BUILDING CAPACITY FOR NET ZERO TRANSITION THROUGH A PLACE-BASED APPROACH TO BUSINESS SUPPORT ECO-SYSTEM

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Net Zero policy initiative is a key area of the national policy in response to climate change. The UK Government's 'Net Zero by 2050' (Net Zero) policy initiative is an ambitious transition agenda and one that is arguably world leading. Although the UK is responsible for just 2% of global emissions and approximately 5% of historical emissions (Statista, 2023), Net Zero has been an important policy agenda for every UK government since 2008. Today, it is often positioned as 'the economic opportunity of the 21st century' (Skidmore, 2023: 20). Despite opportunity laden policy discourse, Net Zero actions and plans have been subject to varying degrees of success, criticism and are recognised as 'a colossal challenge' (National Audit Office, 2020: 7).

Net Zero is a fast-paced policy agenda set out to respond to the climate change concerns and to address sustainable development challenges. It is rapidly developing in the UK as a part of the national and local industrial development strategies to balance national and regional economic development with sustainable development and community building. Net Zero policy is represented across many regions in the UK. For example, in England, through 26 regional authorities there are clear commitments towards clean growth and net zero targets (www.businessboardnetwork.co.uk), and in Scotland and Wales, through the governmental commitments, to low carbon and climate change solutions (www.gov.scot/policies/climate-change and https://gov.wales/wales-commits-net-zero-2050-sets-out-ambitions-get-there-sooner).

Achievement of the net zero ambitions is becoming synonymous with a notion of net zero transition. In fact, Turner et al., (2020) view Net Zero as a systemic transition in how people live and do business in different local areas and regions within nations. Despite the recognition and anticipation of net zero opportunities globally, in most regional contexts the net zero policy lacks consistency in target setting, design of policy interventions and policy implementation. Additionally, the policy discourse on Net Zero fails to communicate the transitional nature of the challenge which is associated with complex socio-economic changes that require capacity building for transformation building at a multi-level, i.e. local, regional, national and international.

EAST MIDLANDS: CARBON EMISSIONS TREND 2005-2021

The East Midlands carbon footprint was 8.43% of the UK emissions in 2021, a decline of 0.06% from the 2018 position. Figure 1 shows an overall trajectory of the decline in the regional and national territorial carbon emissions from 2005 till 2021 in the UK and the East Midlands. The Department for Business, Energy and Industrial Strategy figures report a decline of the 39% in the national territorial emission and 30% in the East Midlands over the period of this time period. Despite the continuous declining trend, a first rise in the carbon emissions was recorded in 2021 both for the UK and the East Midlands at 7% and 10%, respectively.

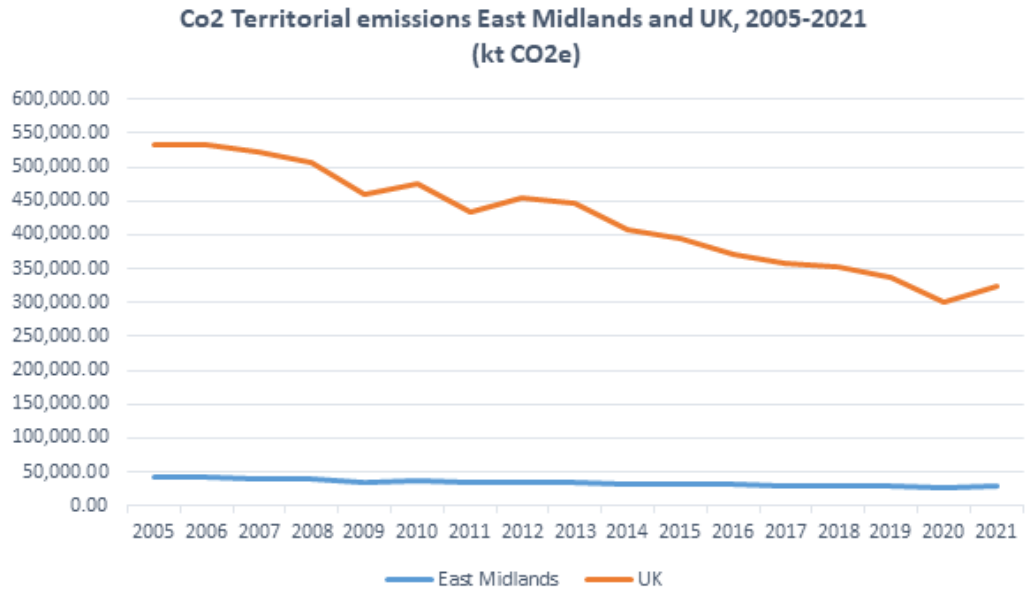
A closer look at the emission sources confirms transport is responsible for 35% of the regional carbon footprint closely followed by industry at 30% (Figure 2). "Domestic carbon emissions" account for just under a quarter (24%) of the regional emissions; Whilst both public sector and commercial are contributing 4% of the emissions each in the region. To a lesser extent, Agriculture and land-use change and forestry (LULUCF) account for 2% and 1%, respectively, of the regional emission. Waste management including landfill and other waste management regional schemes had the lowest carbon emission contribution at 0.02% in 2021.

This pattern of regional carbon emission has not changed significantly since 2005 where industry and Transport accounting for 28% and 27% of the regional carbon emissions respectively. Overall, these two sectors accounted for over a half of the carbon emissions in the East Midlands in 2005 and 65% in 2021. There has been a reduction in carbon emissions in every single category except transport and industry over the 16-year period. The biggest drop in over half of the 2005 emissions has been reported in the waste management category during the same period (DESNZ, 2023).

NET ZERO BUSINESS SUPPORT IN THE EAST MIDLANDS

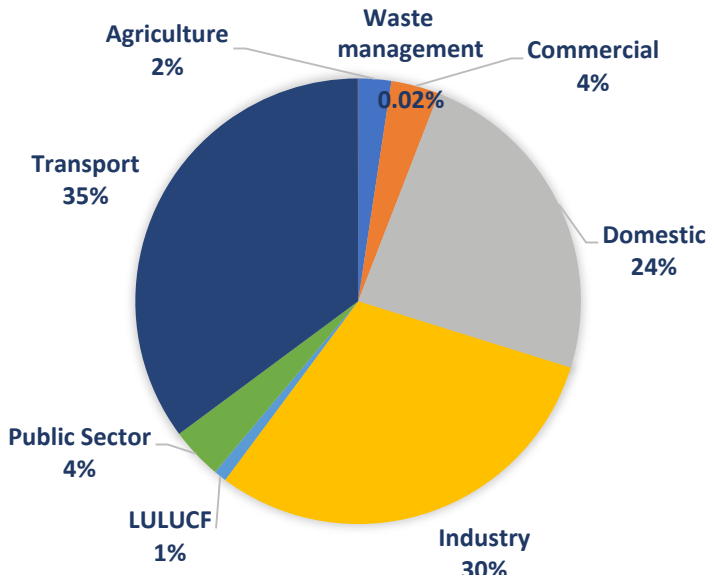
The review of the national and regional net zero policy highlights a gap in articulating

FIGURE 1
CO2 TERRITORIAL EMISSIONS IN THE UK AND EAST MIDLANDS, 2005-2021



Source: Department of Energy Security and Net Zero, 2023

FIGURE 2
CO2 EMISSIONS BY GHG SECTOR IN THE EAST MIDLANDS, 2021



Source: Department of Energy Security and Net Zero, 2023

the role of business support in the net zero transition. The policy lacks considerations for the approach, pace, scope and scale of the support that would prepare businesses to successfully engage with the biggest transformation of the business environment as a result of the net zero transition in the coming years. Figure 3 presents a summary of policy gaps in articulation of the role of business support in the net zero transition.

The prevailing policy discourse in relation to net zero business support is largely about energy efficiency initiatives and decarbonisation. Although these are well recognised opportunities of the net zero transition, they are deemed to be 'easy wins' and do not require significant operational and behavioural changes in businesses. Other opportunities exist around development and commercialisation of the new product and service offerings, and supporting businesses towards green growth (OECD, 2011) but they are not sufficiently articulated in the policy discourse. This requires a holistic understanding of the transformation that businesses would undertake as part of the net zero transition. Such a transformation involves re-imagining the purpose of business in society and redefining approaches to sustainable growth through contribution to place and communities.

The policy mixes mainly target manufacturing, power, energy, digital and transport sectors rather than projecting a balanced view of the net zero support towards both manufacturing and services sectors. Rural businesses see little relevance and there are no clear pathways of engagement with Net Zero. This widens the policy-practice gap between the rural communities and the local and regional net zero policy ambitions leading to unrealistic targets and ineffective policy design (Peters et al., 2018).

Broadly speaking, the mechanisms for net zero business support are yet to be fully understood, as these programs are implemented through Growth Hubs, Chambers of Commerce, or regional universities. Business support programmes supported previously by EU funding streams such as the European Regional Development Fund (ERDF) are no longer available for the UK. Most of the business support funding comes from the UK Shared Prosperity Fund (UKSPF). Despite the change of funding source, the approach to and configuration of the business support remains the same – provision of business support ac-

FIGURE 3
POLICY ARTICULATION OF THE ROLE OF BUSINESS SUPPORT IN THE NET ZERO TRANSITION

Topic	What is articulated	What is not articulated
Business and Net Zero transition	Business is pivotal to the net zero transition as the bulk of investment and innovation is expected from the private sector (HM Treasury 2021). SMEs are core target for growth and the future of net zero (Skidmore 2023).	Configuration of the business support at the central and local levels including considerations for multi-stakeholder approach in creating business support ecosystem for the net zero transition.
Types of support	Government needs to act to enable SMEs to actively participate and benefit from the transition. Access to finance is part of the solution (Skidmore 2023).	Net zero business support beyond an energy-efficiency and decarbonisation focus.
Characteristics of support	Introduce a package of measures including a one-stop shop for SMEs to get decarbonisation advice with a carbon foot-printing tool, develop a strengthened low-carbon advisor/auditor role for SMEs and develop an effective financing strategy to support SME decarbonisation (CCC 2022).	Manufacturing focus dominates investment priorities, whilst services sector is downplayed. Urban vs rural business challenges of engagement with the net zero transition.
Support mechanisms/ platforms	Utilization of role models — use sector-specific forums to provide evidence, case studies, information and advice to encourage businesses to actively decarbonize (Skidmore 2023).	Net zero support as a mechanism for accelerating the transition of regional and local entrepreneurial ecosystems towards Net Zero. Collaboration and cross-sector solutions to support net zero innovation and decarbonisation.
Net zero/green skills	Net zero skills are critical to the success of the net zero transition. A comprehensive assessment of when, where, and in which sectors there will be skill gaps specific to Net Zero. This should include consideration of particular barriers to labour market entry into occupations (CCC 2022)	Upskilling of business advisors to support the net zero transition. Considerations for pace and scope of training as well as the numbers of the advisers to be trained.

Source: Baranova (2023)

cording to decarbonisation themes such as energy efficiency grants, information and advice; renewables grants and advice, and other. There is a distinct lack of a *strategic, place-based and whole-system approach* in stimulating the local entrepreneurial eco-system towards Net Zero.

Figure 4 presents an overview of the net zero business support programmes in the East Midlands. Our analysis reveals that Derbyshire and Nottinghamshire, recently merged into Easte Midlands Combined Authority (EMCCA), offer a greater variety of business support programmes compared to Leicestershire. Out of 10 pro-environmental support themes, only four are offered in Leicestershire; mainly in the areas of energy efficiency grants, advice and information; renewable energy use and adoption advice and information; and generic net zero advice and information.

FIGURE 4
NET ZERO BUSINESS SUPPORT PROVISION ACROSS DERBYSHIRE AND NOTTINGHAMSHIRE, AND LEICESTERSHIRE GROWTH HUBS

Business support towards the net zero transition	Derbyshire and Nottinghamshire	Leicestershire
Energy-efficiency advice and information	x	x
Net Zero advice and information	x	x
Renewable energy use and adoption advice and information	x	x
Energy-efficiency grants	x	x
Eco-innovation advice and information	x	
Sustainability/net zero/clean growth network	x	
Eco-innovation grants	x	
Green growth grants	x	
Renewable sources of energy adoption grants	x	
Retrofit grants for households and communities		

Source: Baranova and Lynch (2024)

Derbyshire and Nottinghamshire net zero business support programmes target various areas beyond energy efficiency and resource efficiency focus. There are funding streams in Derbyshire and Nottinghamshire to support eco-innovation grants and eco-innovation advice and information. There are grants to support green growth strategy of the local businesses, as well as renewable sources of energy adoption grants in place. There are established regional pro-environmental networks; some networks are with a general focus on sustainability; whilst others have a focus on Net Zero, clean growth and the development of hydrogen technology and infrastructure. The initiative led by a former D2N2 Local Enterprise Partnership, Cadent, and some of the region's leading organisations such as Uniper, Toyota, Midlands Engine, East Midlands Freeport and Leicester and Leicestershire Enterprise Partnership resulted in the formation of a new industrial partnership called "East Midlands Hydrogen", which is expected to become the UK's largest inland hydrogen cluster.

Further analysis of the policy document and business support initiatives reveals the supply-side and demand-side policies to support development of the market for net zero goods and services as a necessary prerequisite of the net zero transition.

ENABLING NET ZERO TRANSITION: DEMAND-SIDE AND SUPPLY-SIDE INCENTIVES

Demand-side policies aim to achieve net-zero emissions, which generally focus on reducing the consumption of goods and services that generate carbon emissions. These policies focus on influencing consumer behaviour by encouraging sustainable practices and driving the adoption of low-carbon alternatives. On the other side, supply-side policies aim to decrease the carbon footprint of production processes, increase availability of low-carbon energy sources, and promote innovation in clean technologies. Section below gives an overview of a sample of the demand and supply side policies in the East Midlands region (2019-2024). From a demand-side perspective, the following were the main areas of policy incentives identified:

- Education and awareness campaigns;
- Behavioural interventions;
- Investment in infrastructure;

- Circular economy initiatives prompting recycling, reuse and resource efficiency;
- Green Procurement Policies;
- Community engagement and participation; and to a lesser extent
- Regulations and standards.

Examples of Demand-side policy incentives in the East Midlands

- **Education and awareness campaigns:** Leicester City supported 170 local companies through 'Go Green' workshops and 90 to sign-up to an online sustainability platform though the Leicestershire LEP growth hub. They also developed an interactive climate change game kiosk for young people which has been used more than 2,500 times in museums, schools and at city events. Examples of these activities include, (i) growing the Eco-Schools scheme in Leicester, with 65 schools now achieving Green, Flag awards, the largest number within any local council area in the UK, (ii) supporting 9 local schools to make their own climate emergency declarations and 27 to sign up to the Let's Go Zero campaign, (iii) Carrying out research on reducing the climate impact of school meals and delivering a workshop to 14 local schools on this issue, (iv) launching a new Plastic Clever Schools award to encourage a reduction in single-use plastic consumption, and (v) working with the city's Arts & Museums service to create and distribute a home learning pack on sustainability to more than 900 children. The City Council has also provided carbon literacy training to c.108 decision makers within the council, and to students and staff members in city schools (900 and 100, respectively).
- **Behavioural interventions**: The D2N2 Energy strategy outlined that there are numerous channels for promoting behaviour change. Including for example, social media, advice stalls, community events and home visits. They referenced the work of the Community Climate Action Network (see for example http://www.everybodys-talking.org/). The collaboration of partners is recommended to pool resources and expertise while expanding potential outreach. Nottingham City Council is driving behaviour change among staff and citizens. It has an innovative eTEACHER project which is building an app to empower building users to become more energy efficient. Meanwhile, the National Ice Centre is continuing its well-established behaviour change programme which achieved 9% total bill savings in its first year (Schools – Family Learning Programme – National Ice Centre (national-ice-centre.com).
- **Investment in infrastructure**: According to Derby City Council's Climate Change Action Plan 2022-24, several actions are proposed for future developments. They plan on undertaking a property review process using EPC and DEC ratings as a guide; there are recommendations that all new buildings achieve a mandatory 'A-rated' EPC, LED lighting will be installed across the whole council property estate reducing lighting costs by 20% at each site, and they aim to ensure carbon reductions by installing new boilers. They will provide additional solar PV systems to properties that house the elderly and vulnerable; whilst they will also use green technologies and low carbon materials as part of any tender process for material supply chains and new contracts.
- **Circular economy initiatives** prompting recycling, reuse and resource efficiency: In 2021, Leicestershire County Council trialed new recycled and low carbon products and techniques in necessary highway improvements, which recycled 5,000 tyres and saved 30 tCO2e, compared to conventional resurfacing techniques. The Council's pilot project will go on to inform other local authorities as a case study on how to reduce emissions within highways projects across the UK. The Leicestershire Food Plan looks at how they can reduce the environmental footprint of food, including carbon emissions associated

with food production and consumption. Leicestershire Traded Services (LTS) is the Council's trading arm and provides school meals to over 32,000 children a day. LTS achieved Gold Food For Life Served Here for these meals, which includes 15% spend on organic produce, 5% on free range pork and poultry and reformulation of recipes to include 20% less meat by adding beans and pulses.

- **Green Procurement Policies:** Councils across the East Midlands region have encourage a holistic view of procurement procedures. For example, Nottinghamshire County Council, through their Procurement Strategy, place emphasis on environmental considerations, including key performance indicators and targets for tenders and contracts (where appropriate). Leicestershire's Energy infrastructure strategy highlights that the Melton Borough Council requires development proposals, including refurbishments, to demonstrate that they have sourced their materials locally and through reused, recycled and renewable sources, and that these materials have been 'transported in the most sustainable manner and have low embodied energy.
- **Community engagement and participation:** In Derbyshire, the council, after identifying their targets and priority actions, are now looking to work with the community to understand the best way to deliver their strategy. The council, in their Climate Change Strategy, made a number of commitments. For example, they will ensure that elected members and offices will engage with community groups, residents, schools and businesses to map existing or ongoing work on climate change; and they will understand the role that the County Council can play in supporting those activities. They will also work with partners such as businesses, the private sector and the Local Authority Energy Partnership to develop demonstrator projects to be used to build understanding on retrofitting buildings and decentralised energy systems.
- **Regulations and standards:** According to their Energy Infrastructure Strategy, Leicester City Council released a Development Management Policies document (July 2017) as part of its new Local Plan consultation process. In this document, the Council suggests that planning policy for major new developments will follow an energy hierarchy in which firstly energy use is minimised, secondly energy is supplied efficiently, and thirdly energy is supplied through renewable sources. The Council also supports a 'fabric first' approach where buildings 'must be constructed of high-quality energy efficient fabric before the energy efficiency of heating systems is considered.

Whilst from a supply-side perspective, the key areas included:

- Investment in renewable energy infrastructure;
- Funding support;
- Energy efficiency measures and green growth support; and
- Infrastructure development for Low-Carbon Transportation.

Unsurprisingly, examples of supply-side policies are less in abundance compared to demand-side initiatives.

Examples of Supply-side policy incentives in the East Midlands

- **Investment in renewable energy infrastructure:** Nottingham City Council owns its heat network through Enviroenergy, and the smart heat meter it provides (EEMonitor). It set-up the not-for-profit energy supplier Robin Hood Energy with the aim of making energy more affordable for all. The Council has been successful with a range of awards in recent years, covering everything from the work on solar generation, to innovation in retrofit and being named, in collaboration with key city partners, as Huawei's leading Smart City for energy in 2017. As well as this, the Energy Research Accelerator (ERA) is investing

in projects which demonstrate the generation, storage and use of new technologies. One of ERA's demonstration projects is at Trent Basin in Nottingham. Trent Basin is a housing development in Nottingham which provides the full-scale demonstration of an integrated energy system using solar, battery and thermal ground source energy generation. The project involves the University of Nottingham and the developer Blueprint, with support from Nottingham City Council. People living in Trent Basin benefit from renewable energy being produced through a solar farm on the site. The energy generated through this is stored in a battery, supplied by Tesla, the largest community battery in Europe. It can store 2.1 MWh of energy, delivering 500kW of power – enough energy to boil 170 kettles simultaneously for four hour. Local energy generated and stored on site is managed by a community energy company which provides energy services to residents. This includes storing and selling locally generated energy to the grid at peak times. Profits made by the energy company helps to cut energy bills for residents.

- **Funding support:** Leicester City Council provided £1.17 million in grants to 208 local businesses to increase energy efficiency and reduce carbon emissions through the ERDF-funded Green BELLE grant project. As well as this, since 2017 Leicestershire County Council has been a delivery partner with Leicester City Council in the Green BELLE project. The project provided 50% grant funding, up to a maximum of £10,000, to Small or Medium-Sized Enterprises (SMEs) across the city and the county, to support them in reducing carbon emissions from their businesses. The project aims to reduce annual carbon emissions by over 1,500 tonnes of CO2e. Measures supported included the installation of LED lighting, insulation, double glazing, solar panels, and improved heating and lighting controls. Almost £1m has been awarded to businesses during the life of the project. Nottinghamshire County council allocated £550,000 in 2021/22 for projects that support the delivery of the Council's Corporate Environment Strategy actions. Approval and funding was given to several projects, including, improvements to Mansfield Bus Station, including LED lighting and solar panels a pilot of photovoltaic glass to power bus shelter lighting and digital display on a mobility hub in Ollerton, and green spaces habitat management. Nottingham and Nottinghamshire Energy Grants (N2EG) provided support for numerous clients. One client, for example, had LED lighting fitted, changed their electric heating to gas central heating and installed cavity wall and loft insulation. This resulted in the reduction of their first quarter utility bills from £2,771 to £949.
- **Energy efficiency measures and green growth support**: D2N2 Energy strategy highlights the award-winning Derby and Derbyshire Energy Efficiency project (D2EE), a partnership with the University of Derby and Derbyshire County Council. The Council provides bespoke energy consultancy and grants to help small and medium sized businesses (SMEs) save energy and carbon emissions and reduce the cost of their energy bills. The project has completed 330 energy audits and advisory reports for SMEs and awarded 136 grants totalling £845,000. This will save SMEs an estimated £325,000 per year on energy bills and 1,169 tonnes of Greenhouse Gas (GHG) emissions. Over £1m of private sector investment in energy efficiency has been leveraged. D2EE ended 31st October 2019.Nottingham Sustainable Enterprise Centre and the technology-focussed Infinity Park Derby (located within an Enterprise Zone) also complement the business accommodation and clustering offer. In addition to the initiatives above, businesses have been supported through networking and collaboration by the University of Derby's Low Carbon Business Network, the East Midlands Chambers of Commerce's Sustainability Forum and annual Sustainability Summit.
- **Infrastructure development for Low-Carbon Transportation**: Leicester City set up a 'Big Bus Plan' with local bus

operators, including action to, (i) replace 116 diesel buses with electric models saving 2,053 tCO2e per year, (ii) electrify the Park & Ride and Hospital Hopper services and launch the new, free Hop! electric shuttle bus route around the city centre, (iii) introduce the first multi-operator integrated tap-on, tap-off bus ticketing system in the UK to provide best-value tickets for passengers, and (iv) create new bus lanes and priority routes, alongside improved bus information signage. They also committed to expanding their network of 20 mph zones to cover more than 1,400 city streets, installing 70 new charging points for electric vehicles in the city, and continuing to make Leicester safe, accessible and friendly for walking and cycling, with projects such as, developing a Covid-19 Transport Recovery Plan, which provided pop-up walking and cycling lanes during the pandemic, they added 8.3 km of cycling routes, taking the citywide total up to 68km, provided active travel education in over 80 city schools through the Living Streets, and introduced the Next Steps and Big Walk and Wheel projects, delivering Bikeability cycle training to 3,220 students.

The D2N2 Energy strategy highlights the present-day Go Ultra Low (GUL) initiative which aims to promote the uptake of ultra-low emission vehicles. GUL leads the new regional electric vehicle charging network ensuring coverage across the two counties and cities. This network, which includes local Councils and Charge Your Car in association with Chargemaster, offers local residents reduced tariffs and includes the delivery of 230 new charging points. Addressing the wider aspects of low-emission vehicle supply and demand, the LEVEL initiative (Low Emission Vehicle Enterprise and Learning) has delivered training courses, skills workshops, master classes and conferences. It also has facilitated project collaborations and brought innovative ideas for intelligent mobility solutions to the area. This is a collaboration between Derby City Council, Nottingham City Council, Cenex and CleanTech Business Ltd and receives funding via OLEV's Nottingham Go Ultra Low (GUL) programme.

Our review of the regional policy and business support programmes confirm infrastructure development for low-carbon technologies are the most cited supply-side interventions by the local councils. As for demand-side, education and awareness raising campaigns, and investment in infrastructure projects are incentives promoted by all city and county councils in the region.

Our study of regional business support ecosystem identified the following features of effective net-zero business support:

- **Place-based approach** to design and implementation which includes working with local councils, businesses and communities to design support mechanisms that target both supply side and demand side of the net zero support provision. The supply side activities must include work with support and training providers to ensure their net zero offer is up-to-date and customer focused. As for the demand side, the businesses need to be informed and stimulated to uptake the net zero business support, grants and up-skills the workforce for net zero transition.
- **Targeted support for net zero strategic sectors** is important to ensure the focused approach to stimulating priority sectors that develop technologies that are essential for carbon reduction and green innovation. These sectors require up-front investment in technology development, skills development and commercialisation. In the UK such sectors include hydrogen; offshore wind; carbon capture and storage; and green finance (Skidmore, 2023).
- **Address knowledge and information gaps** by providing information and guidance and establish online platforms for businesses to take opportunities for green growth regionally, nationally and internationally. Organise regular training workshops, webinars, and seminars on topics such as green technology, sustainable business practices, and financial management tailored to the needs of green entrepreneurs

- Strengthen competitiveness and **encourage internationalisation strategies of local businesses**. There are significant opportunities at international net zero markets, they must be well understood by the businesses if they are to be accessed (McKinsey 2021, 2022). Relevant skills and support mechanisms must be in place to support successful international growth of local businesses.
- **Green skills development** is integral to net zero business support provision. Develop and launch a comprehensive training programme for business support professionals to develop their green skills and competences. Green skills development outcomes must be designed in any net zero support programme; the outcomes must be monitored, reported and evaluated on.
- **Multi-stakeholder collaborations** for the delivery of net zero support solutions. It is necessary to forge strong partnerships with universities, colleges, and research institutions to integrate green entrepreneurship into academic curricula, facilitate research collaboration, and offer student placements. Develop business support governance system in the region to ensure variety, continuity and place specificity of the business support provision long term.

CONCLUSION AND RECOMMENDATIONS

Successful Net Zero transition requires an effective business support eco-system at a regional and national level. As businesses are increasingly focusing on net zero growth opportunities across both domestic and international markets, the broadening of the scope and availability of the support is becoming critical. Business support should go beyond the traditional focus on energy efficiency and renewable energy. It should include development of the competences in the areas of competitive strategy, responsible management and leadership, eco-innovation (i.e. green innovation, green funding and finance), collaborative working and stakeholder management to name just a few. Such skills need to be developed over time and require a *transformational approach* in the delivery of business support (Baranova, 2024). This is a radically different approach to transactional, short-term business support interventions prevailing across the pro-environmental business support programmes.

Policy community is advised to ensure that net zero business support needs to become an integral part of the local industrial strategies and strategic economic plans. A review of the net zero transition needs to be undertaken to understand the risks and the impact of the transition in the locality. The eco-system approach to the design of the agile business support provision opens opportunities for multi-stakeholder collaborations and partnerships in the design and delivery of the business support interventions. As a result, capacity for net zero transition strengthens through stimulation of demand for green growth skills, learning, knowledge exchange and green innovation.

Businesses are advised to approach the capability development towards Net Zero holistically and with a strategic outlook. Although energy efficiency might be a starting point of the net zero journey, broader green skills and competences are required to succeed in the fast-emerging green market niches. It is important that businesses engage in a proactive dialogue with the policy community to shape the net zero policy and the business support mechanisms. Multi-stakeholder collaboration for Net Zero needs to be encouraged including development of collaborative mechanisms, digital platforms for collaboration and effective Net Zero national and regional governance.

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