

Getting to Net Zero

Bridging the Innovation Gap
Between Places and Companies

REPORT 1
SUMMARY REPORT

PREPARED FOR:
Innovate UK

URBAN FORESIGHT

A multidisciplinary innovation practice that is dedicated to accelerating the next generation of technologies, services and policy frameworks for cities. We work with ambitious organisations around the world on projects that improve lives, protect the environment and boost local economies.

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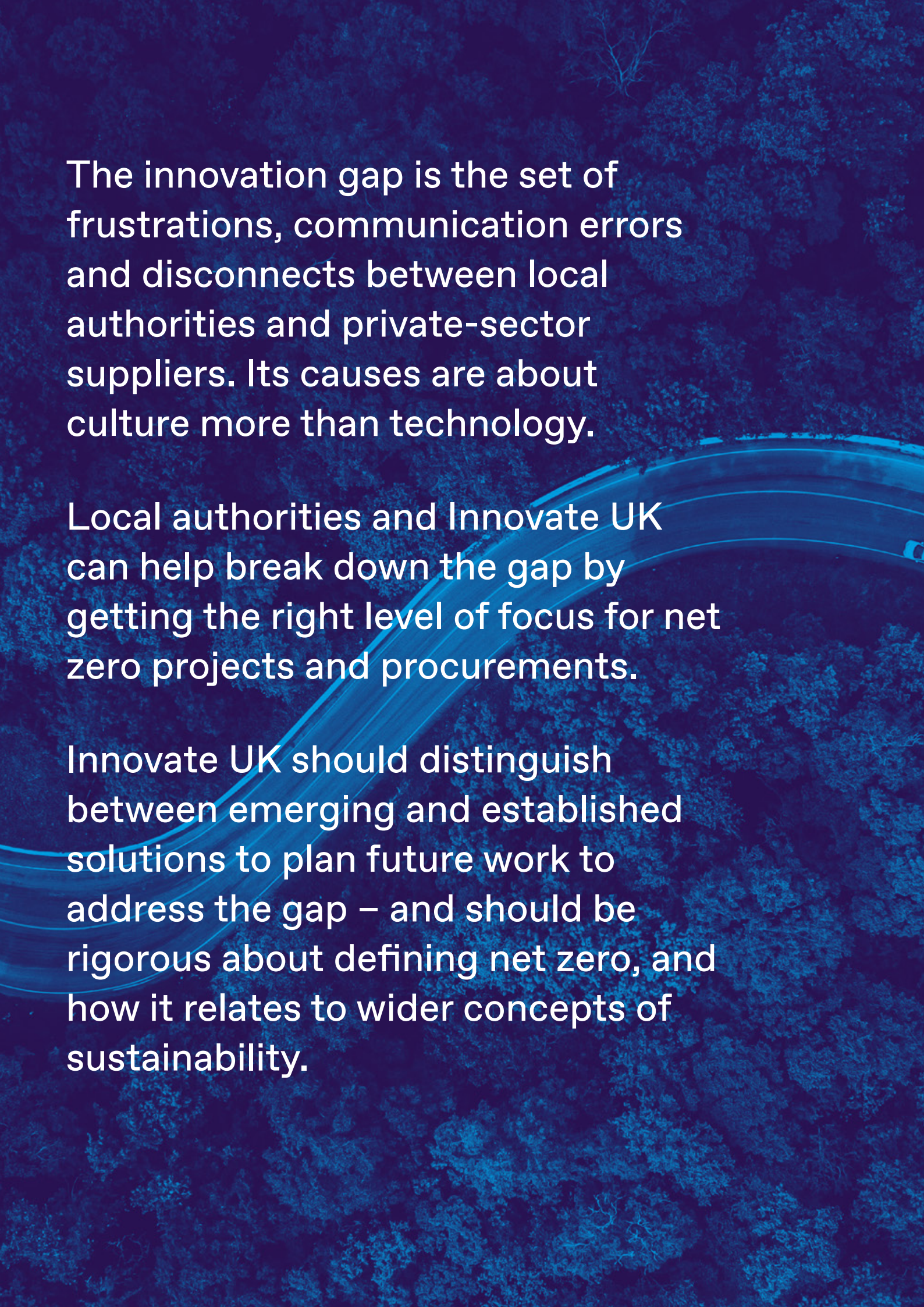
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An aerial photograph of a dense forest with a winding road, overlaid with a blue gradient and light streaks.

The innovation gap is the set of frustrations, communication errors and disconnects between local authorities and private-sector suppliers. Its causes are about culture more than technology.

Local authorities and Innovate UK can help break down the gap by getting the right level of focus for net zero projects and procurements.

Innovate UK should distinguish between emerging and established solutions to plan future work to address the gap – and should be rigorous about defining net zero, and how it relates to wider concepts of sustainability.

An aerial photograph of a winding road through a dense forest, with a blue color overlay. The road curves from the bottom left towards the top left, with a few cars visible. The surrounding forest is thick and green.

Executive Summary

The purpose of this project is to help the UK get to net zero emissions by 2050, by helping Innovate UK understand and address the innovation gap between companies and local authorities. This report summarises the project.

Defining the innovation gap

The innovation gap is the set of **frustrations, communication errors and disconnects between local authorities and companies which want to supply them**. Companies often find it difficult to sell innovative ideas to local government, while places often find companies unnerving to deal with, or hard to fit into their existing processes. These gaps prevent innovation and create barriers to net zero ambitions.

Causes of the innovation gap

In local government, there are 5 underlying causes of the innovation gap, which all relate to **organisational culture in local government**:

- **Capacity.** Local authority staff often lack the headspace, people and funding to pursue innovation projects or move beyond familiar types of supplier.
- **The nature of net zero.** Understandings of net zero vary significantly. This means councils miss opportunities to link functions to net zero goals. It is a reactive and complex agenda, with a significant role for national government – which makes it easy for councils to limit their engagement with private suppliers who could help them.
- **Budgets.** Net zero solutions may offer benefits across different parts of a local authority – but budgets usually sit separately, so innovators cannot show their potential impact.
- **Procurement.** A range of process failures means procurement actively discourages younger, more innovative firms with new business models or services.
- **Structures.** Companies want a single informed, interested and influential figure or team to engage with. Most councils lack this. Local authorities are complex organisations, while newer funding mechanisms and forms of devolved governance rely

on informal relationships. This makes it hard for innovative suppliers to engage.

In the private sector, there are 5 underlying causes of the innovation gap which all relate to **poor awareness of council customers**:

- **Lack of awareness of net zero concepts.** Many businesses are not aware of the importance placed on net zero by public buyers, and do not frame their offer in terms of net zero.
- **Ownership influence.** Many innovators have ownership which requires quick results. Councils work to political timescales.
- **Business models.** New business models may clash with traditional council buying processes. Large incumbents often have little incentive to innovate, even if they work in an area relevant to net zero.
- **Skills.** Firms underinvest in tendering and networking as core business skills.
- **Language.** Many firms speak in terms of disruption, entrepreneurship and radical change – when local authorities seek certainty and familiarity.

Responses to the innovation gap

Local authorities and Innovate UK can address the innovation gap using an analytical tool developed by this project - **a framework for net zero actions by places**. This is available online in interactive form at www.netzeroframework.co.uk and a print version can be found [on page 24 below](#).

This breaks down the big challenge of net zero into successively smaller strategic, high-level and tactical challenges. It helps places to clarify the range of things they can do to get to net zero, and helps them design the right kind of approach for the right kind of topic – running a procurement with the correct level of detail, for example, to

get the right breadth of innovative but relevant bidders.

For Innovate UK, it is designed to identify the right conceptual level of focus for future projects.

Innovate UK can also distinguish between **different kinds of innovation support for different kinds of market**. This project identifies categories of solution, graded by their relevance to net zero goals, and the relative maturity of the market in that solution. This can inform what kind of project is likely to stimulate innovation and shape thinking on net-zero placemaking:

- **Established solutions** are already relevant to net zero, and the market supply is mature. But innovation can be stifled by buying processes, dominant suppliers in a concentrated market structure, or stable markets without any innovators. The response is therefore to support new challenger companies, broker ways of challenging buying habits, or rewire buying processes.
- **Emerging solutions** could have an impact on net zero ambitions – but the market is not yet mature. The central question is making stuff work: undertaking projects which drive the development of models, solutions and technologies towards viability, and becoming commercially sustainable and applicable to places.
- **Adapting solutions** are mature markets, but with limited understanding of how those solutions are relevant to net zero goals. Tying them more closely to net zero is primarily a question of awareness: of stimulating and spotting opportunities to push more mature suppliers towards environmental policy.

Wider recommendations for companies, places and government

Wider recommendations for Innovate UK and government include:

- Building capacity in local government for innovation.
- Standardise and enforce definitions of net zero, and keep up the pressure to deliver.
- Ensure projects are rigorous in defining scope, recognising net zero is distinct from broader questions of sustainability, biodiversity, or other environmental goals.

Recommendations for companies include speaking the language of local government; understanding the pressures councils are under; and considering how their business models could fit into local government processes. Recommendations for places include streamlining procurement processes; removing internal silos by putting people, funding, and policy in the same place; and assuming a leadership role in net zero.

Introduction: Bridging the Innovation Gap in Net Zero

The purpose of this project is to help the UK get to net zero emissions by 2050, by helping Innovate UK understand and address the innovation gap.

The innovation gap is the set of **frustrations, communication errors and disconnects between places and companies**. Companies often find it difficult to sell innovative ideas to local government, while places often find companies unnerving to deal with, or hard to fit into their existing processes.

These gaps prevent innovation and creates barriers to net zero ambitions.

The project defines this problem, analyses it, and **provides a set of tools and recommendations for places, companies and Innovate UK to address it** – and ultimately help the UK achieve net zero.

The concept sits at the confluence of a series of intellectual and policy debates over how innovation happens, how places and companies work, and what kinds of role public authorities have in driving innovation. These are big, difficult questions. The purpose of this report is to process this complexity and distil the project research into clear:

- Causes of the innovation gap, on both council and company side.
- Symptoms of the innovation gap, as seen in different sectors.
- Potential responses by Innovate UK to those different types of market.
- Wider recommendations for companies, councils and central government bodies on how to bridge the innovation gap.

Its scope is **local authorities and companies in the UK**.

It is based on internal workshops, desk research, a questionnaire of suppliers to places, and an interview programme with 14 companies covering a range of sizes and sectors, and 11 local authorities across the UK.

A full methodology and set of definitions for the project is included as an Appendix.

A large, stylized, dark blue quotation mark icon, consisting of two thick, curved strokes.

It's not just cash. It's
headspace, and getting
round to the things you
want to do when the day
job is so stretched."

Local authority policy lead

A large, stylized, dark blue quotation mark icon, consisting of two thick, curved strokes.

Net zero is the only
good reactive policy
ever to happen in local
government."

Local authority policy lead

A large, stylized, dark blue quotation mark icon, consisting of two thick, curved strokes.

At times it feels as though
innovation is unwelcome
- if the proposition does
not fit a template of
pre-planned solutions,
there's no interest in even
discussing it."

Private sector supplier

Causes of the innovation gap in local authorities

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The project identified 5 themes in demand-side causes of the innovation gap: capacity, the nature of net zero, budgets, procurement, and structures.

Capacity in local government

The single greatest barrier to individuals in local government supporting new, innovative projects and purchases is capacity.

- This term is meant broadly. It includes headcount: after ten years of spending reductions, most local government teams are by now relatively tightly staffed. Few have significant resources to invest in dedicated innovation teams, or teams like smart city units which can focus on new service patterns and technologies.
- As important, however, is headspace: local authorities naturally focus on their statutory duties and long-established services. Projects which are seen as even marginally optional are less likely to become a priority. Multiple interviewees for this project described being interested in new innovations, but simply not having the bandwidth to think about turning it from a promising idea into action.
- The way that funding is delivered can shape workloads. Pitches for central government funding have variable levels of associated paperwork and time required, depending on the structure of the fund. EU projects bring particularly onerous reporting, audit and application requirements.

Councils often face acute choices on which pots of funding to pursue – ironically, much like a small business, they cannot afford to pitch for funding without a reasonable chance of success.

Many funding sources which are not one-off funds prize track record, meaning that councils which become skilled in fighting for applications tend to win more. All of these factors mean that funding in itself does not always mean an expansion in capacity: it can often be broadly neutral for councils.

There is an issue with turnover in some parts of local government:

- Suppliers felt that the most engaged, inspiring local government leaders moved on before their projects came to fruition.
- This rejects the cliché of managers being promoted above ability: the problem, in the view of innovators trying to get stuff done, is that bright people in local government become frustrated and move sideways, often to nearby councils; or they get promoted. Either way, companies often found their sponsors and allies move on before a project is complete, and they have to rebuild relationships.

The nature of net zero

Net zero has its own unique features. The innovation gap is exacerbated by two features of net zero policy: confusion over basic definitions, and the reactive, politically-led nature of net zero.

Variation in definitions

‘Net zero’ as a term is widely recognised and seen as a political and policy challenge across local government. Many places follow the Global Protocol for Community-Scale GHG Emission Inventory categories of Scope 1 (direct emissions within an area), Scope 2 (energy indirect emissions) and scope 3 (other indirect emissions), or are comfortable using those terms.

Environment, energy and transport specialists tend to be accurate and disciplined with their terminology.

However, although these are globally-recognised standards in emissions auditing, they are interpreted differently by different places, and by different people across councils.

Crucially, even if the formal strategy is clear, everyday meanings vary. Some places informally use ‘net emissions’ in a way that excludes carbon capture. Some include measures which are strictly about adaptation.

Some places define Scope 1 as all emissions produced within their boundary, but in conversation or informal use others define it as emissions directly by the local authority itself. This might be a confusion derived from the GHG protocols, which have separate delineations for city-level emissions and organisation-level admissions – and it represents a major difference in interpretation.

Offsetting can be a particularly confused topic. Emissions avoidance, so that emissions are lower than would otherwise have been the case, is sometimes described as ‘offsetting’, but this is not the same thing as permanent removal of carbon from the atmosphere.

There are other ways that local authorities categorise and report emissions:

- The EU-wide definitions of ‘traded’ and ‘non-traded’ emissions.
- The ONS categories of end-user domestic, industrial and commercial, transport, and land use emissions.
- Many follow a carbon hierarchy approach: placing avoiding releasing GHGs above reducing emissions, substituting carbon-heavy energy for lower-carbon sources, and finally compensating emissions by developing negative emissions programmes.
- Some places also break down emissions generated elsewhere as a result of their activities into production-based emissions and consumption-based emissions.

Many places do a combination of the above, mixing and matching different analytical frames in the same place, and mixing their formal strategic approach with informal understanding using different concepts.

These definitional challenges are not unique to councils: the Energy & Climate Intelligence Unit now tracks the ‘integrity’ of net zero plans as well as their pledges, precisely because the concept is open to slippery definitions.¹

For councils, these variations in core concepts lead to missed opportunities.

Councils miss opportunities to drive net zero through supply chains– because they are not thinking thoroughly about indirect emissions, and suppliers are claiming to be ‘net zero’ with no consistent understanding of the term, or without pressure on enforcing sustainability in their own supply chain.

Councils miss opportunities to translate existing services into net zero services – such as greenspace management, which almost all councils run, but few conceive of as serving net zero goals through carbon sequestration.

Finally, they risk buying services which they think are about net zero but might have no bearing on net carbon levels whatsoever – such as climate change adaptation.

A reactive, radical, complex agenda

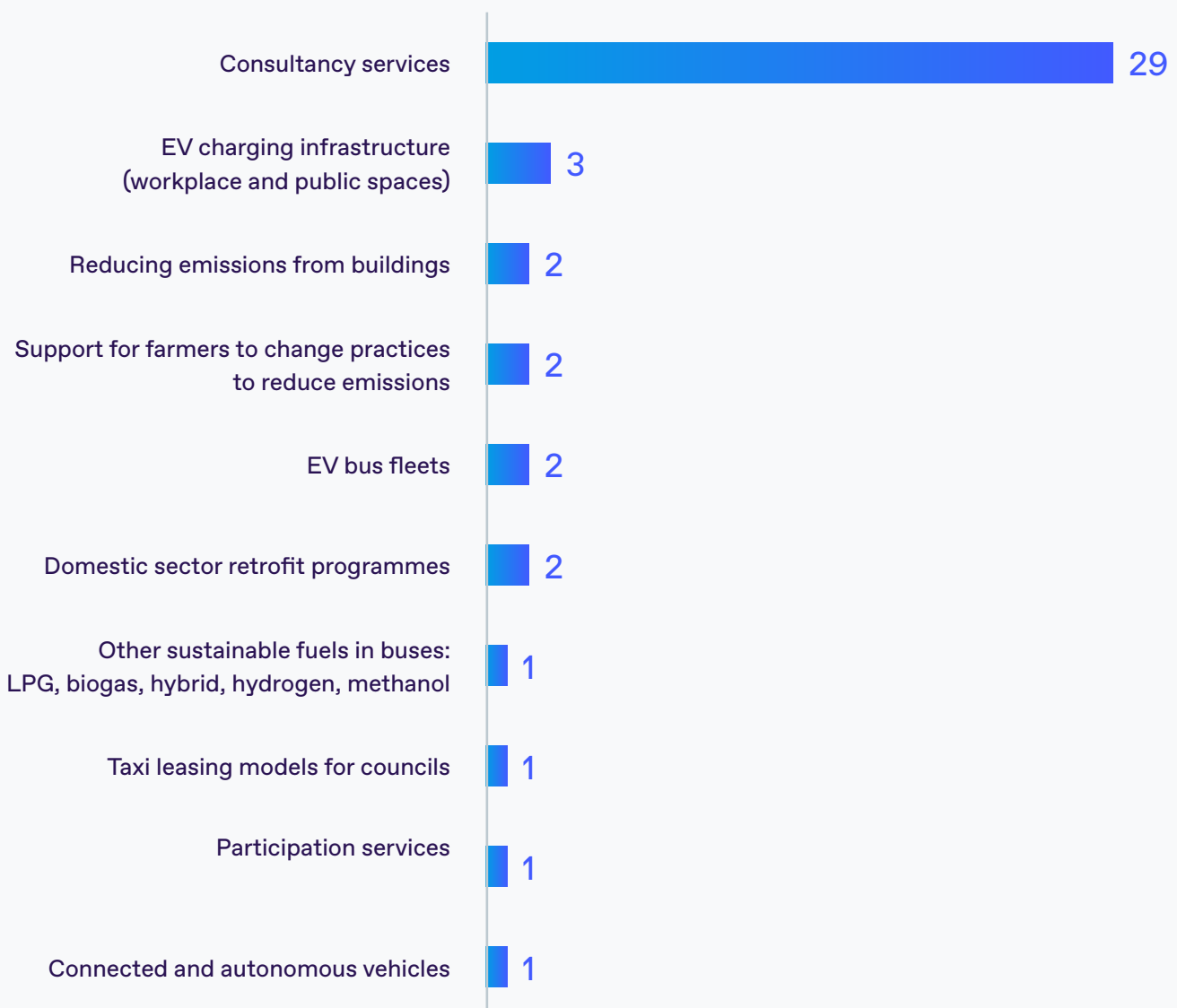
Net zero is reactive, in that action is being driven by public concern and political goals – and in particular, the declaration of climate emergencies which occurred in 2018-19 is now being translated into strategies and action plans. It is radical, in that it requires change across a host of behaviours and habits. It is also complex, with all levels of government and most areas of public policy involved.

This has two consequences. First, councils often define only a narrow range of purchases as relating to net zero:

- A total of 44 contracts worth £73 million were issued by local authorities in 2020-21 using the terms ‘net zero’ or similar – of around a total of £80 billion local government spending through procurement. Of those, 29 were consultancy or advice, and the rest were concentrated in solutions widely understood as relevant to net zero.
- This was supported by interviews which generally found that innovation or environment specialists understood the scale and urgency of net zero, and the need for action on a host of policy areas – but colleagues elsewhere, in their view, saw net zero as really meaning a small set of transport and energy projects.

- When councils do look to more sophisticated projects, they are often scarred by the experience (or reputation) of private finance initiative and other mechanisms to raise capital for larger projects. Several councils in this project suggested risk-sharing underwritten by the UK government for net zero projects, as a way of reducing barriers to action at scale across policy areas – dragging net zero out of a ‘ghetto of EVs and wind turbines and nothing else’.

Net zero procurement by councils - solutions procured



Second, the willingness of councils to assume leadership roles – often beyond their strict statutory requirements – has an outsize influence on their ability to advance net zero innovation.

- Proactive councils assume that if they do not lead, no-one else will. This often leads to innovation projects with the private sector, engaging markets on complex problems, looking for consortia to come together to address new challenges. They tend to move beyond their formal or statutory role, and work with their local employers, industries and stakeholders to take action. They tend to look at entire supply chains, and bring in suppliers which might not previously consider councils to be customers. They tend to partner with nearby councils or similar-size places to solve regional-level problems, or broker new models at greater scale. The best examples of innovation in net zero are driven by council proactivity.
- On the other hand, councils which lack the initiative or ability to lead can be paralysed by net zero. The temptation is to suggest that net zero is a problem too big for councils to shape, with the policy levers lying at national or regional level. It is easy to duck questions of behaviour change. It is easy to say the Coronavirus means environmental goals are now secondary. It is easy to decide that far-off technologies will replace current options, and therefore nothing should be done today. It is too easy to think 2050 is just too far away to worry about.
- In other words, often local authorities could take a lead role in creating new innovations. But the nature of net zero makes it easy for councils to avoid this kind of leadership.

Budgets

Council budgeting processes have a significant influence on innovation, largely for the worse.

Many innovative suppliers looking at large-scale decarbonisation offer benefits over a 10, 20 or 30 year timescale. Few councils budget in those terms, at least for revenue spending.

Budgets are often split between different teams which could, in theory, benefit from the same net zero supplier – but sitting in silos makes it impossible to understand those benefits.

In common with most public bodies, as a rule if council teams do not spend their funding by year end, they risk losing it next year. Innovation projects need not be expensive, but the inability to spend ‘spare change’ collectively makes even small projects difficult to finance.

There are some specific budgets where councils have a conflict of interest between revenue goals and net zero goals. In particular, car parking is a major source of revenue for most councils. Policies and projects which aim to reduce car traffic either require senior leadership to accept losses, or bridging funding to ease transitions. There are other less direct revenue dependencies, such as business rates from major employers, or more general concerns about economic growth.

Procurement, finance and legal

Procurement is the single biggest frustration that companies have with local government, particularly small firms and start-ups.

These challenges are well-known, and this project avoided covering this familiar ground. However, these familiar issues become particularly problematic for buying innovation in net zero. These problems include:

- Lack of engagement before procurements, to gain feedback and refine contracts before tenders are issued.
- This in turn means that procurements often either set terms too broadly – making it hard for companies to identify if they are relevant to them – or too narrowly, forcing companies to meet existing definitions rather than bring new ways of working to bear. When many net zero solutions do not fit easily into existing categories, this can be off-putting to newer firms.
- Procurements are, understandably, designed to prioritise public value. But it can go too far: pushing risk to providers, demanding control of intellectual property, writing tight margins, or setting payback periods too short all rule out many more innovative models. Many newer firms cannot afford for early contracts to go wrong, so can only opt for those they are confident will succeed.
- Timescales for submissions are tight, procurement documents are long and complex, and scoring criteria tends to reward headcount, turnover, track-record and financial resources. Newer firms struggle with these demands.

All of these conditions favour big companies who have the scale to take on low profit contracts, the heft to meet eligibility criteria, and big enough shoulders to survive if contracts fail – and little reason to innovate beyond ways to keep their margins intact.

There are additional issues specifically for net zero, in relation to more recent developments. Councils are limited in the specific demands they can make of suppliers to have a net zero supply chain, or use sustainable products. Scoring criteria always include cost and quality, but specific ways to establish net-zero credentials do not exist. Crudely, if two companies of equal quality compete for a contract, and one is cheaper, it will usually win – even if its competitor is net-zero. In turn, this means suppliers to places currently have little commercial incentive to pursue their own net zero approaches, beyond reputation management.

The Cabinet Office is reviewing carbon scoring in procurement, which may address this issues. It also published a green paper on procurement in December 2020. Two issues were raised in the research on the green paper:

- First, it does not address disputes over intellectual property in any detail – which is a sticking point for innovative firms in particular.
- Second, many of its remedies are about explaining existing rules better, and rehearsing when different forms of procurement are appropriate. This suggests that procurement

is not really about the law, or existing duties on councils – but on interpretations of that guidance, and the practices that have emerged around procurement. Suppliers report that the problem is not the legal fact of procurement, but the lack of content knowledge, and inability to see beyond existing categories of service. This is a cultural problem, not a legislative one – and that is far harder for central government to address.

This is supported by the fact that frustration with procurement is not confined to companies – but also felt by policy colleagues. Many described the process of designing a new project, winning senior support and identify potentially exciting partners – only for procurement to box it into an uninspiring, mediocre repeat of existing contracts.

Procurement is itself a discipline with an important aim: securing best value. Procurement figures in interviews suggested frustration that high-minded policy colleagues did not understand the legal requirements for competitive tenders, or the necessity of audit trails for decisions, or the importance of managing risk for councils.

These disconnects between policy and procurement are not really about the rules governing projects. They are more a question of how teams work together, and how a united vision unites people with different professional perspectives – or fails to.

In other words, procurement is the single biggest manifestation of the innovation gap – the prompt for more frustration and anger than any other council function. But this might be a symptom of the wider management of local government, rather than simply being a cause.

Structures

The way that local government identifies responsibilities, structures teams, and interacts with new forms of regional and sub-national governances has a significant influence on its ability to innovate.

Impenetrable structures

Many companies said local government structures were impenetrable to outsiders. Any organisation with a new innovation for councils faces the immediate hurdle of working out who to speak to. Some described submitting Freedom of Information requests to find out basic information.

Councils recognised this, suggesting that once a company identified a person who worked in roughly the right field, they would try and build that contact a relationship for everything within the council - because the difficulty of finding anyone else was too great.

Councils also said that this was not a problem confined to outsiders, and that navigating structures, identifying responsibilities and getting contact details was a challenge within councils.

Councils often separate functions in ways that hinders coordination. One case-study from an interview, for example, was that an individual had led a smart parking solution elsewhere. The funding, technology and process was proven. But in this council, transport and parking were two separate teams – and that was enough to prevent the technology being rolled out.

Lack of informed, influential, interested figures

Where companies could identify a relevant contact, they often lacked the combination of responsibilities and skills to advance a partnership. They might be interested but not have the power to turn interest into something more definite; they might have the power but not have the interest; or they might have both the power and the ability to take decisions, but not understand the core content of the subject. Companies sought a single person who is informed, influential and interested. That person is rare.

Again, this challenge is particularly acute in policy areas linked to net zero, where compared to other parts of the public sector, crucial functions can sit separately. Social care or transport teams in councils, for example, will often have clear links between strategy, policy and delivery. In some parts of the public sector, like the NHS, these functions are often vested in the same person or team. That is less common in environmental policy – teams tend to be subject matter experts, but not expected to execute delivery.

There are also specific issues with skills, and differences in the skill mixes that different policy areas tend to reward:

- Some local authority functions are registered professions with their own hierarchy of qualifications and standards, like planning, that are applicable across public and private sectors.

- Some sectors see individuals move between client and provider, and have a cultural expectation that policy design is intimately linked with commercial skills. It is quite common for transport policymakers, for example, to move between sectors, and core concepts of contract structure, commissioning and public-private partnerships are part of the core material of transport careers.
- But some important disciplines are more sharply divided between functional, specific task management and more abstract policy or legislative skills – such as parts of environmental policy.
- Fleet management, for example, is crucial to councils' net zero goals. Fleet managers will themselves often come from a transport, logistics or commercial background and be comfortable in the industry and designing technical purchases and contracts. But on average, the person writing wider policy or developing council projects will come from an environmental policy background, and their natural territory is developing legislation, council motions, policies and strategy. These are quite different cultures. Bringing innovation in from suppliers requires both to work together.

This leads to specific gaps – the absence of skilled business modellers in natural capital and carbon sequestration was a recurring theme in the research, for example.

More generally, many policymakers – and particularly environmental policymakers – lack the skills to translate passion and knowledge about a particular topic into a new service, innovative pilot, or relationship with the private sector.

New funding structures

Councils suggested that central government funding streams were a mixed blessing. They recognised that new funding streams represent an opportunity not just to increase spending, but often to define buying around a particular problem.

Newer forms of institution, such as the city deals, the industrial strategy, city-region mayoralities, and the promise of levelling-up funds, are also prompting joined-up action across regions and growing a sense of coordination. Many local authorities welcome these innovations as organic evolutions – not attempting to restructure the entire landscape of local government or economic development, but building new structures around functional economic geographies.

On the other hand, funding pots set incentives, and this can sometimes skew council approaches – particularly when local government budgets have reduced over the past ten years. Councils have less autonomy to pursue their own investments, and so are more likely to follow the terms of central funding, even if that is not their preference:

- One authority described being ready to roll-out a programme of chargepoints, but being unable to win internal buy-in, because the central funding only lasted for a year – creating the perception this was not a long-term priority.
- The phrase ‘eternal pilots’ was used by more advanced councils – the perception being that central government only moves at the pace of the slowest council and is biased to trials and pilots, because they are politically easier, even if a technology is proven at scale, and could move beyond a pilot.
- One city authority had produced a business case for the installation of triple-glazing in its offices for improved heating performance. However, the central funding available to them extended only to the installation of double glazing. As they were unable to make the triple glazing investment out of their own operating budget, the Council instead opted for the worse-performing double glazing option.

Many of the new levels of governance also rest on surprisingly informal governance. New combined authorities act almost as city think-tanks and political champions. Combined authorities technically sit additionally to councils in their area, not above them, and buying of services is left to councils. Some city-region bodies do not control crucial policy levers, such as planning. This means that while they have a strategic overview, have political clout and can bring in funding, they do not always have the ability to translate that into engagement with the private sector. If relationships fail, often their powers are lacking: Greater Manchester’s entire spatial strategy broke down, for example, because it required the unanimous support of 10 councils, and a small group of councillors in Stockport turned against it – bringing down the whole plan.

Conclusion

This is about organisational culture in local government

There is a risk of making sweeping assertions about councils. They are diverse organisations.

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However, the common theme in the above is that causes of the innovation gap all lie in organisational behaviour. Capacity, structures, people, and funding all influence the innovation gap – and these are functions of leadership, change management, and organisational design. The innovation gap is partly about what net zero means, and partly about longstanding problems with procurement. But at its core, it is really about culture.



“

I think often cities just don't really know how we fit in. Our model can be hard to explain.”

Private supplier to places with an innovative business model

“

You'd be better off just sending us an annual bill.”

Local authority policy lead, reacting to an innovative business model sharing savings between councils and suppliers

“

Procurement is often focused on specific services not open-ended ambitions like achieving net-zero. This makes it hard to find the space in the public sector where innovation is being sought.”

Private sector supplier to places

Causes of the innovation gap in private sector suppliers to places

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The research identified five main themes in supply-side causes of the innovation gap: lack of awareness of net zero concepts, the influence of ownership models, the influence of business models, skills, and language.

Lack of awareness of net zero concepts

Numerous companies have some kind of relevance to net zero.

A central conclusion of this project, discussed below, is the sheer range of net zero applications and actions. But this is not reflected in companies' marketing and positioning:

- Sometimes businesses use concepts which are related to net zero, such as sustainability, climate change, or environmental services.
- But many businesses simply do not attempt to market themselves directly in terms of net zero or carbon reduction. This includes both established businesses in mature markets which could have a much closer relationship with net zero goals, and newer innovations.
- On a practical, day-to-day level, this means they might miss the few tenders or opportunities which are pitched as 'net zero'. More generally, their marketing and sales suffer from not understanding a crucial agenda in local government, and not realising how they could reframe their offer to fit local government priorities.

Influence of ownership, company structures and maturity

There is extensive literature on the links between company culture, funding and internal innovation practices.

This project explored one aspect of these dynamics – the way that different kinds of company can create friction with customers in local authorities.

Many start-ups and scale-ups have strictly limited cash runways: they need to demonstrate to investors that they have a viable business within their existing funding, or they will need to raise more money, or close. This creates natural pressure to find customers and prove technology.

Smaller family firms and microbusiness which do not consider themselves start-ups are generally debt-averse and cash-poor, and as such generally operate with a forward-looking horizon and reserves of 3-12 months, varying significantly by sector.

Local authorities generally work to much longer timescales without specific deadlines, such as rounds of central government funding, electoral cycles, or statutory consultation periods. Projects can often be delayed, cancelled or changed without the core business of a local authority being affected.

Many businesses will have models which can accommodate uncertain timescales, and if owners and investors are confident there is an ultimately a market opportunity, may be patient. Many energy startups in particular are owned by energy majors working to long timescales. However, this mismatch of timescales leads to frustration – and that frustration is particularly intense for high-capital, tightly regulated sectors such as transport, energy, planning or housing. Start-ups in these sectors usually need to refine hardware or software, and might have the resources to only target 1 or 2 demonstration sites before scaling up. If those sites are subject to delay, it can have an outsize impact on their growth.

This frustration can be experienced by public buyers as anger, impatience or even arrogance on the part of companies: not understanding the political pressures that councils work to, the need for democratic consent, or the complex range of inputs that go into designing policy. Fuelled by entrepreneurial zeal – and the pressure of cash being king – many innovators can alienate their buyers.

Business models clashing with council structures

Specific company business models can lead to confusion between supplier and buyer.

A range of newer firms run traditional services, but more intelligently through technology, such as digital twinning, artificial intelligence, or sensors and automation. Often the business model is to take a cut from the savings generated, without charging for installation. For example, an AI buildings operator could offer to install its technology for free, and then share profit from the savings through automation; a smart lighting installer could agree a benefit-sharing model; a renewable firm could install hardware and share energy generation benefits.

In theory these models are low-risk to councils, but council budgeting is not set up to take account of this kind of dynamic model. It usually assumes fixed prices in contracts set for 1 to 5 years, or fixed-fee prices for set goods. Benefit-sharing models can, counterintuitively, feel riskier for councils simply because they are less familiar.

Other firms have products which simply do not fit into existing categories of thought, or business models which they do not realise replace entire council functions. Connected sensory devices are often directly competitive with council facilities staff, for example, or do not fit existing categories of building regulation, management or operation. Mobility systems could displace entire council strategy functions in transport.

Software as a Service models should in theory be attractive to councils: these are based on licences for certain number of users, and usually have short termination timelines. Many places are nervous about becoming dependent on certain forms of technology, and so use-based, easily-cancelled services should suit them. Areas like mobility, energy or carbon capture have emerging models using this kind of simple pricing. But this too is countercultural for councils: they are used to buying software licences for IT, but not software-style licences for other services. One council even suggested that the ability to end licences swiftly was seen as a negative in big, complex public services like transport: their rationale was that if a service could be cancelled swiftly, its provider could clearly not understand the gravity and complexity of the topic in question.

There are also particular issues with business models which have emerged as popular in the past ten years:

- The idea of the data flywheel is commonplace in tech discussions, and there is an assumption underpinning many startups (particularly those with venture capital funding) that if they win customers and build data, they can worry about monetising later. Often companies are explicitly aiming to establish a monopoly position, following the axiom of startups that ‘competition is for losers’. For some the ultimate dream is to reach an initial public offering, long before they are profitable. With interest rates low across the globe, there is investor money to burn taking long-term positions in public policy markets.

- This is mistrusted by public authorities: there is a generic suspicion of any firm promising data-driven services without any obviously profitable business model. The assumption is often that a company will move in, sweep up data, and then sell out to a tech giant.
- Sometimes these firms have to pivot from B2C to B2B models - particularly in highly-regulated sectors like energy, transport or urban services, where serving public authorities' needs can be a more sustainable model than trying to take them on. For example, firms like Uber originally hoped to be simple B2C apps that disrupt transport, and are now pivoting to serving employers and cities in the face of regulatory threats. But they are attempting to do so, having previously attacked public authorities.
- There is also a trend for companies to see value in technology and data, even if their core offer is quite traditional. For example, micromobility providers might install or run scooters or bikes. But by providing access to their services through an app and tracking users, they create a data pool to analyse and monetise. Company valuations in start-ups often hinge on these data capabilities, rather than the physical product.
- This is not, however, the role that councils might want them to play: councils will generally want to own, or at least oversee, data flows. In sectors like transport, energy or buildings, often councils explicitly want to commoditise their providers – treating them as a functional part of a system - when the providers want to retain control of higher-value services like data. This clash can at best, lead to confusion or mistrust, and at worst, can collapse pilots or trials. It also fuels the absence of strategic operational partners for councils in a range of key sectors, discussed below.

At the other end of the scale, incumbents often have little incentive to innovate, because their business model fits the current culture of local government procurement:

- The concept of the incumbents' dilemma is familiar in business theory: big players in markets who are so focussed on existing revenue streams that they do not have the ability or need to keep innovating.
- The market in solutions for net zero has some almost textbook examples, like waste or catering outsourcing – where precisely because they are secure operating within the terms of existing contracts, they have little need to innovate specifically on carbon reduction.
- This is shaped by procurement, as outlined above, but it is a two-way effect: when a place does have the right leadership to try something innovative in these sectors, they can struggle to see past the established, lower-cost players which are so dominant.

Skills

Just as councils can lack the right skills to buy from businesses, so companies can have the wrong blend of skills to sell to councils.

Businesses often concentrate on skills, time and investment in their core product teams, rather than understanding how to sell to places. Many of the issues and frustrations experienced with procurement (see section 2.4) that wrongfoot businesses and sales teams are due to their expectation for public sector sales to mirror private sector transactions in flexibility, speed, and buyer relationships.

There was a sharp distinction in the research between smaller and larger companies. Larger firms tended to distinguish between marketing and business development, and would explicitly invest in networking with councils and positioning their market-facing employees as thought leaders who help to navigate and lead conversations in the sector. Smaller firms either lacked the resources or inclination – particularly at start-ups, where often the founder or CEO was also CMO and sales director.

Language

A recurring theme was that businesses and councils simply see the world in different ways. This expresses itself through language and choice of words.

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Innovations often arrive alongside a set of buzzwords. These phrases often:

- Become increasingly divorced from their original meaning – like ‘mobility as a service’, which started as a description of a specific business model but became shorthand for any integrated travel system with an app.
- Obscure major distinctions within processes – such as ‘AI’, which is talked about as one approach but can itself be broken down into different tools.
- Obscure quite simple concepts, such as Big Data, which is more often simply data.
- Have a heritage in Silicon Valley and the US tech scene, such as concepts like data flywheels, the internet of things, disruptive innovation, or cryptocurrencies.
- Outlive their heyday in public policy discussion, such as ‘nudge theory’.

Companies love these phrases. Councils do not. At best, they can capture the sense that a product is innovative. But more often, they sound impenetrable, confusing, or unnerving. They prevent clear communication on what a product is, and particularly with non-specialist decision-makers in procurement or political leadership, undermine confidence.

Some innovators explicitly talk about services in ways that are deeply uncomfortable for public sector buyers. The concept of disruption is, in business, seen as a good thing: it suggests dynamism, innovation, and imagining new ways of doing things. Companies explicitly talk about services in education, healthcare, transport, and energy as ‘ripe for disruption’ precisely because the public sector plays a big role and there are significant unmet needs.

But in these core local authority functions, the word ‘disruption’ has a much more literal meaning – and councils are trying to avoid it. Councils are more likely to feel threatened than supported by this kind of language and this kind of idea.

There are individuals on both sides of the relationship who are exceptions: public-sector buyers who relish the latest industry concept, and companies who speak in terms which address existing public-sector processes and structures. More common, though, is that private sector innovators are simply speaking with a different vocabulary to their customers.

Conclusion

Poor understanding of council customers

Just like over-generalisations about councils, coming to sweeping conclusions on business culture across the UK should be avoided.

However, the theme in the above headings is that the firms most likely to offer a place an innovation have a poor understanding of council needs. They are often self-defined entrepreneurs, disruptors and innovators, when councils prize stability, certainty and have a public duty to manage risk. Most businesses assume the customer is always right: many innovators in net zero solutions start from the assumption that they are wrong. This mindset is an important part of the innovation gap.

Where are the innovation gaps, and how can they be addressed?

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This section shows how analytical tools developed in this project can bridge the innovation gap.

At the core of the project research is a framework which breaks down net zero into meaningful chunks of work, and a market mapping exercise, showing the relative levels of activity in different sectors. These tools can be used to shape responses to the innovation gap.

Get the right level of focus for the right kind of project

Two conclusions from the above analysis are central to addressing the problem.

- When ideas are translated into a commercial agreement, places often get the scale wrong – making market engagements too big and vague, or specific and small.
- Places have surprisingly variable understandings of what ‘net zero’ means, and surprisingly few companies see themselves as serving net zero goals.

To address these specific issues of breadth and focus – and in doing so break down the innovation gap – this project developed a framework for net zero actions.

This is a mental model which takes the big challenge of getting to net zero, and breaks it down into meaningful chunks.

It proceeds through four levels of strategic, high-level and tactical challenges, in a nested hierarchy of levels of focus. It then maps private-sector solutions against those challenges. A full methodology is outlined in a separate report, “REP_2034 A framework for understanding net zero actions by places”.

A visual representation of the framework is below. An online interactive version is available at www.netzeroframework.co.uk.

This is designed to give companies a sense of where their offer could fit in. For local and national policymakers, it is designed to find the right conceptual level of focus, for different kinds of projects:

- A high-level or strategic challenge is a big, thematic question. This is a broad analytical canvas and suited to work on prioritising different actions, roadmaps, or strategies, often between different organisations.

For example, one high-level challenge is ‘reducing emissions from transport’. This is too big to be a useful procurement for councils, and would represent a very open funding topic – but it is a good level at which to think strategically and agree plans between council departments, or for Innovate UK to think through priorities and strategies.

- A tactical challenge is defined by a problem, but is narrower and more focussed than previous levels. This makes it suitable for a challenge-based approach to procurement or innovation calls to the private sector: it is a question that is tightly-defined enough to generate meaningful responses, but not so specific that new forms of solution might be missed.

For example, a tactical challenge within transport emissions is ‘reducing emissions from cars and taxis’. A market engagement exercise or open research call for submissions which is structured around that question will include familiar, established solutions like EV infrastructure – but it would also be open enough for wider traffic systems, or newer ideas like autonomous vehicle technology, to be an option.

- A tactical solution has emerging or established suppliers. This means it could be a focussed, discrete project working within familiar concepts and language.

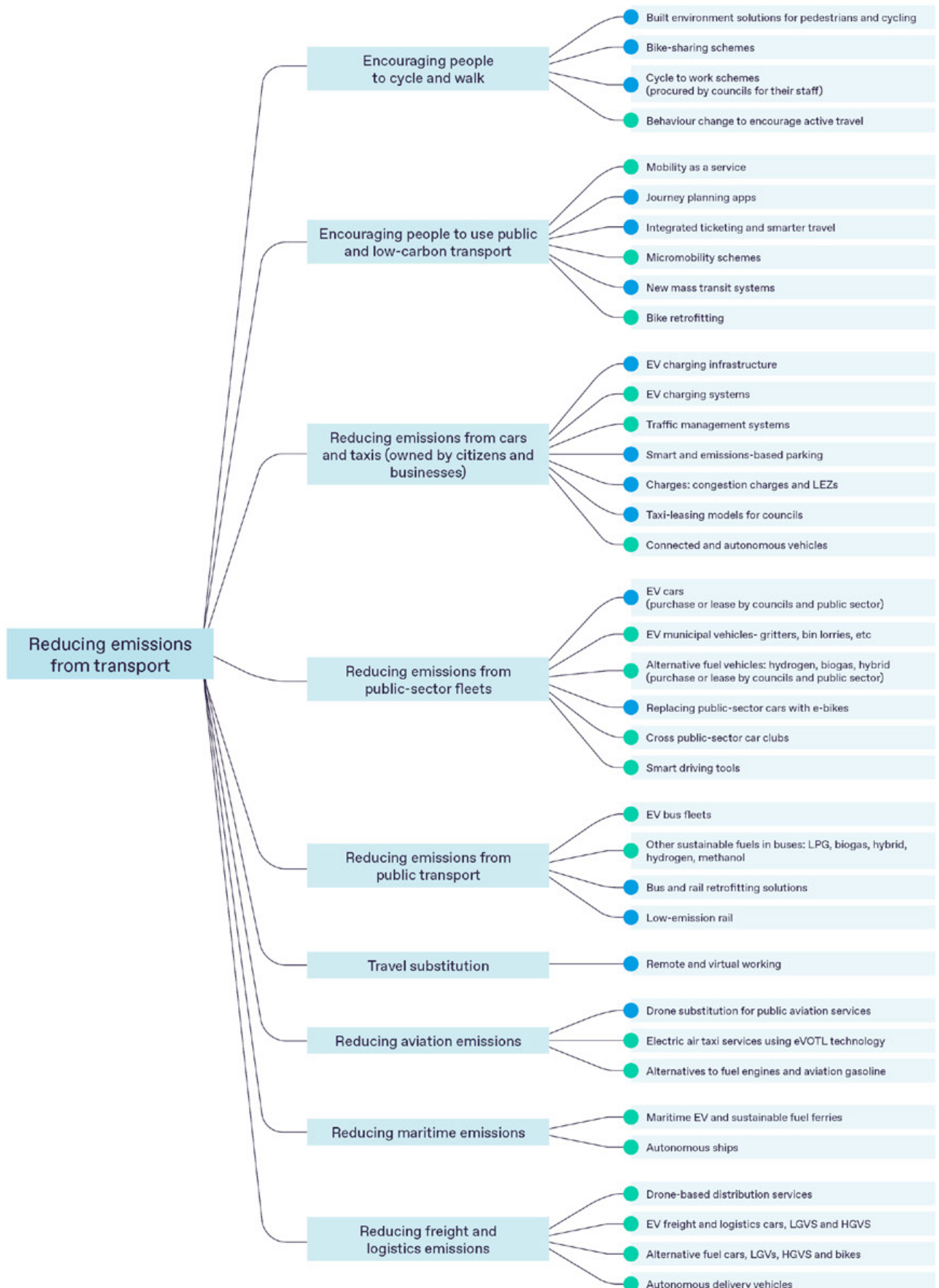
For example, a council could identify that EV charging infrastructure is a required tactical solution, and could therefore proceed with a focussed procurement confident that the concept, focus and terminology would be appropriate and generate interest.

In short, the framework helps places and Innovate UK to think broadly about the range of things they can do to get to net zero, and helps them to design the right kind of approach for the right kind of topic.

Reducing direct emissions: emissions from sources within a place

MARKET BANDING

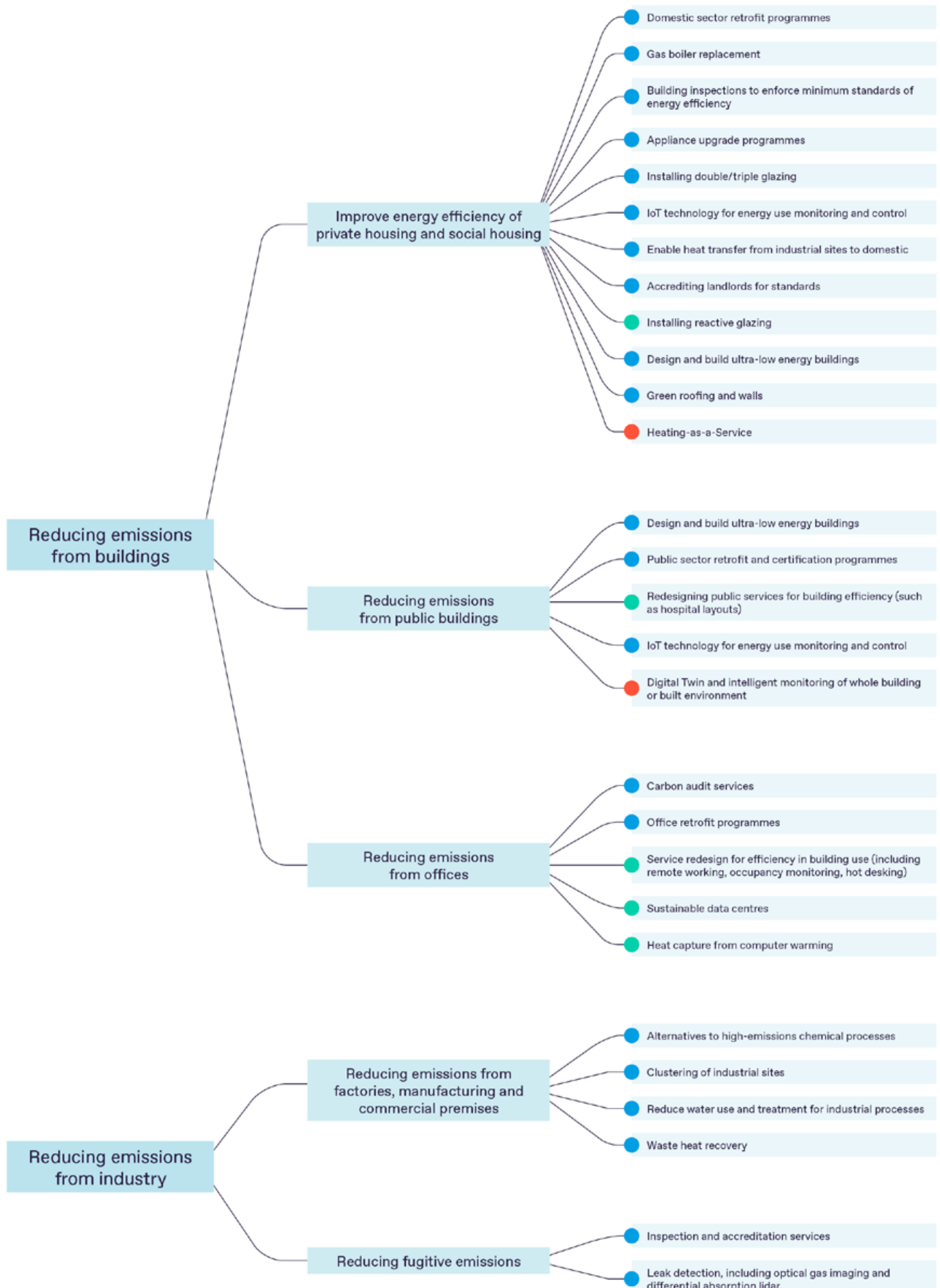
- Established
- Emerging
- Adapting
- Internal



Reducing direct emissions: emissions from sources within a place

MARKET BANDING

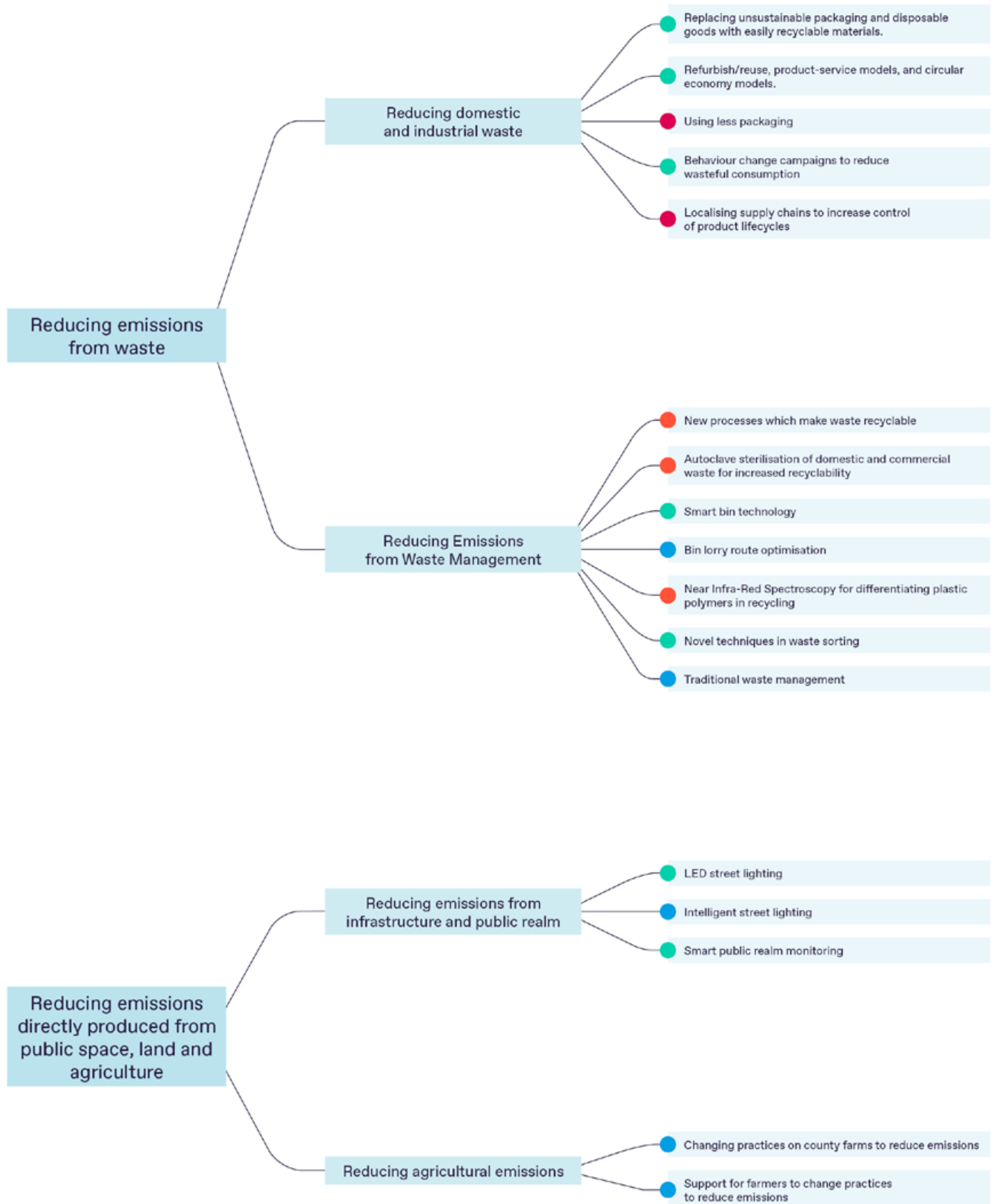
- Established
- Emerging
- Adapting
- Internal



Reducing direct emissions: emissions from sources within a place

MARKET BANDING

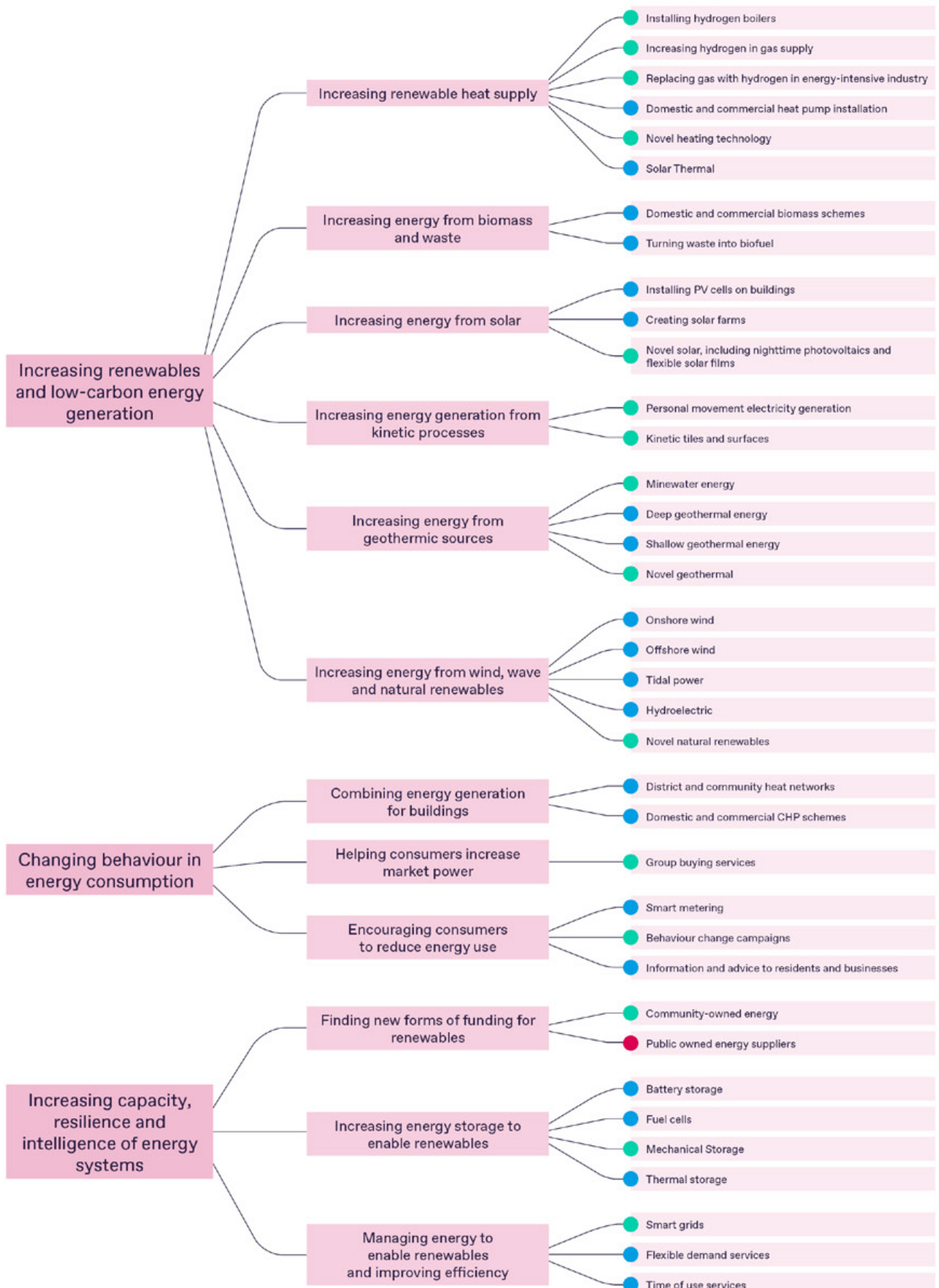
- Established
- Emerging
- Adapting
- Internal



Emissions from energy: emissions caused by energy production required by activity within a place

MARKET BANDING

- Established
- Adapting
- Emerging
- Internal

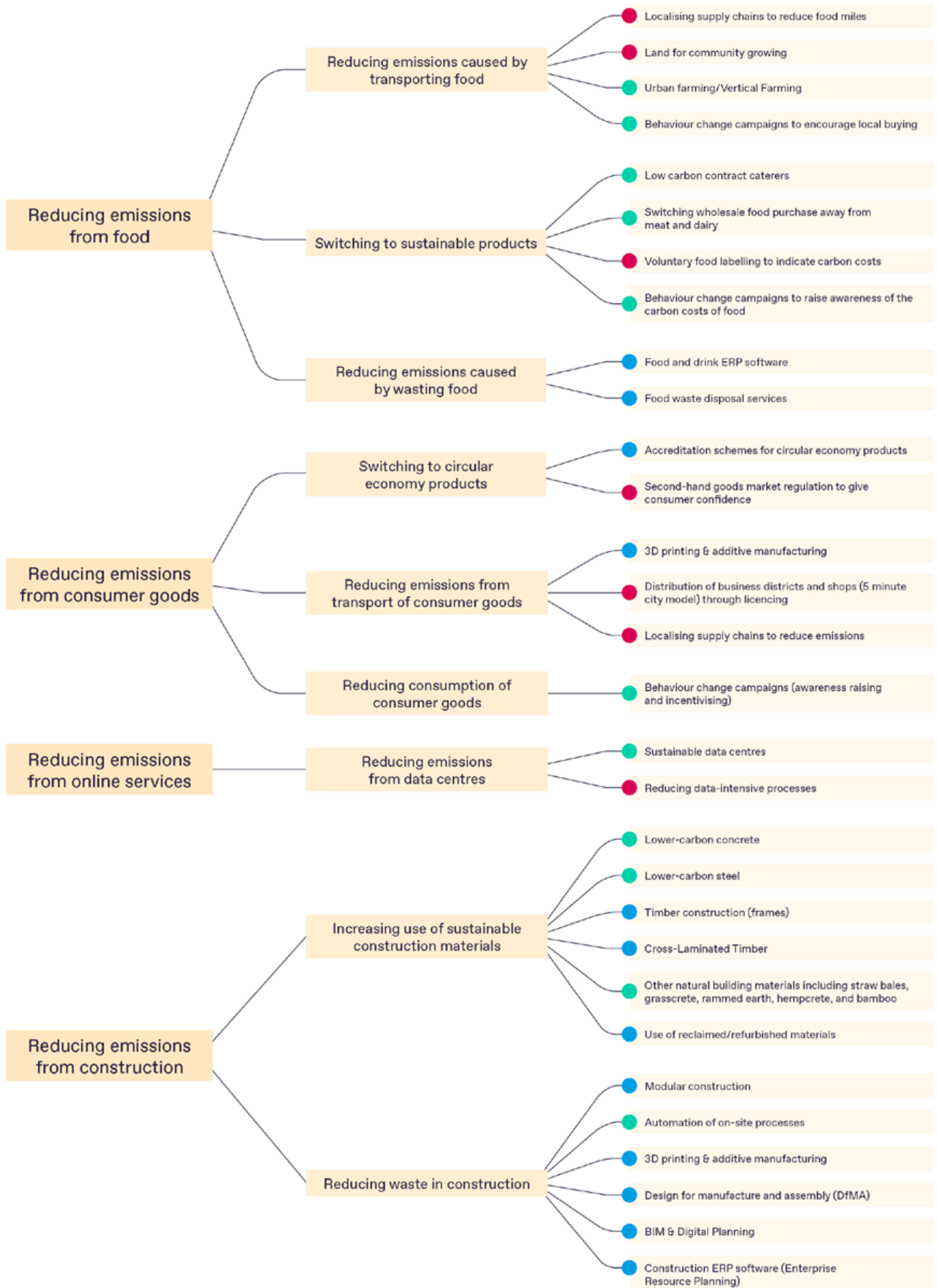


Strategic Challenge 3

Indirect emissions: emissions caused by activity within a place, but which are emitted elsewhere

MARKET BANDING

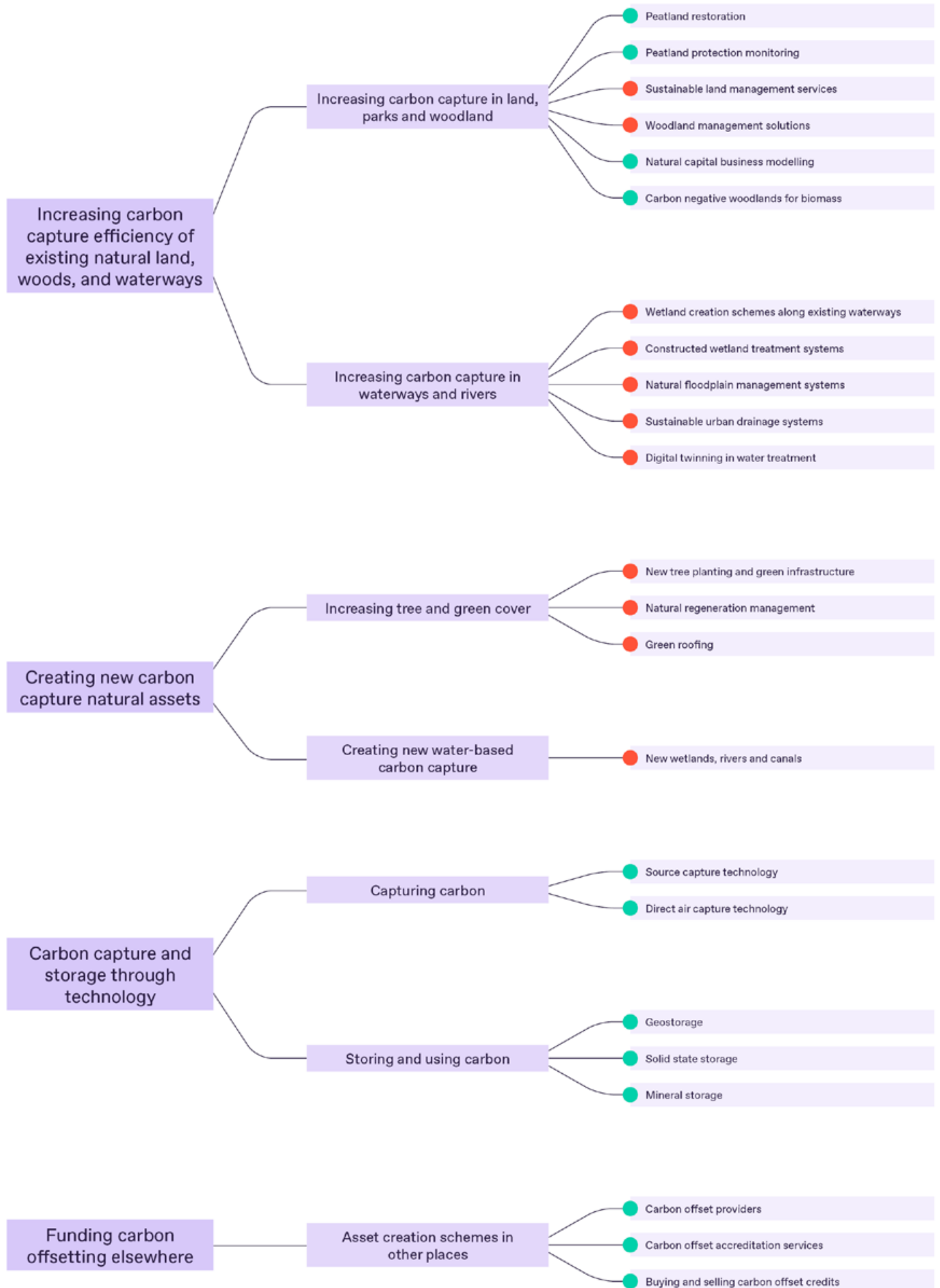
- Established
- Emerging
- Adapting
- Internal



Capturing and offsetting emissions

MARKET BANDING

- Established
- Emerging
- Adapting
- Internal



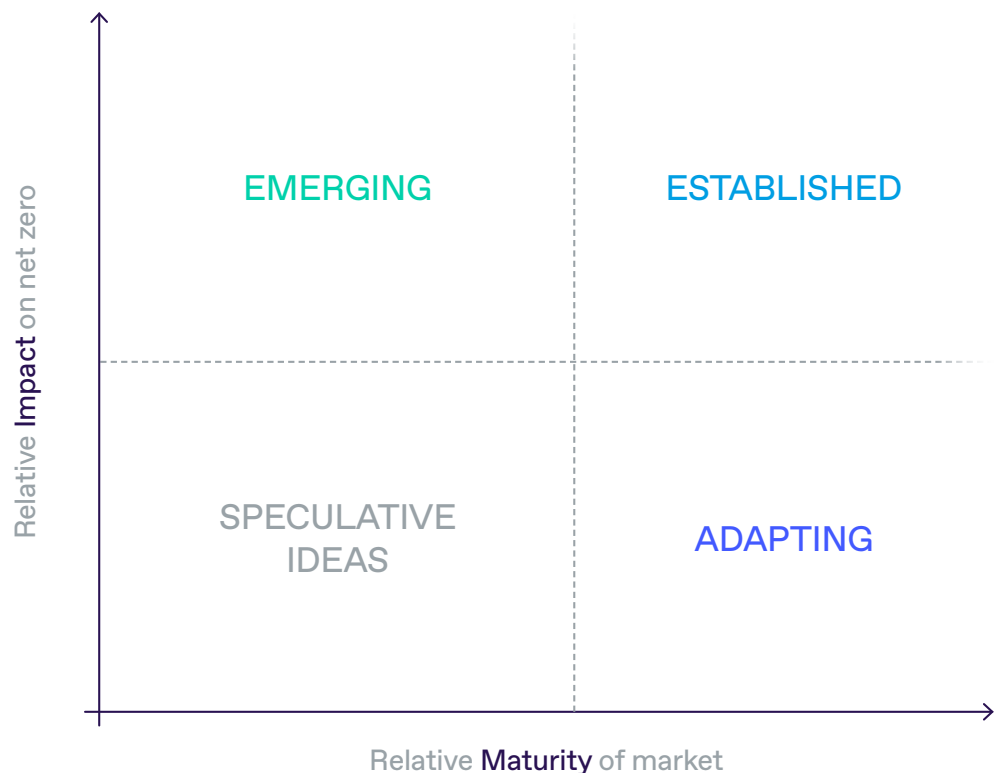
Distinguish between types of market, requiring different sorts of innovation intervention

The analysis above of the innovation gap suggests there are many nuances involved. To be more specific about these dynamics, this project mapped the market in net zero solutions.

This process is covered in more detail in a separate report, “REP_2034 Mapping the market in net zero”.

This developed a second analytical tool, to identify what broad categories of future work by councils, companies and Innovate UK could bridge the innovation gap.

It also assessed net zero solutions for places on two axes – their impact on net zero for places, and the relative maturity of the market. This process identified four kinds of solution:

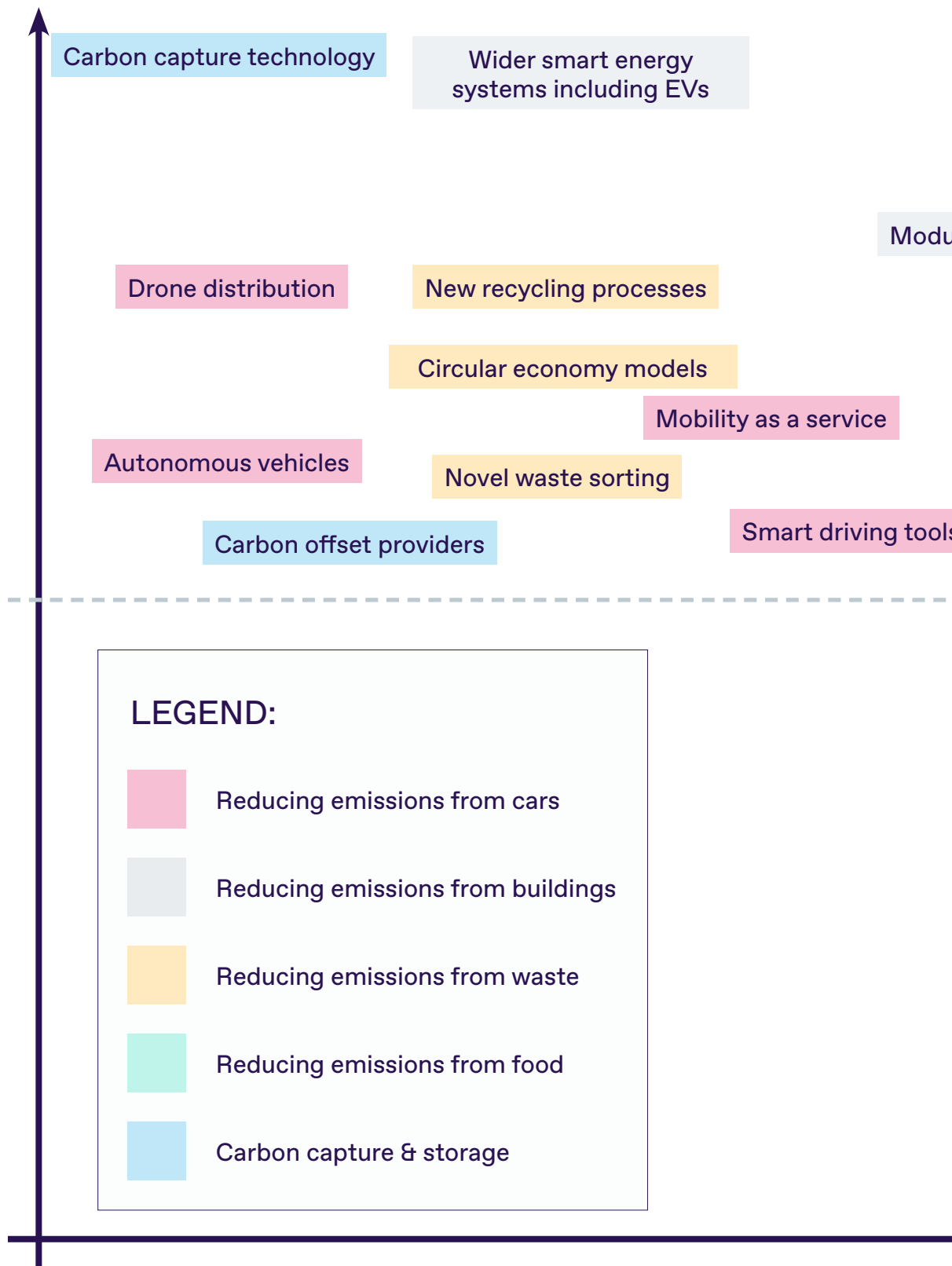


174 solutions were graded. 394 companies in a core database were compiled and categorised against those solutions. A more detailed study of themes of particular interest focussed on five challenges: reducing emissions from cars, buildings, waste, food and carbon capture and storage. The chart on the following page summarises the main groups of solutions mapped against relevance and maturity.

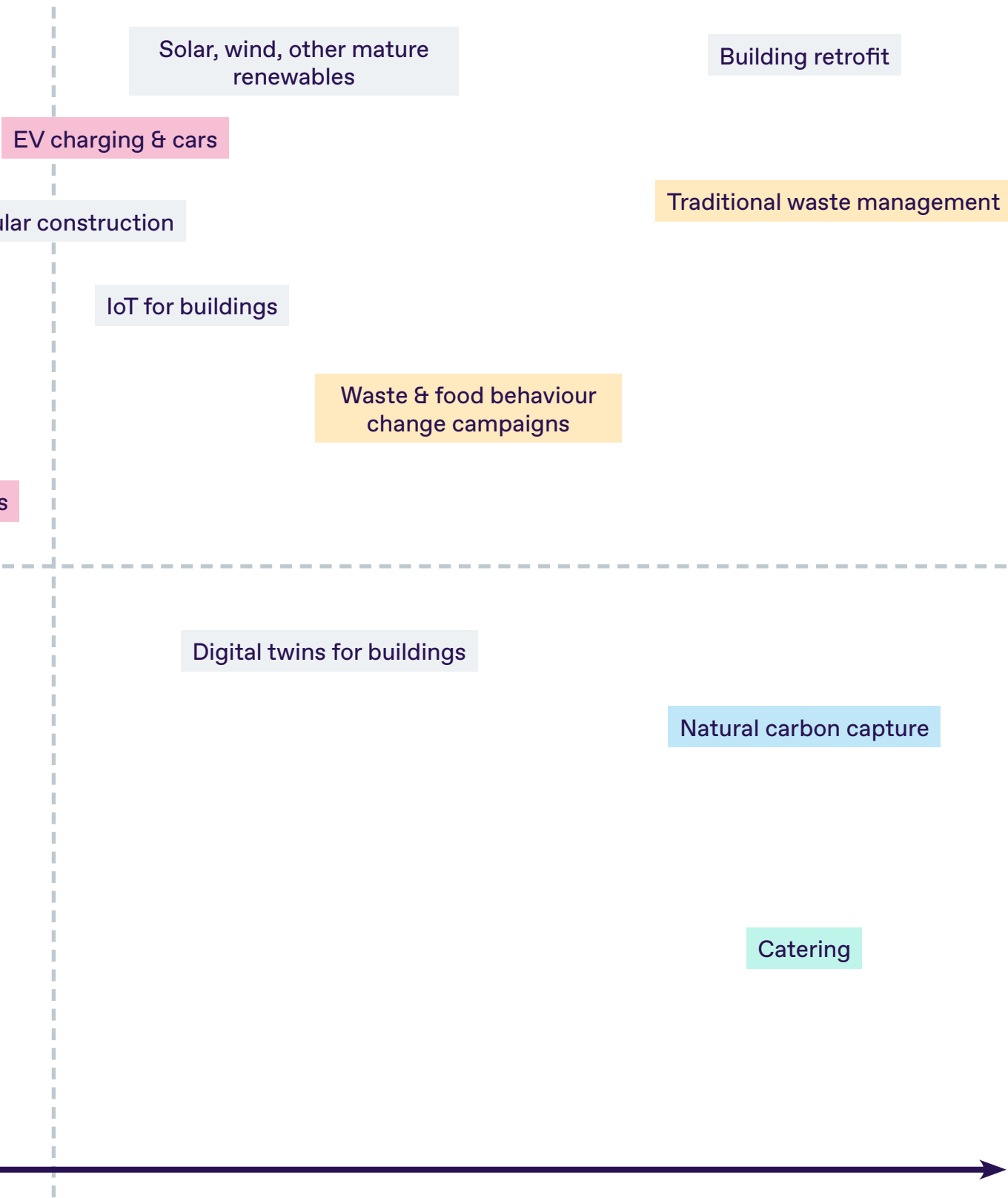
These categories lend themselves to different future approaches in funding, policy development and thinking.

Wider strategic decision-making by Innovate UK will clearly have a number of influences – in particular, deciding what not to do is just as important as deciding what to do – and so this should be seen as a guide to thinking, not a definitive strategy. The sections below set out the different kinds of policy, project and funding which can address the challenges of each category – focussed on the solutions which were covered in most detail in the market-mapping exercise.

How relevant do suppliers and councils think this solution is to net zero?



How mature



Established solutions: focus on new processes

As a rule, established solutions require new processes to produce innovation.

These solutions are already relevant to net zero, and the market supply is mature. But innovation is stifled either by buying processes, dominant suppliers in a concentrated market structure, or stable markets without any innovators. The response is therefore to support new challenger companies, broker ways of challenging buying habits, or rewire buying processes.

Selected solutions in this category	What does the innovation gap look like?	What are potential responses?
Waste management	Dominant market players	Support challenger companies
Domestic retrofitting	Long tail of low-innovation suppliers	Support councils to set more ambitious terms of buying

Established solutions driven by outsourcing giants and economies of scale

What is the innovation gap here?

Functions of local government like wholesale food, contract catering or domestic waste management have a relatively long tradition of outsourcing. In sectors like waste, around 40% of all local government spending is outsourced.²

These markets are highly concentrated: a handful of large firms have significant market share, and depending on the market a small group of 1-5 companies can have up to 75% of market share. Definitions of market concentration vary but one commonly-accepted definition is that if the top four companies in any given sector have a combined market share of 40% or more, the market is concentrated.³

These sectors are the best example of council procurement rewarding incumbency. Councils want to manage risk and value in a core function, and therefore prioritise track record and cost in procurements. Contracts tend to be at margins of 1-3% and run for up to 5 years.

As a result, these sectors are subject to strong cost pressures and economies of scale. The dominance of major players is secured by the efficiencies, driven by their size.

Innovations which might achieve net zero goals are often neglected in these markets – as opposed to innovations which might increase efficiency or reduce costs.

Some smaller players identify niches which the bigger firms have yet to exploit – such as

refining a process for a particular type of recyclable, and focussing on that type of waste for commercial customers or in a B2B market – or which councils have a particular interest in buying, such as particular approaches to catering. But these companies are generally limited to niches, remaining small, or becoming part of the large outsourcers' supply chain – rather than growing and competing with them.

What could potential responses include?

In these solutions, councils re-setting priorities to explicitly include net zero goals – and funding it accordingly – is most likely to make big, established players respond, or identify newer firms with a better offering. Looking at circular economy business models to capture value from waste, such as revenue streams from recycled raw materials, could help them move beyond existing budget dependencies.

For Innovate UK, future projects could look at supporting these approaches by councils, particularly in topping-up budgets to make innovation in outsourced markets more likely. Open funding calls for solutions which aim to fund better technology, business models or systems could also identify emerging companies who are aiming to challenge the dominance of the big outsourcers.

Established solutions with clear net zero application but little innovation

What is the innovation gap here?

Some supply markets have a long tail of small suppliers. Examples include retrofitting housing with insulation or glazing, installing more established forms of renewable energy, or management of land, greenspace and natural assets for councils. There are numerous suppliers in these fields. Each has tried and tested technology. Barriers to their adoption range from funding structures, to skills gaps, and other processes which are not related to their core technology.

Often core technology producers are innovative – but installers are the face of supply to council, and they are less nimble. Because many of these suppliers are small businesses, and there are reliable systems and usually sources of funding attached to existing technologies, there is little structural incentive to do things differently. Some installers also gain commission from manufacturers of technologies like heating or renewables.

A market has evolved – fuelled by demand- and supply-side factors – which limits innovation.

What could potential responses include?

This challenge is a wider issue for the UK: our unusually long tail of underperforming businesses pulls down overall productivity and stunts our innovation potential⁴. Numerous responses to this challenge have been proposed in the industrial strategy, by business groups, and government departments. Many of these focus on management training, skills and knowledge gaps, and tackling a mindset that keeps companies small and static, while new institutions like the Business Growth Fund or British Business Bank have tried to deepen the pool of patient capital in the UK to encourage scale-ups.

This breadth of responses reflects the scale of the challenge. There is a therefore a fundamental question for Innovate UK on whether it should attempt to improve innovation in these sectors, or focus elsewhere – because so many other parts of government are considering this particular question, and because the problem is most acute for installers rather than manufacturers of technology.

If these solutions are the focus of future projects, there are existing local networks of business support, and momentum across the business support landscape for support which understands and engages in the ‘levelling up’ agenda by offering more local knowledge transfer, training and advice. This can often neglect smaller, less innovative firms: these networks often by definition identify the most innovative and ambitious firms. Building in activities which specifically target the long tail in these solutions could be considered by Innovate UK’s regional network.

Established solutions: focus on viability

As a rule, emerging solutions require work on viability.

These are solutions which could have a direct impact on net zero ambitions – but the market is not yet mature. The central question is about the practicalities of making stuff work: undertaking projects which drive the development of models, solutions and technologies towards being commercially sustainable and applicable to places.

Selected solutions in this category	What does the innovation gap look like?	What are potential responses?
EVs as complex systems	Innovative hardware providers operating without systemic transformation	Viability projects looking at systems, not just hardware
Mobility as a service		
Smart energy and management	Innovative technologies serving supply chains or on radar of national government, not yet relevant to councils	Focus projects on bringing supply chains to focus on councils as customers, such as through clubbing together councils to create scale

Emerging sectors with technical innovation but few systemic leaders

What is the innovation gap here?

A number of tactical challenges are served by vibrant markets in hardware and technical solutions – and the competitive dynamic looks set to continue to drive innovation. Examples include:

- Electric vehicles, where automakers are competing on range, affordability and reliability and chargepoint manufacturers are competing on speed, functionality and design;
- Wider mobility services such as e-scooters, bike sharing schemes and car clubs have all expanded rapidly in the past 5 years;
- Emerging technologies like replacing logistics traffic with drones, where the basic technology is advanced;
- Core renewables technology like solar voltaics, where costs have rapidly reduced.

But many of these sectors lack operational leaders: companies who can be tasked by a place with not just implementing a single technical aspect of that solution, but creating a systemic change. For example:

- EV rollout tends to be procured from consortia of charging, vehicle and grid operators. There are few companies who can operationalise entire systems for a place, and can be tasked by a place with coordinating that range of suppliers.
- In mobility, there are a handful of technology companies who offer software to integrate new mobility providers into Mobility as a Service (MaaS) platforms – but there are no UK companies who can provide both technology and the legal, contractual and operational services to make MaaS a reality.
- There are few companies which can advise on the policy and spatial frameworks necessary to make drone traffic a reality, or offer turn-key fleets and systems – compared to the number of hardware manufacturers.
- In energy, the potential for smart systems and turn-key ‘energy as a service’ solutions is far less developed and projects which explore these areas tend to be consortia of utilities, energy majors and newer players.

In other words, in emerging fields, the pattern is to have strong supply of parts of systems – and little supply of the systems themselves. There are several causes for this:

- Many councils consider taking this kind of operational lead to be their role.
- Business models for operational leaders are harder to define.
- The relative novelty of some technology might mean there has simply not been enough time for any company to emerge.
- Regulation can play a significant role in preventing new innovations
- Some emerging fields actively seek decentralised systems, or prefer neutral ecosystems without defined leaders.

This is not, however, how many other sectors work – including those that usually sit in the same directorates in councils. For example, in sectors like education, welfare, justice, health and social care, entire operational functions are handled by the private sector, in ‘prime provider’ or ‘accountable organisation’ contracts. In environmental areas like waste collection, providers are expected not just to provide a technical solution but also an operational oversight of downstream processing.

The nature of these innovations is also that the biggest societal change is only realised with a systemic implementation. Electric vehicles are currently effective as a straight replacement

for petrol and diesel cars, for example, but their potential for grid balancing, energy management and role in future mobility requires systems thinking. The potential impact of this gap in operational, cross-solution providers is therefore significant.

What could potential responses include?

A central conclusion for future innovation work is to therefore think about systems and systemic leaders, not just hardware. In themes like transport or energy, the prize is to identify operational leaders who can mobilise new systems.

To put it in terms of the framework, projects in these areas should focus on systemic changes at the level of a tactical or high-level challenge – not only focus on technical viability of individual tactical solutions.

Emerging sectors driven by national policy, not currently focussed on places

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What is the innovation gap here?

A clear theme in many emerging technologies is that councils are not yet the customer. Companies are focussed on governments and buyers of national and international significance, and the more speculative or theoretical the technology, the less relevant it currently is to councils.

Carbon capture and storage through technology is a standout example, where most models and policy pathways for the UK to get to net zero assume significant carbon capture capability – but there is no technology or product which is at a price point and level of practicality for places. There is no obvious roadmap for them to become council-focussed services.

Other examples include less mature forms of renewable energy; electrification of national road and rail; emissions in aviation and maritime sectors; and financial investment in green projects.

This is largely a question of cost and the scale necessary for viability. These approaches are too costly for councils to be the customer. They often rest on single sites of national importance such as a major polluter like a refinery or factory, and investors are also often looking for opportunities at scale and councils do not, on the whole, have extensive enough assets to be of interest.

What could potential responses include?

There are two potential responses here. The first is to leave these areas for now. They will mature, and at some point, may become relevant to councils.

A second approach is to assume anything is possible with enough creativity. One of the recurring themes of this project is a definitional issue: almost everything could in theory be a service to local government. This could be an opportunity, as even if a solution is currently not targeting councils, projects could be designed to try and broker new service models where they become a customer. This is more of a working principle than specific recommendation, but in practical terms this could have two broad templates:

- Projects which explicitly try and move innovations from a supply chain within a sector, and push it more directly into local government's remit by involving local government as partners.
- Projects which club councils together. To achieve the scale necessary to be of interest to investors in these newer technologies, councils could group their approaches together. For example, bringing together all the councils which run ferry services to look at shipping emissions; combining the energy storage requirements of multiple councils for newer forms of technology; combining the natural assets of councils across rural areas to design new natural capital business models.

Emerging solutions where there are basic needs to improve viability in technology, business models and commercialisation

Where technology is some years away from commercial viability, these solutions lend themselves to focussing on hardware and improving the core technology, business model or research base of solutions.

This is clearly core to Innovate UK's work: the market mapping categories are one input to identify what kinds of solution fit this approach.

Adapting solutions: focus on bringing the market towards net zero goals

Adapting solutions represent a curious mixture of mature markets, but only limited understanding of how those markets are relevant to net zero goals.

Tying them more closely to net zero is primarily a question of knowledge transfer: of stimulating and spotting opportunities to push more mature markets towards environmental policy.

Selected solutions in this category	What does the innovation gap look like?	What are potential responses?
Catering	Mature sectors with extensive supply but underappreciated links to net zero	Awareness and knowledge transfer projects
Land management		High-visibility demonstration projects

Solutions which could adapt to focus more on net zero

What is the innovation gap here?

Tactical solutions such as land management, forestry or water management are by definition environmental services, and both places and suppliers consider themselves to be operating in environmental services. There is, however, a surprising lack of companies which connect these services with net zero goals.

This is partly about branding and emphasis. Sustainable urban drainage, for example, is usually described in terms of water management, environmentalism and sustainability in the broadest sense – and many of its approaches and technologies could, with minimal changes, also be capable of sequestering carbon and being described as such. There is nothing fundamental in the supplier or buyer's business model to stop this happening.

However, in some cases, there is a more fundamental question of the potential of a given solution to help get to net zero if commissioned appropriately – and its irrelevance if not. Tree management, parks and land, for example, are core concerns of councils. Most own parks and green space. But suppliers in these areas are focussed on functions such as mowing, maintenance, health and safety and disease control. This is a bigger conceptual gap, where the innate carbon potential of the core material in question does not seem to be understood or communicated.

What could potential responses include?

There are established forums to try and improve knowledge transfer for both private and public sector, such as the KTN, catapults and others. Innovate UK's participation in those forums should include clarifying the net zero potential of these solutions.

Innovate UK could also run high-visibility projects or funding which demonstrate the potential for innovation in these solutions, or identifies newer firms, as an indirect means of showing the carbon reduction potential of these themes.

There may also be a role for wider government in communicating to councils the potential range of actions they can take to get to net zero.

Broader recommendations for Innovate UK and other government bodies

The background of the page features a silhouette of two wind turbines standing on a hill. The sky is a gradient of blue, and the hills in the background are also silhouetted.

50

This section pulls together the analysis of the project into a wider set of principles for Innovate UK, and other government bodies.

The net zero agenda is huge.

The topics in this report touch on almost every aspect of the economy, and most government departments have some role to play.

To make recommendations meaningful this section is focussed on Innovate UK first, and second on the wider family of organisations closest to the project: BEIS and its departments, HMT, and MCHLG.

They largely revolve around the nature of net zero: of what it means to transition to a net zero economy and society, and the choices and types of thinking it requires.

Build capacity in local government

Capacity in local government is the single biggest barrier to innovation by councils, and underpins many frustrations felt by companies.

Innovate UK and central government should therefore focus on building this capacity and avoiding reducing it.

This is an objective that could be targeted in its own right. For example, new projects or funding in net zero could expressly aim to improve innovation capacity in councils, through different means like in-house innovation teams, smart city networks, or skills and training for managers.

It is also an ongoing, working principle for the design of policy and projects. Projects involving councils should:

- Factor in staff time and costs in budgets and allow bids which would require the recruitment of new staff before being implemented.
- Give lead times for funding as long as possible, to allow councils to prepare for pitches for funding.
- Aim to keep funding awarding processes as simple and clear as possible, focussing on the ‘what’ not the ‘how’ in accountability and audit processes – so that they focus on outcomes and key metrics, rather than setting detailed personnel or operational reporting requirements.
- Consider using existing funding programmes before creating new ones, as councils have to invest in any new processes for submitting bids.

Standardise and enforce definitions of net zero

Net zero has a clear technical definition. In practice, it has become a much looser term.

As a minimum, Innovate UK and other government bodies should be clear on the definition of net zero, highlighting wherever appropriate the exact definition of emissions and offsetting being used – and enforcing compliance with this definition in any organisations receiving funding.

This may sound basic, but one of the clear conclusions of this project is that people think they are talking about the same thing when they say ‘net zero’. They are not. Being clear to the point of pedantry is a precondition of good net zero projects.

Keep up the pressure

A wider risk into 2022 and beyond is that after COP26 and the post-pandemic period, net zero loses momentum, as the hard reality of making change starts to be felt.

This is a risk in particular for local authorities, who are under pressure to deliver multiple policy objectives.

If central government stops setting incentives and policy to drive net zero, they will not act.

Refining net zero: pursue embedded carbon approaches

One major difference in understanding of net zero is between organisations which see their services as part of entire lifecycles of product use and carbon, and those which do not.

For example:

- Retrofitting is a well-established market which meets net zero goals. Companies which retrofit with recycled material in insulation, glazing and residential energy efficiency are less advanced.
- Chargepoints for EVs are well-established. Few chargepoints are themselves sourced from sustainable materials.
- EV car sales are growing rapidly, but the majority of cars sold in the UK are second-hand, and manufacturers have been slow to develop ways to fit new batteries into older vehicles.

There are some private-sector companies who think systemically and do adopt approaches which understand embedded carbon and product lifecycle dynamics. But more often, if it is considered at all, 'net zero' is seen as the outcome of a product – not as a working principle for entire supply chains. Innovate UK and other government bodies should, in our view, adopt the latter stance.

Refining net zero: think about opportunity costs, not hype

There is a natural tendency in innovation policy to talk about hype – and whether any given technology justifies the hype.

This is the wrong working concept for net zero.

Places are, justifiably, worried about installing technology which becomes redundant: nobody wants to be the Betamax of net zero. This project suggests that this is now becoming a wider cultural reluctance to pursue existing technologies of proven application, because there is an assumption that more radical technologies will overtake them.

Examples include:

- Switching building heating away from domestic gas to hydrogen. This would be on a scale comparable to switching gas systems in the 1950s, or moving most homes to central heating – a project of several decades requiring sustained policy and financial coordination between government and the private sector. But many homes are suitable for other forms of heating: electric sources like air source heat pumps, prosumer generation, community and district heat schemes. These technologies are, relative to hydrogen, proven and cheap. They are actionable by places, too, in a way that a wider system like hydrogen is not.
- Discussion of larger, more expensive forms of renewables like tidal lagoons, when providers and technology of wind, solar and other more mature renewables are well-advanced and could already be purchased by councils.
- Pursuing e-fuels as an alternative to electrification of cars.

- Pursuing hydrogen for smaller vehicles as an alternative to electrification, when core EV technology is proven and costs viable for councils to proceed with a purchase.

In principle, pursuing these technologies at the same time is possible – hydrogen for home heating could sit alongside other technologies. But in the context of decisions by councils on what to do, there is clear risk that actions that could be taken today to reduce emissions are delayed and deprioritised, because there is an assumption that much bigger changes will be made by someone else.

The approach Innovate UK and government more generally should take is therefore not to think in terms of a particular technology being over-hyped or not. Instead, the primary consideration should be the balance of operational requirements any given solution requires, and the mindset that it requires of a place, and the opportunity costs of any given technology.

Refining net zero: be cautious about the commodification of carbon

A number of developments are creating the conditions for a new understanding of carbon.

Natural capital is a growing theme of interest. Advocates suggest that linking natural assets with financial value is the best mechanism to ensure their protection, and as noted above, there is demand for business modelling and trialling projects.

Carbon trading schemes have now been operational for some time. The concept of capping and trading is now well-established, and as the UK designs its successor scheme to the EU ETS, looks unlikely to be significantly challenged.

Many companies, across a range of sectors, are declaring their intentions to become net zero. This is usually a company which defines itself as a market leader and has ambitions in sustainability to lead its sector. As public procurement starts to look at including carbon impact in procurement – with projects like the Cabinet Office’s study of carbon scoring criteria – there may be a domino effect, where an approach confined to a handful of leaders quite quickly becomes the norm.

What net zero means in this context is open for debate: in some cases it is a company making all of its directly-controlled operations lower-carbon, and in some, it is a company offsetting to the extent their carbon-producing activities require. Just under half the FTSE 100 has a net zero goal, for example: but only 16% have a robust plan underneath it to get there.⁵

There are already companies who can offset carbon impacts by accredited tree-planting or environmental restoration projects. The logical extension is companies offering a carbon offsetting subscription – a simple payment on a

monthly or annual basis. Woodland and peatland creation units are already a tradable commodity: carbon capture looks likely to evolve into a thriving secondary market.

All of these conditions could shift understanding of carbon away from a form of pollution to be reduced, and into an abstract concept to be bought and sold. This was much discussed when carbon credits first emerged. It is now becoming a much more real possibility. Carbon is finally becoming commoditised.

This presents a question about the concept of net zero itself. The idea implies a global perspective and assumes some form of emissions are inevitable. Approaches which streamline the conceptual removal of carbon in a far-removed stage of production chain are theoretically part of the picture.

But at this level of abstraction – carbon treated no more or less like another cost of doing business while nothing else changes – could distract from fundamental questions of sustainability. Without robust measurement, the risk of straightforward abuse is clear.

Navigating this tension is a central consideration for future work. There is no straightforward answer. At the very least, Innovate UK should be clear on the objective of any given programme: is it strictly achieving net zero emissions - or is it a wider shift in sustainability, biodiversity, or other environmental goals?

Recommendations for companies and places

This section identifies specific conclusions for businesses and local government – to help both sides address the innovation gap in net zero policy.

The final phase of this project is a communications phase, with a series of articles and communication materials aimed at companies and councils, discussing recommendations and how to broker new innovations. The content below summarises the core recommendations in those outputs.

Recommendations for companies

Speak the language

Some concepts, buzzwords and jargon are appropriate within an industry, which understands and appreciates that vocabulary. Companies should be more cautious with their language with potential customers in councils – understanding that not these terms can be seen differently.

There is also an opportunity for businesses to be more familiar with the term ‘net zero’ and understand that pitching to that agenda is more likely to lead to engagement from councils.

Understand the pressures

Council staff are working in limitations which few business see, of political and electoral pressure. Most individual council teams lack capacity, and need support to translate good ideas into reality. Business which understand these pressures – and become allies for people in local government trying to push innovative ideas – will receive a warmer welcome than those who give a sense of frustration or entitlement.

Invest in tendering and networking

Procurement should be seen as a permanent feature of selling to councils – because it exists to prevent corruption and secure public value. Companies which invest in tendering as a specific function of sales – rather than seeing it as distinct from sales or investing only in traditional forms of marketing – are more likely to accommodate public procurement into their growth plans. Networking with local government is practiced by major outsourcers as a complement to dedicated tender teams, and more businesses at earlier stage of growth should invest in networking.

Understand how business models interact with public buyers

Businesses cannot be expected to completely rewrite business models to suit councils. However, businesses need to understand that the more innovative the business model, the less likely it is that a council will have encountered it, be able to fit it into existing budgeting processes, or define procurements which could be of interest. Some businesses may be able to describe their model in a way which is more familiar to councils – for example, describing SaaS-style licencing per user as annual contracts – and at the extreme, there may be businesses who need to pivot to a different model, or could grow faster if they did so, because they are so alien to existing council budget processes.

Recommendations for local authorities

Map your assets

Councils which break new ground in innovation often start by mapping their local technological, economic, social and environmental assets. This gives them a more accurate picture of the relative strengths of their own operations and the surrounding context. It is often the basis for agreeing which innovation projects could then be pursued – and in a net zero context, might identify surprising systems which could be the focus of innovation partnerships.

Put funding, people and political backing in the same place

Companies lack informed, influential, interested people in councils with which to partner. Councils should try and create those figures – either in individuals, or teams. For example, smart city teams, innovation teams, or dedicated account managers for different sectors have all been tried with success: the combination of focus, with senior support, and the remit to make decisions, brings the right blend of expertise and influence into a single place.

Broaden procurement approaches

Procurement should be fitted the challenge at hand by adopting different practices as necessary. Some projects should not be a procurement at all, even if they involve the private sector. Practices which better support innovation could include:

- Challenge-based and SBRI style procurement, for less mature solutions and projects which should be defined by challenges, not solutions.
- Shift from procurement to commissioning for more established solutions.
- Avoid short timescales for procurement.
- Avoid weighting by headcount, turnover, or other metrics which squeeze out innovators.
- Engage the market early.
- Make it easier to access decision makers.
- To the extent possible under procurement law, add net zero into quality criteria.

Use momentum of net zero to create new ways of working

Net zero has galvanised citizens, charities and businesses. It is a reactive agenda – but a priority one. Within councils, this is an opportunity to create new ways of working by uniting previously disparate functions around a shared goal. For example, dedicated net zero working groups which bring in wider functions than traditional environmental services have been successful in spotting new opportunities. The same holds for external relationships, where the national momentum for net zero is an opportunity to foster stronger relationships with private-sector innovators.

Look to broaden skillsets of teams

Commercial skills of designing contracts, negotiation, risk management should not be seen as technical skills purely for lawyers and procurement experts. Policy staff should at least understand these areas – to try and make them better-equipped to turn policy intention into successful private solutions, and reduce the friction between policy and procurement teams.

Assume leadership

Councils have strict statutory definitions on the minimum services they have to provide. Almost nothing sets a maximum involvement.

The local authorities which have taken the most innovative approaches assume their job is to lead. Where they cannot directly achieve change themselves, they use their soft power, relationships or advocacy for their area to convene and corral others.

Appendix

Project methodology

Scope

The scope of the project is:

The innovation gap in net zero

For the purposes of overall scope of the project, 'net zero' strictly means the UK-wide statutory goal of net zero greenhouse gas emissions relative to 1990 levels, by 2050.⁶

Places

This means local authorities in the UK of all forms, including combined authorities. This report was commissioned by Innovate UK's urban solutions team, but this scope explicitly includes rural, small-town and suburban councils. The terms councils, local government and places are used interchangeably throughout the project.

Private-sector action

Many actions to get to net zero have nothing to do with markets or companies. Innovate UK's remit, and the focus of this project, is on innovation in the private sector to support places.

Companies

This means companies working in the UK which have a solution which helps address a net zero target.

The situation now and in the immediate future

The project is focussed on the innovation gap as it currently exists and could exist in the next 1-5 years.

There are significant questions of scope and definition at each stage of the project. Each of the above definitions can itself be interpreted in different ways. These are covered in detail alongside the relevant content in Reports 2 (framework) and 3 (market mapping).

Project methodology and reporting structure

Overall project logic

To achieve the purpose of understanding and addressing the innovation gap, the project was designed around a sequence of analytical steps. These followed Innovate UK's tender and subsequent discussions as the project evolved.

These steps were:

- 1. Validating our understanding of the problem:**

Rooting the project in strong evidence about what the innovation gap is and how it is experienced by both sides.

- 2. Disaggregating net zero into an action framework**

To help unpick where the disconnects between councils and companies exist, the start-point was to break down the big, complex challenge of net zero into discrete challenges. The purpose of this is to give a mental framework for understanding net zero actions and provide a foundation to understand private-sector supply.

- 3. Mapping private activity against the framework**

This analysed the state of private-sector supply against the actions in the framework. The purpose of this is to analyse the state of supply, identify where the market was established or still emerging, and give Innovate UK an overall guide to the range of private firms which could address net zero challenges.

- 4. Identifying conclusions**

The formulation of insights and key points.

- 5. Communicating conclusions to councils and companies**

This phase is designed to increase the impact of the project. Many of its conclusions are internal or for Innovate UK alone – but there are also lessons for companies and places. This phase is a standalone period of communicating those ideas.

Phases 1-3 were a deliberately iterative process: having defined the problem and net zero challenges, the market mapping exercise then suggested different ways of thinking about net zero and refinements to the framework; and developing the framework helped test assumptions on the problem.

Phase 4 therefore focussed on pulling that process into tangible conclusions and recommendations.

Methodology and sources

Phases 1-3 drew from four main sources:

- Desk research and analysis.
- Ongoing input from wider teams at Urban Foresight and Innovate UK on emerging thinking.
- A questionnaire for suppliers. This ran for 5 weeks from mid-January 2021, and was promoted through Urban Foresight, Innovate UK and Connected Places Catapult links. The questionnaire aimed to get at least 20 responses. 23 respondents filled out the full survey.
- Interviews with places and companies. These explored the problem from both a council- and -supplier perspective. Interviews were conducted with 24 organisations, over an 8-week period from mid-January 2021.

Supply-side Range of sizes, sectors and applications for net zero	Demand-side Figures in environment, transport, procurement and strategy
Arloid: AI for building heating	Belfast City Council
Urban Electric: EV chargepoints	Newcastle City Council
PassageWay: ‘Nudging’ street signs	Nottingham City Council
Love Architecture: Architecture practice	West Midlands Combined Authority
Stellium: Sustainable data centre	Greater Manchester Combined Authority
Pivot Power: Battery storage	Plymouth City Council
CBI: Industry body	Leicester City Council
Suez: Waste outsourcer	Oxfordshire County Council
Podaris: Transport planning	England’s Economic Heartland
Viridian Logic: Water management	Glasgow City Council
Science Scope: Behaviour change	
Allow AIR: Air quality monitoring	
Two further suppliers asked not to be named.	

Reporting structure

The project outputs are broadly in line with this overall project structure. This report is the central set of conclusions, with other outputs providing supporting evidence and further analytical tools to underpin those conclusions.

Output	Content
1: Summary report	Overall project methodology. Analysis of the causes of the problem. Discussions of nature of innovation gap and potential responses by places, companies and government.
2: A framework for net zero action for places	Detailed methodology for developing framework.
2a: Online version of framework	An online, interactive version of the framework.
3: Mapping the market in net zero solutions	Detailed methodology for mapping market. Analysis of scale and shape of supply. Analytical framework for understanding impact and maturity of solutions.
4: Database of companies	Underpinning database of companies identified in the project.
5: Communications	Series of blogs, articles and online content communicating recommendations from Report 1 to relevant organisations.

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