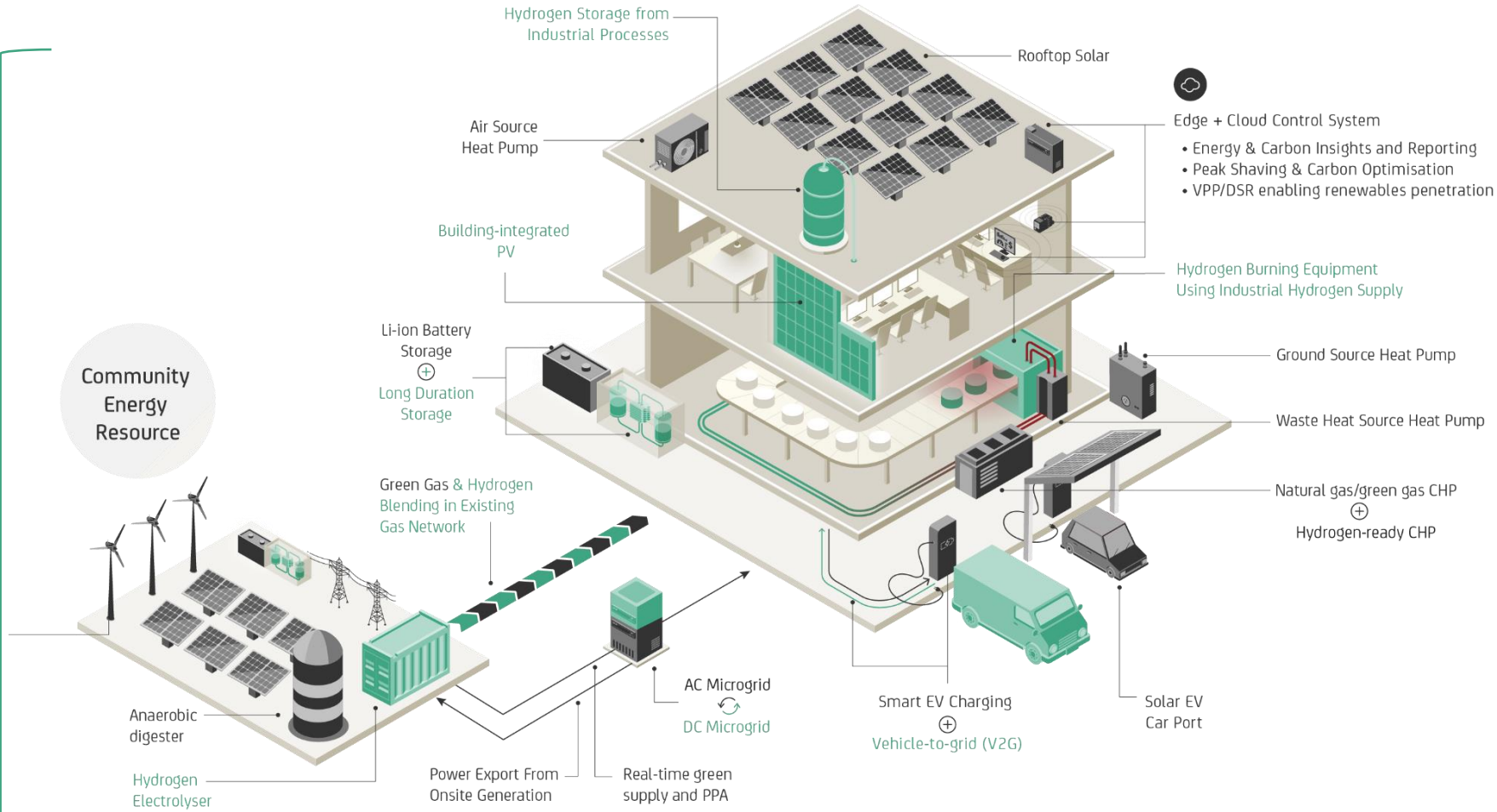
What
technologies?

Sequence
of solutions?

Priority
of solutions?

Benefits
of solutions?

Risks
of solutions?



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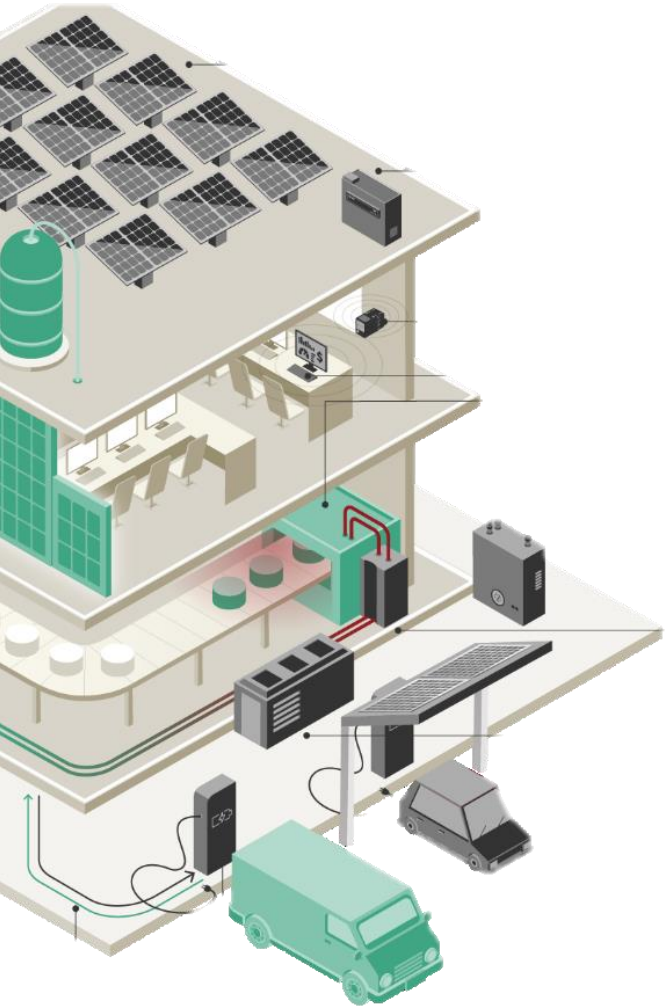
Decarbonisation hierarchy - Cut



	0. Plan	1. Cut
Scope 1	**Net zero consulting** Carbon baselining, science-based carbon reduction plans, project roadmaps with indicative costs and timelines, net present value or pathways	**Energy efficiency** Energy insights, operational process efficiencies, behavioural change, energy conversation measures, infrastructure upgrades
Scope 2		
Scope 3		

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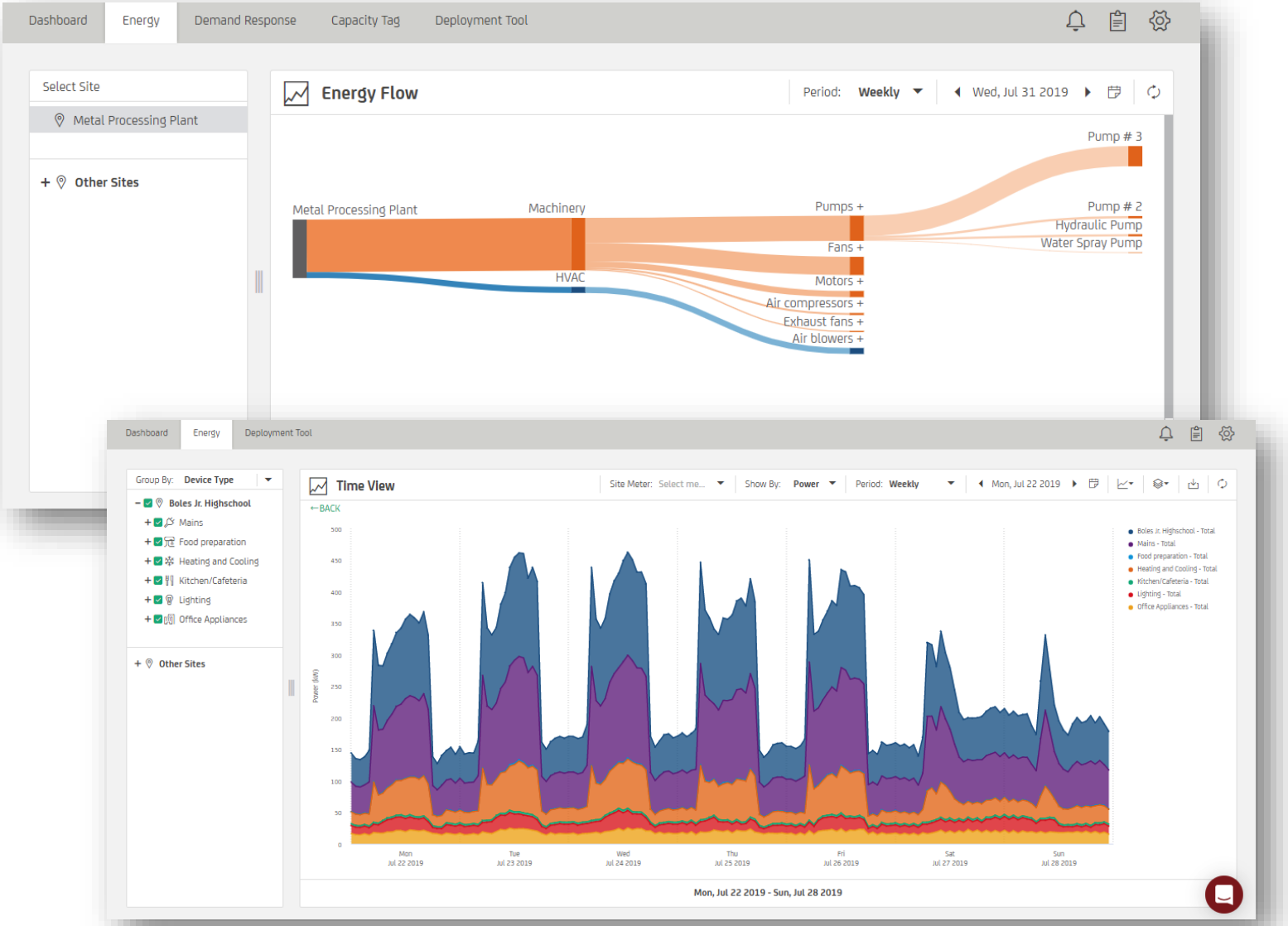
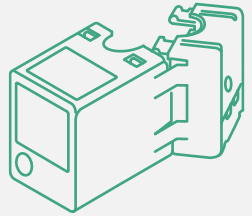
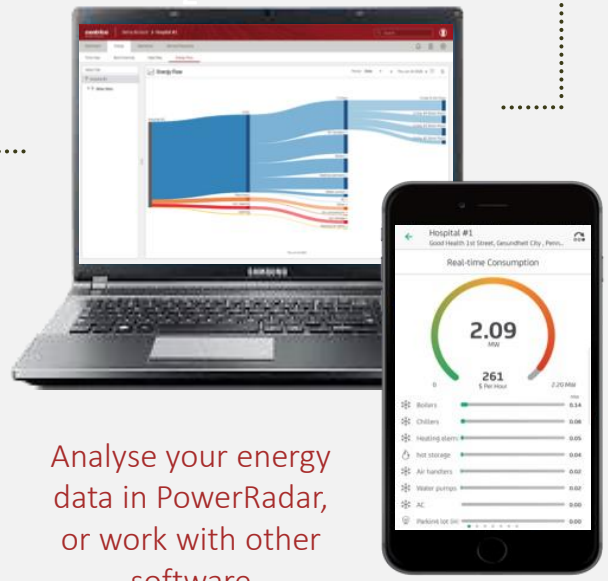
Actionable Energy Insights





Our Panoramic Power wireless sensors

3rd party meters for gas, heat, water, and air



Analyse your energy data in PowerRadar, or work with other software

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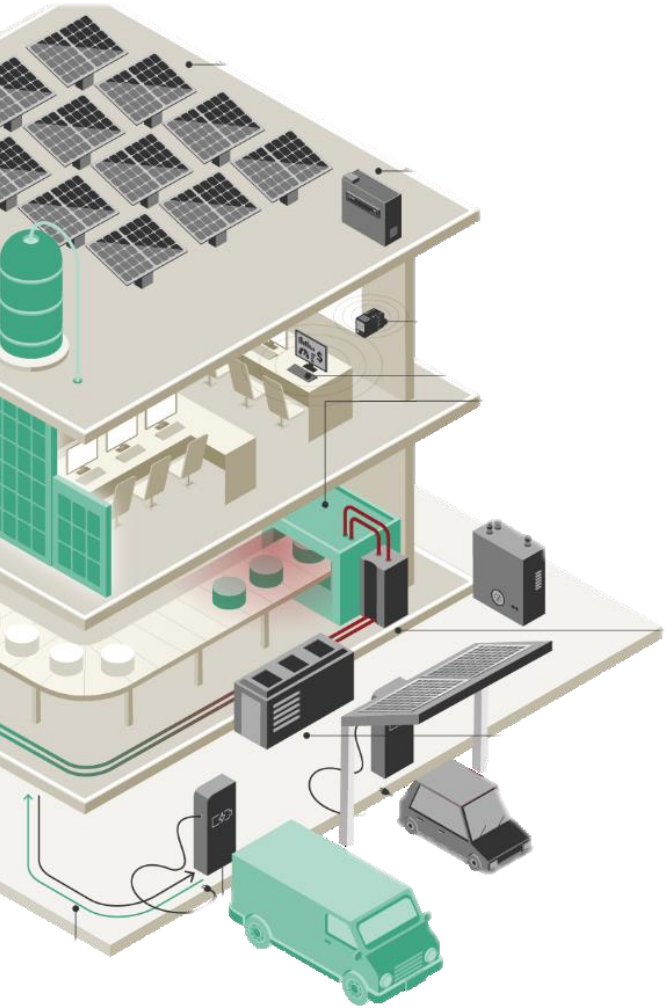
Decarbonisation hierarchy - Convert



	0. Plan	1. Cut	2. Convert		
Scope 1	**Net zero consulting** Carbon baselining, science-based carbon reduction plans, project roadmaps with indicative costs and timelines, net present value or pathways	**Energy efficiency** Energy insights, operational process efficiencies, behavioural change, energy conversation measures, infrastructure upgrades	**Heat pumps** Air source, ground source, waste-heat source	**Electric or hydrogen boilers** Steam, LTHW, MTHW, HTHW	**Hydrogen CHPs** Biomethane as near-term alternative
Scope 2			**Solar PV** Onsite, private wire	**Batteries** + optimisation	
Scope 3			**EV fleet charging**	**EV workplace charging**	

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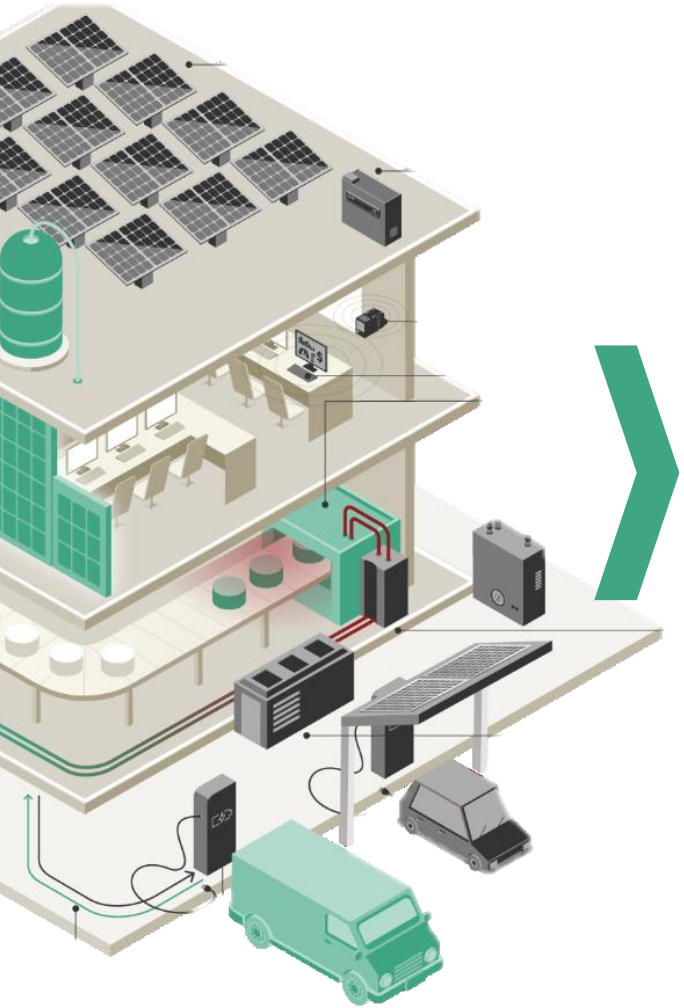
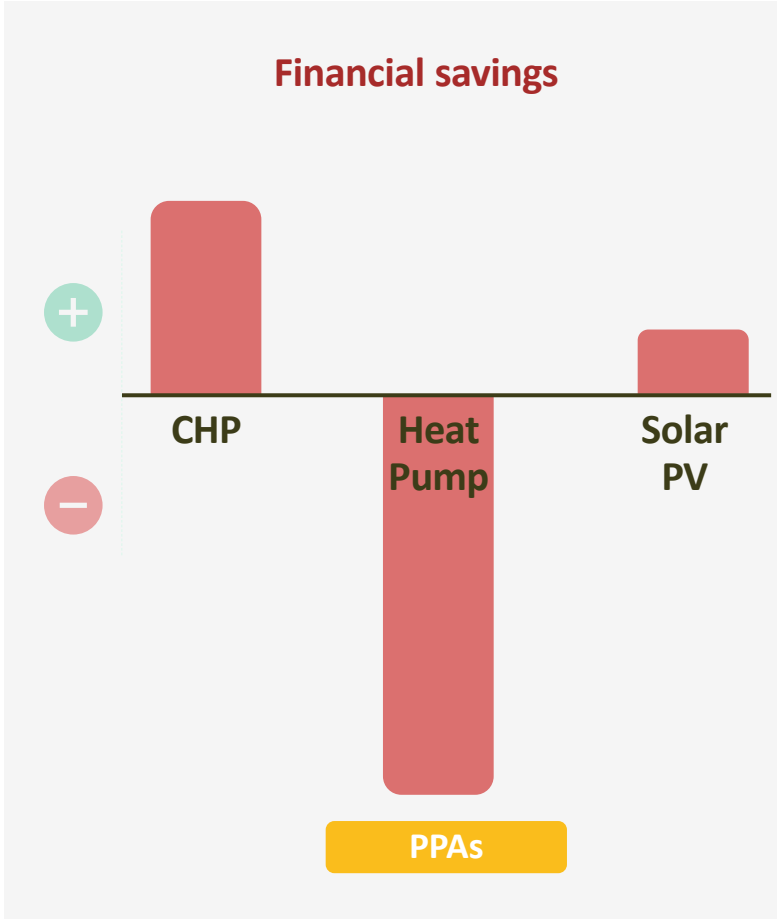
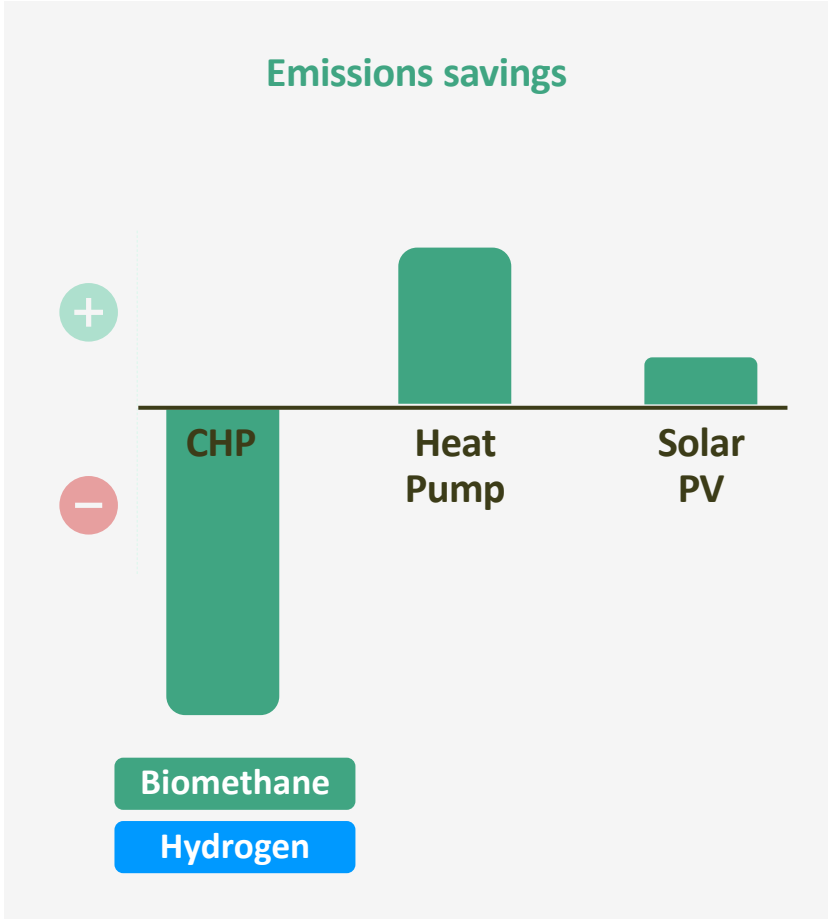
Overview of different energy generation technologies

High-level overview of financial and carbon emission benefits for CHP, Heat Pump and Solar PV projects







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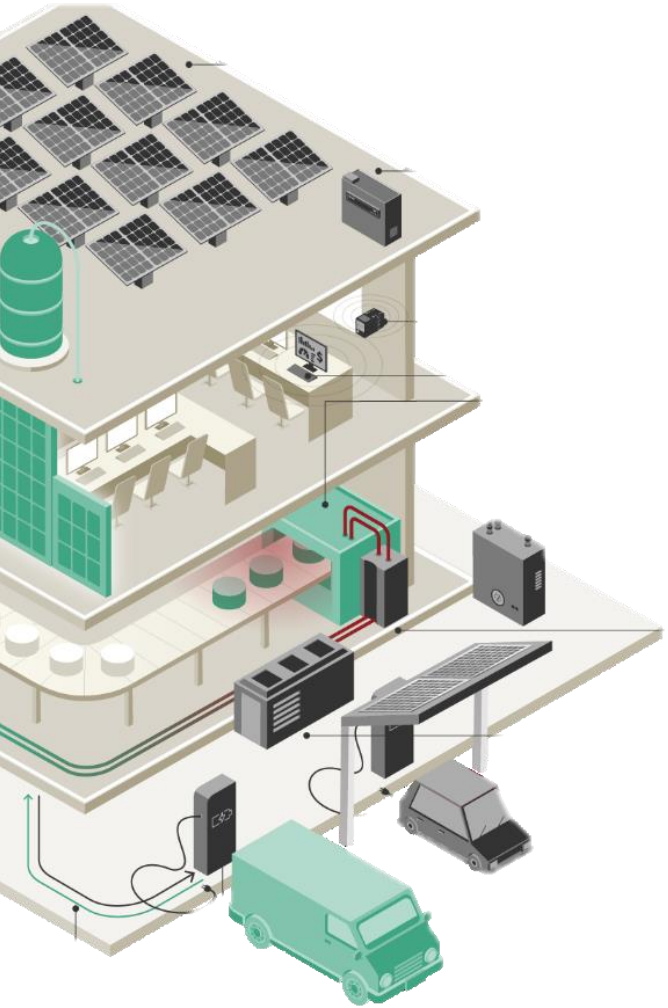
Decarbonisation hierarchy - Complete



	0. Plan	1. Cut	2. Convert			3. Complete		
Scope 1	**Net zero consulting** Carbon baselining, science-based carbon reduction plans, project roadmaps with indicative costs and timelines, net present value or pathways	**Energy efficiency** Energy insights, operational process efficiencies, behavioural change, energy conversation measures, infrastructure upgrades	**Heat pumps** Air source, ground source, waste-heat source	**Electric or hydrogen boilers** Steam, LTHW, MTHW, HTHW	**Hydrogen CHPs** Biomethane as near-term alternative	**cGPA** Biomethane	**REGOs and RGGOs** Solar, wind, biomethane	**Offsets** GHG removals
Scope 2			**Solar PV** Onsite, private wire	**Batteries** + optimisation		**cPPA** Solar, wind		
Scope 3			**EV fleet charging**	**EV workplace charging**				

Complementary solutions
Carbon reporting and cost management benefits

- Energy supply options
- Flexible asset optimisation
- Carbon monitoring and insights

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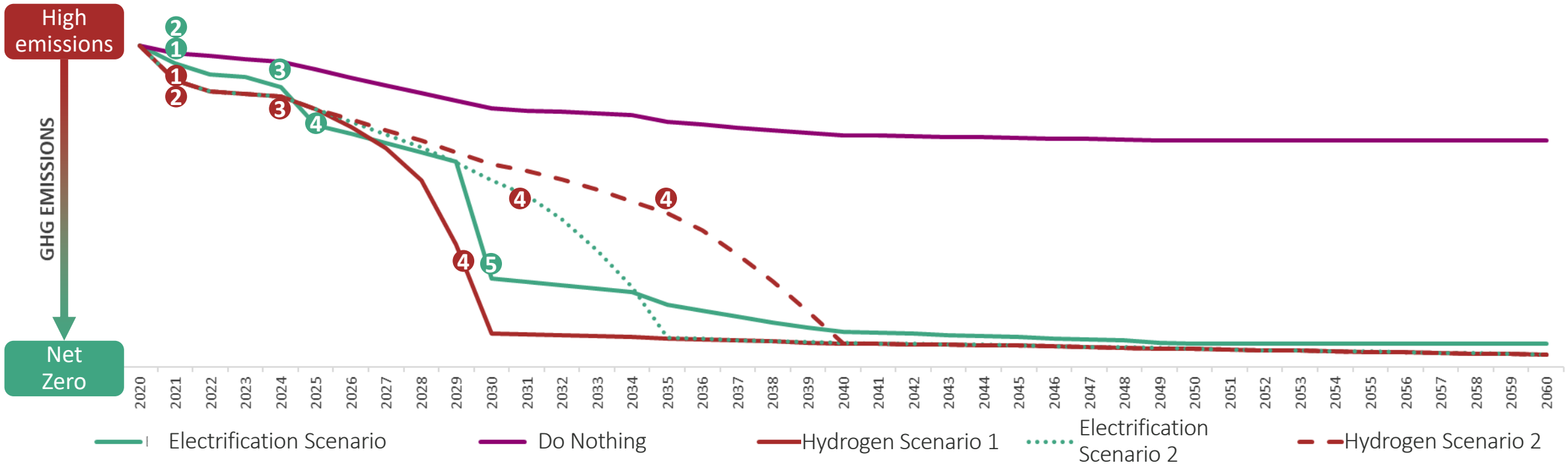
Build a step-by-step decarbonisation roadmap and business case to achieve net zero

Site Net Zero Roadmap



Electrification Pathway Measures

1. ECMs
2. Solar PV
3. Solar PV Carport
4. Electric Steam Boiler
5. Heat Pump

Hydrogen CHP Pathway Measures

1. ECMs
2. Solar PV
3. Hydrogen-ready Boilers
4. Hydrogen-ready CHP

**Figures are for illustrative purposes only*

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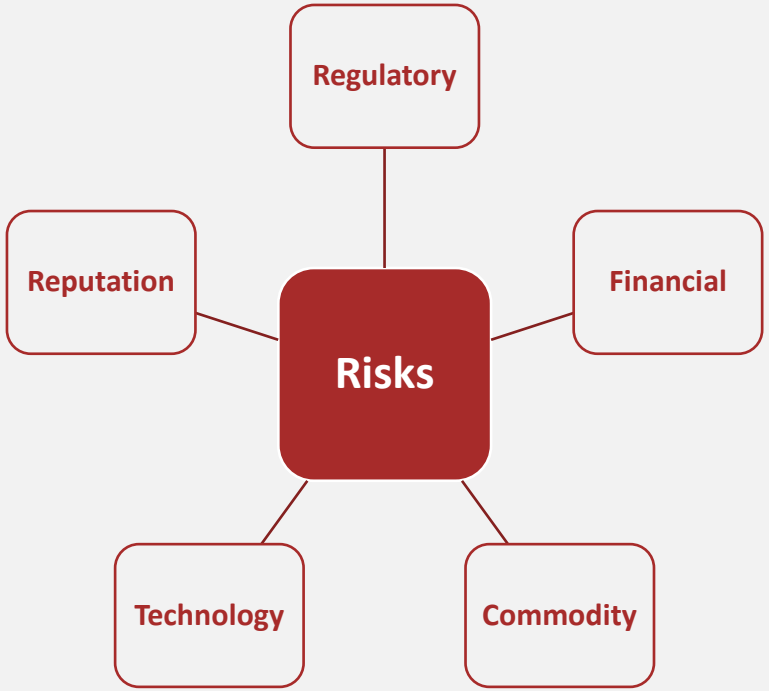
What could stop progress?

Risks and benefits



Where does the expertise come from?

Internal resources

External resources

Where does the money come from?

CAPEX model

OPEX model

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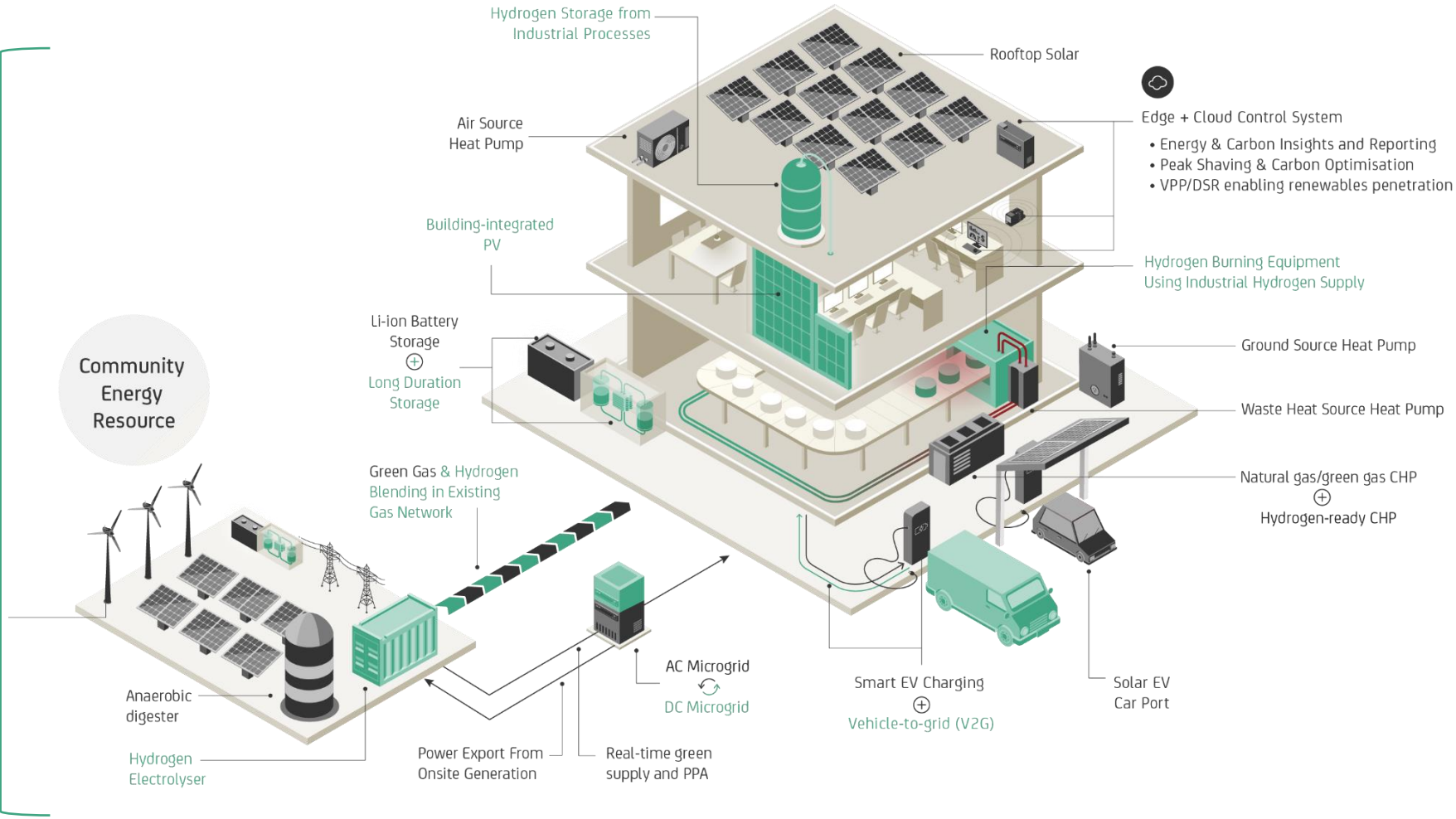
It pays to be sustainable

Recognise
that carbon and cost are not conflicting goals

Revisit
your organisation's decarbonisation strategy

Invest
in the right way for your organisation

Be risk aware
but not risk averse



Food and Drink Case Studies

Martin Wager
Senior Business Development Manager
Centrica Business Solutions

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Benefits of the CHP Project in Moy Park Craigavon

No Capital Outlay

No capital outlay and Operations and Maintenance included in ESA

18,300 MWh

electricity generated annually. This is enough to power over 4850 homes every year.

Hydrogen Ready

To meet decarbonisation plan 30% - 100%

Increase

in the efficiency of electricity and heat generation

Energy Services Agreement (ESA)

Cost

- No capital outlay for Moy Park
- Full Operations and Maintenance support for contract term

Delivery

- Centrica provides full turnkey solution
- Purchase electricity p/kWh
- 10 year contract

Assurance

- Availability guarantee
- Electrical Efficiency Guarantee (Subject to ISO 3046)
- Non performance credits capped

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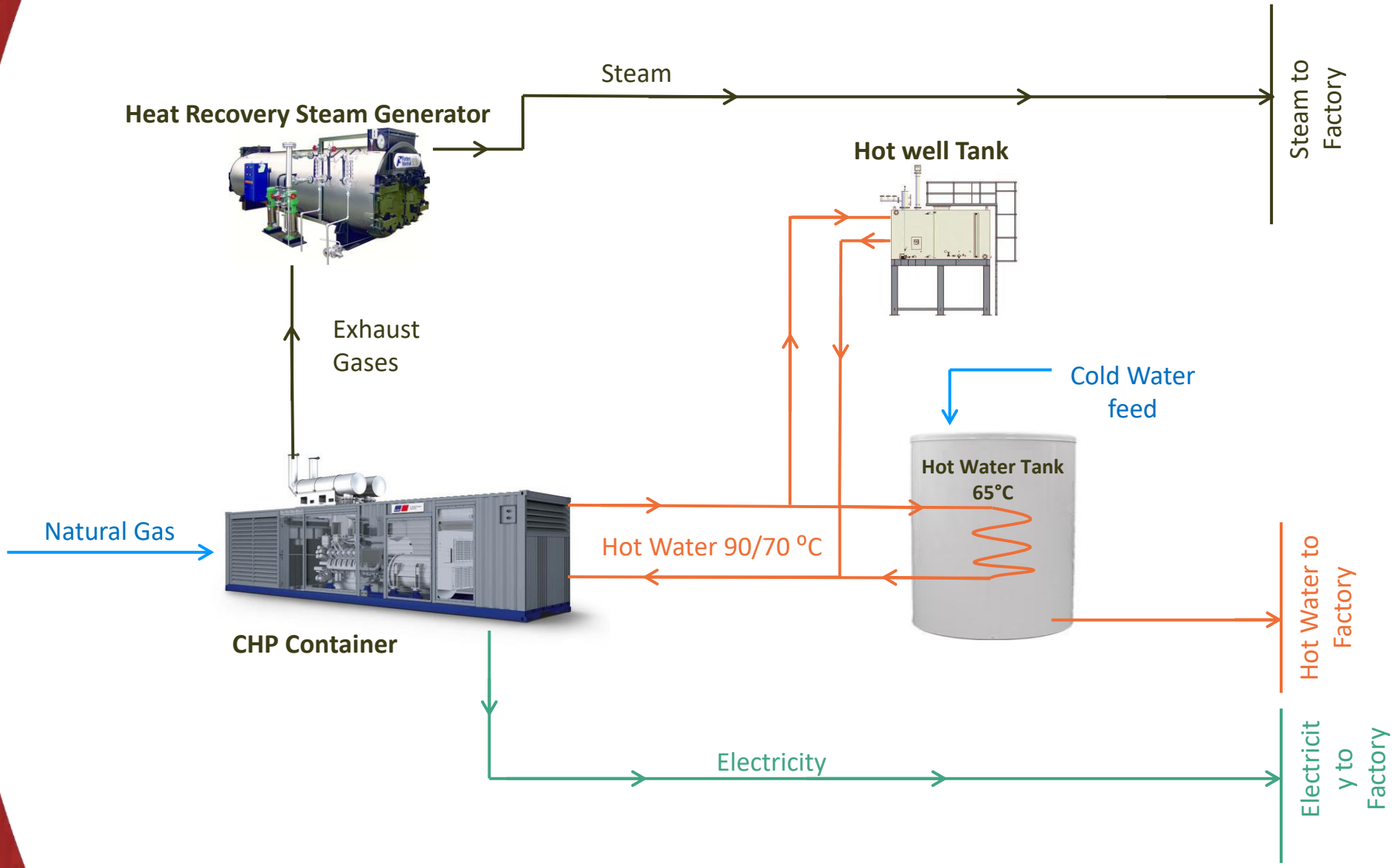
Equipment

CHP 2538 kWe (MTU Hydrogen Ready Prime Mover) 400v 3.5MVA 400v to 11kV Step Up Transformer connected onto HV Ring	Jacket/Oil 1411 kWth LTHW 100m3 Thermal Store (Buffer Tank CIP)	Heat Recovery Steam Generator (HRSG) Approvis
1570 kg/hr Saturated Steam @ 7barg with 85degC Feed Water	Dry Air Cooler (LTHW/Intercooler)	Exhaust Bypass Exhaust 1079 kWth
Lube Oil Tanks	New Gas Supply	Self-supporting Flue

HYDROGEN READY to meet decarbonisation plan 30% /100%

Site Layout


Steam
Heat Recovery Steam Generator
Steam to Factory
Hot well Tank
Exhaust Gases
Cold Water feed
Hot Water Tank 65°C
Natural Gas
Hot Water 90/70 °C
CHP Container
Hot Water to Factory
Electricity
Electricity to Factory

Moy Park – Site Images

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Q+A Session

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