

THE D2N2 LOCAL ENTERPRISE PARTNERSHIP  
LOW CARBON PLAN FOR CONSULTATION  
NOVEMBER 2013



Derby  
Derbyshire  
Nottingham  
Nottinghamshire



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## FOREWORD

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There are three drivers for our low-carbon plan.

How do we ensure that the 55,000 extra jobs created in the next ten years in the D2N2 area are the right sort of jobs – higher-skilled, sustainable, providing a living wage and are accessed by local people in local companies?

Secondly, how do we exploit the huge investment in the low-carbon sector to provide a competitive advantage to our local firms whether they are big or small?

Thirdly, in the context of a major challenger to our climate, how does D2N2's Growth Plan seek to ensure that economic growth is achieved in the most sustainable way so that we are not undermining the resources of the future for the sole benefit of today?

The D2N2 low-carbon plan cannot answer all these questions now but instead use examples of current good practice as it starts a dialogue about how these aims might be achieved whilst establishing clear priorities regarding where we might best start.

I hope you will recognise this is the start of a serious journey and on that basis I commend the low-carbon plan to you for consultation and comment.



David Ralph  
Chief Executive  
D2N2 Local Enterprise Partnership



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## INTRODUCTION

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This document provides a road map as to how D2N2 will support business and create jobs and training opportunities in the emerging low-carbon sector - actively seeking to reduce carbon through products and services.

The prospectus outlines the measures that D2N2 will take to position the area to become the home for future *“green collar”* jobs and businesses. Few, if any, significant clusters of low-carbon businesses have yet developed in the UK, in this embryonic sector which is predicted to grow rapidly in coming years. The D2N2 area has a significant opportunity to build on its existing assets to develop an industry which will be central to both the LEP’s and the UK’s future economy. Developing a low-carbon economy is a way of taking advantage of the need to tackle climate change, fuel poverty and *“keeping the lights on”*.

Given the remit of LEPs it is important to emphasise that the primary focus of this prospectus is on economic growth, innovation and employment creation in the area of *“green collar”* jobs. It is not a plan aimed at responding to climate change issues at a local level but does have a role in terms of protecting the economy through enabling business resilience to energy, carbon compliance, and climate disruptions.

The low-carbon plan forms a key component of the wider D2N2 economic development strategy and will be the framework against which funding from the Single Local Growth Plan will be secured from Government and future investments will be made.



## UK CONTEXT

The low-carbon sector is currently of key importance to the national economy. According to the CBI (1) the low-carbon sector accounted for a third of the total economic growth in the UK during 2011/12 and overall it now accounts for nearly 10% of economic activity (1). In 2011/12, the sector was worth £122bn and has been growing at a rate of 4-5% throughout the economic crisis, since 2008. With almost 940,000 people now employed in the low-carbon sector, the industry is of greater national significance in terms of employment than the automotive or communications sectors.

The UK is embarking on a fundamental transformation of its energy infrastructure with £200 billion of investment needed to rebuild the UK's energy infrastructure, much of which is nearing obsolescence. In order to meet exacting CO2 emission and renewable energy targets and *"keep the lights on"*, over the coming decade, the UK must generate significant investment into renewing and innovating its energy infrastructure. The implications of these changes are;

- The UK's Energy mix will shift from fossil fuels, such as coal, to more renewable energy sources (wind, solar, marine, hydro-electric etc)
- Private-sector investment of £110bn will be accompanied by the creation of 250,000 jobs in *"low-carbon goods and services sector"* (3)
- Such a transition will create substantial business market opportunities relating to *"creating, saving and storing energy"*
- Greater opportunities for on-site and decentralized energy production and distribution with an increased range of energy generators
- An increased level of energy demand reduction in domestic and commercial properties to reduce the strain on capacity, creating new markets for smart energy and appliance systems

In addition low-carbon technologies will be at the forefront of profound changes in other aspects of daily life such as transportation. By 2040 virtually none of Europe's new cars will be powered solely by a traditional petrol or diesel engine. The transition towards ultra-low emission vehicles will create *"a once-in-a-lifetime technology change"* and offers UK companies working in low carbon technologies and ultra-low emission propulsion systems a major opportunity to create completely new supply chains; *"Supply chains for the new technologies do not yet exist – strength in previous technologies is no guarantee of the same strength in future"* (4). Sustainable public transport will improve and increase in scale as efforts to decarbonise transport and create a model shift take place across the region. With this, ICT improvements, enabling real-time data and connectivity for users and integrated transport, will become commonplace.

Natural resource costs are rising. This is particularly impacting on carbon-intensive energy, food and logistics businesses. Amongst procurers, there is an increasing push towards resource efficiency, lower embodied energy and lower carbon alternatives in the value chain to limit cost risks, across all product classes and businesses.

The Public Services (Social Value) Act 2012 now requires consideration of social and environmental value, alongside economic consideration in many public contracts. This is a sea change towards sustainable procurement, meaning that there is both a benefit to the bottom line and a competitive advantage in winning contracts, for any business moving towards developing low-carbon products and business models.

## LOW CARBON...CLEAN TECHNOLOGIES...CLEANTECH...GREENTECH...ENVIRONMENTAL INDUSTRIES

There are a wide range of terms which often get used when referring to this sector. In many ways this is a reflection on terms being “*coined*” which then become outdated as they no longer embrace the dynamic and fast-moving nature of new technological developments.

The term Clean Technology or “*Cleantech*” is often used especially internationally in connection with the low-carbon industrial sector while it also embraces the recent emergence of Information Technology businesses operating at the intersection of energy, building infrastructures, software and data analytics; digitally-enabled products and services that use data and technology to address environmental, energy and resource constraints.

For consistency the Dept. for Business Innovation and Skills definition(4) will be used of low-carbon goods and environmental services (LCEGS) as being goods or services produced or traded, supply chain activities, R&D and training activities.

Low Carbon Goods and Environmental Services		
<b>Renewables</b> Biomass, Geothermal, Wave and tidal, Photovoltaic, Hydro, Wind Biofuels	<b>Low Carbon</b> Building Technologies Energy grids Carbon capture and storage Low carbon vehicle technologies Alternative fuels Additional energy sources ICT - Energy data analytics Lower Carbon suppliers	<b>Environmental</b> Waste management, Recycling and Recovery Air pollution Environmental Monitoring Contaminated land remediation and reclamation Water Supply and waste treatment

## QUANTIFYING THE LOCAL SECTOR

There is relatively little current data available which can be used to assess the scale of the low-carbon sector across the D2N2 area.

In the East Midlands there were 62,500 jobs in LCEGS in 2011 which constituted 7% of the overall UK total. The East Midlands share of UK LCEGS employment was similar to East of England, the South West, West Midlands, Yorkshire and Humberside.

Other research studies (5) established that there were 452 SMEs in Nottingham and Nottinghamshire working within the low carbon industries employing 7,100 people.

Recent work for Nottinghamshire County Council (6) has concluded that based on the distillation of a number of research studies the sub-sectors that appear to be strongest locally within Notts are:

- Building technologies
- Energy management
- Photovoltaic
- Recovery & recycling
- Waste management
- Water supply and waste water treatment

Derby City and Derbyshire County councils are working with Derby University to inform local low-carbon economy policies and to engage local students and business in the low-carbon economy.

However many of the previous research studies are now historic and do not reflect the recent trends which have taken place across the area. A mechanism needs to be developed to accurately measure trends in the development of the low-carbon sector in relation to businesses created, business growth, GVA, employment levels, survival rates.

### ACTION POINT 1

As part of its plan to measure progress in achieving its Growth Plan objectives, D2N2 will work with the Local Authorities, University Business Schools and Colleges to put in place research mechanisms to capture growth trends in the low-carbon goods and environmental services (LCEGS) sector.

### ACTION PLAN

To develop this draft plan interviews have been recently undertaken with key business and public sector stakeholders (see Acknowledgements) which have been cross referenced with previous local labour market data and research studies (see Notes). Based on this analysis D2N2 believes it can have the greatest economic impact if it focuses its resources on three specific programme area opportunities;

1. Smart Energy Communities,
2. Low-carbon transport technologies and
3. Support for SMEs providing low-carbon goods and environmental services.

## SMART ENERGY COMMUNITIES

Given the increasing uncertainty regarding future energy security and pricing, recent research has shown that a key component determining the future economic competitiveness of Cities and Towns will be their future ability to more effectively manage and participate in their own energy infrastructures. The UK Government's energy demand reduction plans together with EPBD EU targets for 'nearly zero-energy' buildings by 2019 will all have major impacts at local level. Equally, this will instigate demand for new products and services, and necessitate a rapid building of capacity in the supply chain.

In the UK we are seeing the start of a transition away from centralised generation to more energy self-sufficient Towns and Cities which generate a greater proportion of their own energy through a mixture of renewable sources. Key aspects of this approach will be demand management to reduce consumption and municipal ownership of a localised grid structure.

As a result of this transition the "*Smart Energy City or Town*" of the future will be:

- Able to secure diverse investment in energy generation and storage technologies
- Insulated against increasing energy prices through ownership and/ or control of its own energy sources
- Able to offer secure, competitively priced, low-carbon energy supply and services to its residents and businesses
- An exemplar of integrated low-carbon heat, power, waste and transport systems
- A "*smart city*" where energy flows are planned, mapped and monitored and demand profiles "smoothed" through use of technology and incentives.
- An exemplar of neighbourhood community energy solutions including measures to tackle fuel poverty
- A generator of heat and power from waste
- A place where local energy supply chains are developed e.g. biomass
- Leaders in the creation of low-carbon jobs, industries, services and training opportunities through the harnessing of energy infrastructure investments

(7)

Urban areas will need to develop "whole place" low-carbon solutions integrating urban design, and sustainable mobility considerations with decentralised energy systems such as local heat networks or electricity grids and off-grid energy systems such as biomass heating, community energy solutions, energy from waste and demand management measures. Ultimately the building stock will be transformed into "micro-power plants" to collect renewable energy on site while the power grid must be digitised and made "intelligent" to handle the intermittent renewable energies being fed to the grid by numerous producers.(8)



## A) SMART ENERGY COMMUNITIES - CITIES

Nottingham is a case study as to how these concepts are being and will be taken forward at a City level. Nottingham has the UK's largest district heating system and currently generates more energy from low-carbon and renewable sources than any other UK city. Nottingham has a strong legacy of heat networks and use of Combined Heat and Power (CHP) in the private, public, health and University sectors totalling 11.45% of energy use within the city.

Nottingham aims to reduce its carbon emissions by 26% and generate 20% of its energy requirements from renewable and low-carbon sources by 2020 (7).

The City plans to create a “*Smart Energy City*” power and heat network and demand management strategy which will encompass;

- An expansion of the Nottingham's **district heating network** to form a linked secure network supplying heat and power across the city. Technical work is currently taking place on a Heat strategy master plan identifying preferred options and business cases to secure funding for delivery.
- The future development of **storage capacity** across the city for heat and power will form an integral part of the network, offering greater opportunities to intelligently and efficiently manage demand.
- The creation of a **Nottingham Energy Park** – Chinook Energy will utilise its pioneering technology to convert domestic waste into energy and provide secure, cheaper clean power to the business park and potentially be a vehicle to attract business investment and jobs.
- An energy and utility infrastructure master plan for the **Nottingham Enterprise Zone** which develops a clear understanding of the future operational requirements of the site to ensure the competitiveness of the Enterprise Zone “offer”.
- Development of proposals to connect independent Combined Heat and Power Plants **CHP providers** to utilise spare energy capacity generated by businesses and organisations located near to the City's **Enterprise Zone**.
- The creation of “**Community Micro power plants**” across the Cities utilising different forms of neighbourhood-based renewable energy generation. For example solar panels have been installed on 2700 social housing properties on the Aspley estate -the single largest domestic photovoltaic (PV) scheme to be delivered in the UK. The project has also provided green skills training and work experience opportunities to unemployed residents (see later).
- Assessing the feasibility of a **Nottingham Energy Tariff** - a low-cost clean, secure energy supply which will not only reduce the incidence of fuel poverty but also give the City a competitive edge in attracting inward investors and supporting indigenous business.
- Area-based domestic **residential and commercial retrofit** schemes to reduce fuel poverty
- A scaleable **energy data platform** which captures, aggregates, analyses and maps patterns in energy demand and supply across the City. Such a platform will utilise crowd sourcing techniques enabling distinct energy communities or user groups to monitor, assess and benchmark their building(s) performance against others and share intelligence to save energy and reduce their carbon emissions.



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## A) SMART ENERGY COMMUNITIES - CITIES

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Potentially such a “*Smart Energy City*” power and heat network, linked with demand management strategies, can provide a test bed for how Cities will in the future, generate, save and store energy while providing a platform for investment, job creation and an improved environment.

Similarly Derby has an aim in its emerging City-wide Climate Change Strategy that “*Derby is able to reduce its reliance on energy from fossil fuels through a locally generated, diverse, efficient and more secure energy supply*”. The strategy also has an aim that “*residents have homes that enable them to reduce their demand for energy and use energy efficiently*”. The Council is examining the potential for district heating in the city, other decentralised energy topics, including engaging with the Energy Technologies Institute’s Smart Systems and Heat Programme. The Local Authority is also keen to explore the potential for uptake of renewables through FITs and RHi at domestic and commercial levels as well as specific home energy/fuel poverty area schemes using intelligence from combining datasets, and utilising funding such as ECO.

Derby City Council has recently made major investments such as the hydroelectric power plant on the River Derwent, near the Council House, which generates about 1.3m kilowatt hours of electricity a year - enough electricity to power the equivalent of 300 homes, while saving over 500 tonnes of CO2 annually.

### NEP Energy Services Ltd

NEP Energy Services Ltd was established in 2006 as the social enterprise trading arm of a local charity; providing practical and strategic support in energy use and carbon reduction to households, organisations and communities.

While focusing its work across Nottinghamshire and Derbyshire, NEP works UK wide. Since NEP was incorporated it has grown from 3 to 21 staff, supporting a large local supplier and contractor network. NEP has delivered more than £20m worth of capital projects, supporting over 45,000 homes, saving households more than £10m per year in energy bills. Over the last 3 years NEP has also supported 30 large public organisations and 70 SMEs, across the UK, to save over £3m per annum and more than 5,400 tonnes of CO2e through improved resource efficiency.

This growing organisation’s work in sustainable development has been recognised with national, international and global awards.

## A) SMART ENERGY COMMUNITIES - CITIES

### D2N2 SUPPORT

Building on such local activity, D2N2 will develop an investment programme to ensure that future energy infrastructure investments are harnessed to create “green collar” construction and supply-chain jobs, business growth, and skill development opportunities. In order to achieve this D2N2 will need to have a clear indication as to Local Authority’s investment priorities, timescales and the potential economic returns associated with the respective programmes.

Chinook Sciences Ltd is a UK technology which has developed a pioneering recycling process which is used to generate clean energy and improves the way in which scrap metals are recovered and recycled. Chinook plans to create a £49 million Energy Park at a site at Bulwell, Nottingham.

The project will create 200 “green collar” jobs and involves the construction of an integrated manufacturing plant, research centre, demonstrator and training facility. Energy will be supplied to businesses on the Energy Park and users in the immediate area.

#### ACTION POINT 2

The LEP will provide funding support for both Nottingham and Derby City Councils to take the lead in developing with partner organisations “Smart Energy Communities” prioritised delivery and investment plans for their areas. On the basis of such plans D2N2 will enter a dialogue with the respective Cities to;



A) Identify which projects the LEP may be able to support



B) Work with Local Authorities and Investors to create innovative funding mechanisms to support the development of major energy infrastructure investments such as district heating extensions.



C) Provide capacity and technical support to enable the Local Authorities to secure ERDF, Green Investment Bank and other forms of European funding such as ELENA to support the delivery of their plans



D) Invest in supply chain events, workshops and business support measures in order to link local businesses to these commercial opportunities (See section 3)

## B) SMART ENERGY COMMUNITIES - TOWNS AND RURAL AREAS

Other sub-regions of the LEP are also developing their own energy plans including low-carbon energy supply chain opportunities.

Nottinghamshire's economy has long been based around the production of energy – historically the North Notts Coalfields was a major employer and today E.ON, with 4500 employees, is one of the largest private sector employers across the County. The National Grid training site at Eakring, North Notts, is located on a site that was owned by BP and was the first place in the UK where oil was drilled.

Nottinghamshire is at the forefront of developing new forms of “green” energy such as **biomass heating**, which is generating a significant supply chain in the growing, processing, manufacture, storage and distribution of wood fuels.

Nottinghamshire County Council has over 70 biomass boiler sites, including 62 of the County's Schools, the largest portfolio of any local authority in the country. This has created a demand for 2,500 tonnes of wood pellets/year which is now being met by Nottinghamshire suppliers.

Nottinghamshire's **Centre of Renewable Energy (CORE)** boasts the largest willow plantation in the world, which is used by **Strawsons Energy** to supply wood fuel pellets to local biomass customers

**Hoval**, the Newark based biomass boiler manufacturer, has experienced growth of 60% during the last 5 years.

**Lindhurst Innovation Engineers** have pioneered the development of ground-breaking technology to create a microbial fuel cell which will enable farms and agricultural businesses to generate most or all of their energy requirements from waste water and slurry.

**Alkane Energy** has developed technologies to extract methane gas from former coal mines which is used to power generators and sell electricity to the national grid

In North Nottinghamshire and Derbyshire former Colliery sites plans are also being developed in to “*Energy Parks*” as a location for wind and solar energy, methane gas extraction – for example Harworth Estates has recently submitted planning applications to generate three forms of green energy - wind, solar and methane on land at the redundant Bilsthorpe Colliery site.

Local company **Alkane Energy** has developed technologies to extract methane gas from underground mine workings which is then used to power generators and sell electricity to the national grid. Alkane are also developing technology to use warm mine water as a renewable source of heating and cooling at its plant at Markham in Derbyshire. Nottinghamshire County Council intends to “*Research the scope for former colliery sites to become Energy Parks*” (9). This will involve the County working with owners and developers to draw up plans for Energy Park concepts, assess resource implications and potential benefits.

At a community level the growth of the Transition Town movement demonstrates how place-based grassroots economic development can be used to grow more resilient communities across the region. There are at least eight Derbyshire and ten Nottinghamshire Transition groups, for example in Belper, which are working with their local councils, businesses, environmental organisations and educational institutions to deliver more sustainable and resilient integrated enviro-economies.

### ACTION POINT 3

The LEP will encourage Local Authorities, Communities and businesses working in Towns and rural areas of D2N2 to collaborate to further develop their own “*Smart Energy Communities*” Plans. Such Plans will assess local current and future energy requirements and local resource opportunities. These Plans will contain practical project proposal by which the adoption of renewable energy sources will be encouraged, low-carbon business supply chain opportunities developed and new technologies pioneered, for example the development of supply chains for low-carbon fuels and associated commercial models for the purchase and delivery of locally generated energy. Such Plans will be the basis for a dialogue regarding potential financial support from D2N2.

## C) SMART ENERGY COMMUNITIES - LOW ENERGY BUILDINGS

### C) SMART ENERGY COMMUNITIES - LOW ENERGY BUILDINGS

A key component of Smart Energy Communities will be that of residential and commercial building retrofit energy schemes incorporating apprenticeship training and targeted supply chain initiatives.

The UK is entering a new era of rising energy prices and increasing fuel poverty.

- 80% of the UK's current building stock will exist in 2050.
- 40% of total energy is consumed by buildings.
- Up to 30% of energy consumption is typically wasted.
- Target of 15% of UK's energy to be renewable by 2020.
- £8bn p.a. savings potential in UK alone from increasing commercial building efficiency by 20%.
- Likelihood of incentives for Electricity Demand Reduction, and increasing use of the "Internet of Things" (IoT) enable appliances for smart home management..
- European directive for energy efficiency and energy demand means buildings have to be close to zero energy by the end of the decade. (Plus UK 2016 zero-carbon buildings target).
- "Low Income High Cost households" account for over 14% of all households in Derby.
- Heat is a substantial market with local strengths that is a government priority to de-carbonise and reduce costs to the consumer.
- There is a growing demand for sensor controllers and software to monitor, manage and control energy and appliances autonomously and on demand.

### RETROFIT

Despite recent energy insulation programmes there is still substantial work to be undertaken. For example there are approx. 10,000 solid wall "hard to heat" social housing properties still to be insulated in the City of Nottingham.

Building retrofit programmes have the benefits of improving energy efficiency, tackling fuel poverty, reducing carbon emissions and creating jobs. A report produced by Nottingham Energy Partnership (10) calculated that in Nottingham alone, a further 800 jobs could be created or retained by 2017 and a further 1,480 during the period 2017-2021 due to the labour-intensive nature of such retrofit programmes.

Plans are currently being developed by Nottingham City Council for a "Green Deal" neighbourhood blanket retrofit approach including external solid wall insulation, loft insulation, and double glazing. Proactive measures have also been undertaken to ensure contractors employ 35% of their workforce from the Nottingham area on the Nottingham Greener Housing11 scheme due to start on the Clifton estate. The City Council has also funded the training of Green Deal Assessors and taken steps to link SME's to business opportunities through future Green Deal schemes.

Derby City is currently looking to secure an ECO-funding agreement with one of the fuel suppliers to carry out extensive solid wall insulation both in social and private sector properties up to March 2015, with the aim to extend into the next phase of ECO. As part of this agreement the City Council is looking to secure partnership arrangements to deliver the Affordable Warmth element of ECO. Derby is looking to build on past work, which has used a variety of funding and partnerships. For example within the city the national Carbon Emission Reduction Target scheme was promoted with the Council working in partnership with Dyson Insulations and Apex Carbon Solutions to install loft insulation to over 1,200 homes and cavity wall insulation to over 650 homes since March 2010.

Improvements were also made through the national Community Energy Saving Programme scheme, which was part funded by Eon. This scheme benefited both social and private sector housing in Derby.

## C) SMART ENERGY COMMUNITIES - LOW ENERGY BUILDINGS

### RETROFIT

The work on the social housing stock included:

- 622 solid wall insulation installations (458 internal and 164 external).
- 1,390 new central heating installations.
- 1,544 loft insulation installations.
- 265 had solar PV.

And in private sector housing:

- over 200 private households installing external wall insulation, and
- over 80 installing new energy efficient boilers.

Nottingham City Homes has undertaken a number of retrofit programmes to tackle fuel poverty across the City through its “Secure Warm Modern programme”. To date;

- More than 2,600 solid wall properties, across both the social and private sector, are being insulated .
- In conjunction with E.ON and NEP external wall insulation has been recently fitted to 350 homes in Bulwell Hall and another 750 across Nottingham.
- Solar panels have been installed on more than 2,300 homes – generating 1.5 gigawatts p/a, earning the maximum feed-in-tariff.
- Residents in fuel poverty potentially now save an average of £300 a year.
- Procurement systems have been designed to encourage SMEs and local social enterprises to tender.
- Every £1m spent on our Secure Warm Modern programme has generated 21 jobs.
- In addition contractors are required to employ one apprentice for every £1m of contract value;
- The ‘1 in a million’ scheme has so far created 122 apprentices

In addition to domestic properties there is also the need to improve the energy efficiency of commercial premises. New legislative changes will soon make it illegal to let commercial properties with an EPC rating of F or G – the lowest two grades of energy efficiency. It has been estimated that 20% of all commercial buildings will be unlettable unless landlords upgrade their premises to meet these new minimum standards.

Finally good building stock energy data will be essential to monitor the effectiveness of retrofit programmes in both domestic and commercial sectors.

**BESPOKE** – is an ERDF-funded Derby City Council energy efficiency grants and advice scheme that has engaged over 80 businesses, undertaken over 40 energy audits, and awarded a number of grants to SMEs. It has raised awareness of the money, energy and carbon saving potential in local businesses and has highlighted the need for local and innovative solutions to assist this energy efficiency transition.

## C) SMART ENERGY COMMUNITIES - LOW ENERGY BUILDINGS

### FUNDING

During a recent consultation exercise there was strong support for EU Funds to be used to speed up delivery of low-carbon building energy retrofit programmes. Such activity would support construction jobs, create SME opportunities, innovative technologies and new supply chains. The new ECO funding scheme, via the Utilities, provides an opportunity to retrofit houses at scale and the potential for co-financing with ERDF and leverage of additional benefits.

ECO and Green Deal funding is in its early days, and is currently complex, both in the funding mechanism and delivery channels. However, it does offer opportunities – including if it is matched with other funding. Although ECO funding is by no means straight forward according to Nottingham Energy Partnership a potential ECO-ERDF match-funding package, channelled through local agents, could be used to leverage the following benefits:

Mansfield-based company, **SpineLock Living**, is pioneering a new system of house building constructed off site, to high engineering standards, with insulation, rainwater harvesting and renewable energy systems incorporated into the design.

SpineLock has already employed 20 additional people at its factory and more jobs will be created as the company expands. Plans are in place to create 300 new jobs over the next three years. SpineLock is also working with local colleges to develop training for the new products and processes

1. Shortening the value chain between funders and installers to ensure minimum profit take-off from intermediaries and maximum delivery of economic benefit to communities and SMEs.
2. Strengthening local SMEs competitiveness to win and deliver high value contracts, rather than as subcontractors, being squeezed by national companies to deliver at cut-throat margins
  - a. Supporting SME certification e.g. environmental management, H+S quality
  - b. Providing local depots for key sustainable and low-carbon products at low wholesale rates, usually only available to large companies
  - c. Supporting access to apprentices, graduates and training to increase capacity to take on and diversify work
  - d. Supporting resource efficiency improvements to cut SME overheads, audits and grants
3. Supporting total place solutions through providing a mixed programme of domestic and non-domestic resource efficiency support on an area-based approach, linking homes, workplaces and local social enterprises.
  - a. Developing community plans that include the domestic and non-domestic energy programmes and identifying other community energy resources and assets that could be developed and owned locally by businesses, schools or community groups. Building the market, community planning, initial feasibility, community ownership and linking demand to local suppliers.
  - b. Identify suppliers in each area that could be supported to improve and market their products, to access low-carbon supply chains and thus increase market share and create jobs.
  - c. Support local SMEs and social enterprises to improve their resource efficiency; audits and grants.
  - d. Support the auditing and surveying of void properties to develop low-carbon retrofit solutions and maximise local economic activity.
  - e. Partnership with training providers to offer audits as practical training exercises

## C) SMART ENERGY COMMUNITIES - LOW ENERGY BUILDINGS

### FUNDING

4. Deliver an action learning and needs driven innovation process to work with SME contractors and universities, solving technical problems and generate novel approaches and IP to meet local challenges in technology deployment.
5. Ensure that all low-carbon technology and service suppliers in ECO-funded programmes are supported to identify potential skills demands and these are linked to local training providers.

#### ACTION POINT 4

D2N2 will work with Local Authorities and relevant organisations from across the LEP area and the Utilities to create a programme of neighbourhood-based building retrofit energy schemes incorporating apprenticeship training and targeted supply chain initiatives. A key element of this work will be to create innovative funding packages utilising ECO finance matched with European and other funding sources.

#### ACTION POINT 5

D2N2 will also support measures to build better building energy data models linked to the Smart Energy Communities programme to provide organisations and communities with tools which encourage users to benchmark their data against other organisations and building users and share intelligence on energy-saving measures.

### NEW BUILD HOUSING DEVELOPMENT

There are positive signs that improving market conditions will soon lead to the construction of a number of new housing schemes – for example a planning application is shortly to be submitted for a £40 million “*eco-community*” of “*green*” housing at the Trent Basin site on Nottingham Waterside. The 8-acre development will be the first phase of a wider 25-acre scheme to be developed by Blueprint and the Homes and Communities Agency.

Considerable research has taken place locally and nationally as to how new residential schemes can integrate high-quality urban design principles and modern construction methods, such as for example modular construction, with low-energy building design, incorporation of renewables, rain water recycling, community energy plants, neighbourhood waste recycling schemes, adaptive principles and sustainability principles in relation to access to public transport.

Although the D2N2 will never be a gap funder of housing projects in cases where developers can demonstrate they are incurring additional costs by adopting sustainable principles in their developments and building houses that are fit for purpose and future-proofed from an energy perspective, the LEP will consider supporting elements of such schemes if these can contribute towards D2N2’s low-carbon plan objectives.

#### ACTION POINT 6

D2N2 will encourage the adoption of sustainable development principles in new-build residential schemes and will target support to capture added benefits relating to the creation of jobs, apprenticeships, training and local supply chain opportunities and the demonstration of low-carbon technologies being developed by local businesses.

## 2) LOW CARBON TRANSPORT TECHNOLOGIES

The Government has recently launched a major element of its industrial strategy - *“Driving success – a strategy for growth and sustainability in the UK automotive sector”* (11)

By 2040 almost none of Europe’s new cars will be powered solely by a traditional petrol or diesel engine. We are about to witness a global shift to ultra-low emission vehicles utilising low-carbon technologies and propulsion systems, many of which have been developed in the UK. Reducing vehicle carbon dioxide emissions requires major innovations in advanced combustion engine and battery technology together with sustainable and ethical low-carbon fuels. Ultimately there is likely to be a shift to fuel cell electric vehicles together with innovations in new materials and manufacturing technologies to reduce vehicle weight.

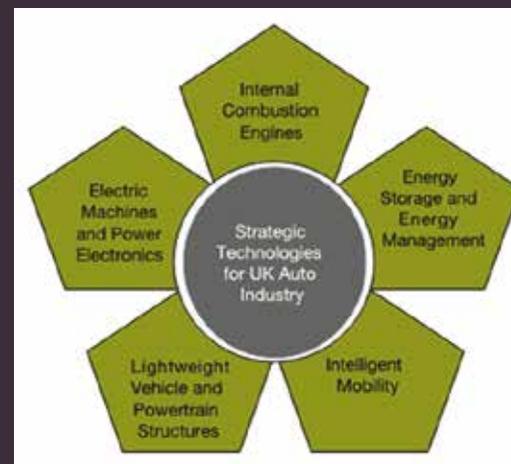
The report argues that the UK can only secure the long-term future of its automotive sector by moving ahead of international competitors in research and development (R&D) on ultra-low emission vehicles and growing the UK share of the automotive sector value chain; on average only a third of the parts that go into vehicles currently manufactured here are sourced from within the UK. Locally Rolls Royce has recently been quoted as saying that their local suppliers are nearing capacity and they may in the future have to look outside the UK.

Smarter travel will utilise new technologies to enable real-time traffic data and management, as well as a more integrated and flexible transport system.

Key features of this transition will be:

- There is unlikely to be one dominant technology for some time but there are common components that are likely to be a part of all the competing systems such as electric motors and batteries.
- The UK is well positioned to capitalise on its existing comparative strength and experience in design, development and manufacture of powertrains in addition to its world-class specialist capabilities in relevant low-carbon technology areas.
- Supply chains for the new technologies do not yet exist – strength in previous technologies is no guarantee of the same strength in the future.

Five strategic technology themes have been identified where the UK could show leadership through specialisation. These include internal combustion engines; electric machines and power electronics; energy storage and energy management; lightweight vehicle and power train structures; and intelligent mobility.



Automotive Council -  
Strategic Technology Themes

Derby is a leading high-technology city with the highest concentration of advanced manufacturing employment of any city in Great Britain. The presence of Companies like Rolls Royce, Bombardier and Toyota has led to 32,000 people being employed in “planes, trains and automobiles” in and around Derby. Many firms, such as Rolls-Royce, who employ 12,000 people in the City, are already world leaders in the development of energy efficient technologies:-*“There is great opportunity for the city to use the expertise it has within this field to embed new technology opportunities within other sectors and reduce energy use throughout the local economy”*. (12)

## 2) LOW CARBON TRANSPORT TECHNOLOGIES

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### GLOBAL TECHNOLOGY CLUSTER - “DERBY INFINITY PARK”

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Regional Growth Fund support has been secured to create a Global Technology Cluster, at Chellaston, in Derby. This 200-acre development adjacent to Rolls-Royce in Sinfin, to be known as Derby Infinity Park, will be a hub for leading high-technology companies from the supply chains of the rail, automotive and aerospace sectors in Derby. The site will be a hot-bed for innovation and world-leading technologies, supported by the 'Engineering Supply Chain Solutions' organisation. Planning permission for the link road from the A50 to the site has been approved with construction due to start late 2013. The site itself will begin construction in 2014.

The first phase of the project will see the design and construction of a new Innovation Centre, which will accommodate the University of Derby's Centre for Supply Chain Innovation. It will also provide grow-on and incubation space offering light industrial workshops, offices, training facilities, and spaces for the demonstration of new technologies. D2N2 can support the work of Global Technology Cluster by helping promote and market its offer nationally and internationally, providing technical support and brokering industry collaborations.

It is important to stress that the development of low-carbon technologies is not limited to just the Derbyshire area. Chinese motor manufacturer **Changan** has their UK R&D HQ in Nottingham, while **First Auto Works** (FAW), one of China's biggest vehicle manufacturers, has recently announced a major collaboration with University of Nottingham to undertake research into low-carbon technologies. **ZF Services** is a leading worldwide supplier of drive line and chassis technology while the **Hardstaff Group** at Gotham have invented a “*dual fuel*” bio methane technology, which significantly reduces the fuel consumption of HGV vehicles and buses. **Intelligent Energy's**, products such as hydrogen fuel cell technologies are being used by the likes of Suzuki and Boeing, while the **University of Nottingham** is pioneering research programmes in hydrogen fuel cell vehicle technology.

**The Hardstaff Group** is a Road Transport and haulage business which has in recent years become an acknowledged pioneer of dual-fuel technology in heavy haulage vehicles in the UK and Europe. Hardstaff's dual-fuel solution substitutes around 70% of diesel fuel with natural gas and reduces CO2 emissions by 20% while offering significant fuel savings to fleet operators.

Hardstaff is now working in partnership with major European HGV manufacturers, including Mercedes-Benz, who, consequently, has appointed the Company as a specialist dealer. In addition a new company, Hardstaff AB, has recently been formed in Gothenburg, Sweden, which installs dual-fuel technology on to all new Volvo vehicles.

## 2) LOW CARBON TRANSPORT TECHNOLOGIES

### D2N2 SUPPORT

D2N2's objective is to position Derbyshire and Nottinghamshire as a leading UK R&D hub and "go-to" location for low-carbon vehicle technology development and manufacturing. As a first step towards achieving this aim D2N2 will undertake the following actions;

#### ACTION POINT 7

Establish a **Low Carbon vehicles technologies Task Force** bringing together key businesses and organisations from across the LEP area to develop a "road map" as to how innovation and commercialisation can be fostered in this sector. The first task of the Task Force will be to map local technology readiness and supply chain strengths and weaknesses.

#### ACTION POINT 8

Work with Derby City Council to support the implementation of the Global **Technology Cluster** and its **Innovation Campus** by helping promote and market its inward investment offer, providing technical support and brokering industrial collaborations.

#### ACTION POINT 9

D2N2 will support the development of proposals for an "**Energy Valley**", Low Carbon **Vehicle Technology Park** at the Hardstaff Group site close to the A453 / M1. This will entail investment to create a Business Park cluster of companies working in low-carbon vehicle technology and will include Industrial units, office campus, test-bed workshops and training facilities in conjunction with local Universities and Colleges.

#### ACTION POINT 10

Enter into a dialogue with Government to determine how local companies can benefit from the recent announcement regarding the creation of a **new Advanced Propulsion Centre (APC)** to support the development of new supply chains for low-carbon vehicles. This Centre will receive £1 billion of Government and Industry investment over the next 10 years. D2N2 will develop a relationship with this project and explore if there is an opportunity for this facility to be based in the LEP area.

#### ACTION POINT 11

Explore the potential for collaborative work with other LEPs such as those in the West Midlands to achieve investment programmes that have sufficient critical mass. D2N2 will also liaise with the Automotive Council which has been tasked "*to bring together the key automotive LEPs...to determine strategic priorities for local and regional implementation of the national strategy*".

#### ACTION POINT 12

Work with the UKTI to build and strengthen our low-carbon vehicle technology sector **inward investment profile**

#### ACTION POINT 13

Seek representation on the Advisory Group being established by The Automotive Council and Engineering and Physical Sciences Research Council (EPSRC) "*to align research funding with industry challenges*".

#### ACTION POINT 14

Provide Innovation support to SME's working in automotive low-carbon vehicle technologies (See Section 3)

### 3) LOW CARBON SME SUPPORT

According to a recent research undertaken by the Carbon Trust, the low-carbon economy is a UK success story and accounts for more than £120 billion in annual sales and employs almost 1 million people(13). It has been growing despite the recession with “over a third of the UK’s economic growth in 2011/12 likely to have come from green business”.

The report argues that such growth is largely due to SMEs, which account for 91.5% of the low-carbon sector, and will therefore be critical to the future potential of the low carbon economy. The national Study has also found that;

**“Relative to population size, Derbyshire and Nottinghamshire have a high proportion of low-carbon SMEs... Some qualitative interviewees suggested the Derbyshire cluster may have emerged as a hub around Rolls Royce’s operations in the area”**

There is anecdotal evidence to suggest that local low-carbon companies are increasingly developing their own products which they intend to manufacture in the UK. According to Nick Gostick, Director of Nottingham CleanTech Centre, the barriers to entry for low-carbon SME’s are being reduced in relation to prototyping, availability of new materials, and access to 3D printers. We may begin to see a move towards “boutique manufacturing” which, when combined with “reshoring”, will lead to a growth in the local manufacturing base.

With increasing demand for lower-carbon goods and services being driven by sustainable procurement pushing carbon reduction down the value chain, there are also many opportunities for local companies to develop lower-carbon products to secure a larger market share, creating local jobs and economic activity.

An example of the circular economy provided by NEP is the growth in the remanufactured furniture market. The office furniture industry in the UK is valued at approximately £680 million per year. One local public body, currently looking at sustainable furniture procurement, spends £400k per year on office furniture. The UK market for remanufactured goods is still small, at less than 0.5% of the UK market. According to Kentwood, a USA-based furniture manufacture - remanufactured furniture accounts for over 9% of total commercial sales of the American furniture industry.

DEFRA has cited the role of an increase market share of reuse and remanufactured furniture in its 2011 review of waste policy (14). A supplier who can remove broken furniture and provide remanufactured furniture can usually supply at a fraction of the price of new goods will have a market advantage and probably employing a local workforce to reupholster and refurbish. Lower cost, lower impact remanufactured goods will be increasingly attractive to large organisations locally and wider looking to reduce costs and environmental impacts in their value chain. This process turns waste to profit and improves resource efficiency in the local economy.

***A key component for D2N2’s strategy for creating economic growth in this sector must therefore be to focus its support on low-carbon SMEs - “the new engine for growth”.***

In order to determine what practical actions the LEP can undertake to support local companies, the Carbon Trust national research has been cross-referenced with a series of qualitative interviews of key local intermediaries and a survey of *The GreenTech Business Network* company members. This has led to the following series of findings and proposed actions;

### 3) LOW CARBON SME SUPPORT

#### 1) FINANCE

Unsurprisingly access to finance figured, in both local and national research, as the major barrier to business growth;

*“Access to sources of external finance is critical to both fledging start-up businesses and more established micros and SMEs, and timeliness of finance can be a limiting factor in any business’ survival and cash position. In 2011, 18% of high-growth firms identified funding to be an important barrier to growth” (15)*

Different forms of funding are needed at different points in the business growth cycle;

- Start-up funding for micro businesses – in the case of young entrepreneurs such amounts can be relatively modest
- Funding support for R&D – product development, prototyping, testing, protecting IP
- Business start-up investment from commercial providers
- Expansion finance for established “high-growth” SMEs

A number of funding schemes are currently being piloted in the areas. These include the Derby Enterprise Growth Fund, the Global Derbyshire Small Business Support Programme and the Nottingham Technology Grant Fund (N’Tech), the latter of which can provide grants of up to £1 million to Cleantech businesses towards R&D and technology developments that will create employment. Nottinghamshire County Council has also launched a partnership arrangement with Funding Circle, an organisation which directly connects individual investors to business needing investment.

What is emerging is a patch work of differing funding pots which are not available in all parts of the LEP area. It is suggested that D2N2 reviews the progress of such funds and seeks to develop a more collaborative approach where such schemes can be extended both in timescale and geography and made available to all low-carbon businesses seeking investment.

#### ACTION POINT 15

D2N2 will monitor the progress of funds such as the Derby Enterprise Growth Fund and the NTech Fund in supporting the growth of low-carbon companies and extend or replicate these funding pots across the wider LEP area.

A surprisingly high number of companies contacted during work on the low carbon prospectus have previously benefitted from **Technology Strategy Board (TSB)** grant funding to develop their often pioneering low-carbon technologies. Such support had proved invaluable in that it was available even to micro companies, funded a proportion of the costs of R&D projects and fostered collaborations with other partners including Universities. However TSB funding is often limited to occasional competition calls around niche technologies and attracts intense competition across the UK.

Not surprisingly there is strong support amongst SMEs for equivalent funding mechanisms to be put in place at the D2N2 area level especially if it can match fund TSB support towards R&D projects. It is felt especially important that SMEs are in a position to procure the support they need, for example through an Innovation voucher scheme, rather than be limited to what happens to be on offer.

Apart from helping indigenous companies to grow, a ladder of funding support may also attract other low-carbon companies to the LEP area. The Carbon Trust research found that: *“When asked about what would incentivise them to move, low-carbon entrepreneurs valued regional funding opportunities as a determining factor in their choice”*

#### ACTION POINT 16

D2N2 will work with the TSB to put in place a programme of R&D financial support, including potentially an Innovation Voucher scheme, to enable SMEs to develop and commercialise low-carbon technologies.

### 3) LOW CARBON SME SUPPORT

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## 2) TECHNOLOGY DEMONSTRATIONS

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One of the key areas where low-carbon SMEs would benefit from support is in relation to demonstration opportunities to prove the performance of their technology over time in a working as opposed to a research environment. Test bed opportunities, for example in Universities, enable low-carbon SMEs to develop prototypes and gather reference data but there is also the need to show how such prototypes performs under varying “*real world*” conditions. In-situ testing is a particular challenge with regard to energy efficiency in buildings as there is a well-acknowledged gap between design and build/operational performance.

Various suggestions were made during the research as to how major local public and private bodies might be persuaded to give access to their property estates to trial products and create “*an outdoor lab*” but it is not clear how feasible these proposals are.

#### ACTION POINT 17

D2N2 will convene a workshop to bring together key individuals and organisations to discuss the issue of technology demonstration and develop a project proposal which builds on the availability of local facilities in order to create demonstration opportunities for local companies.



### 3) LOW CARBON SME SUPPORT

## 3) BUSINESS INCUBATION CENTRES

In the space of 10 years BioCity, Nottingham has grown to be the largest BioPharma incubator in Europe with over 46 “physical” and 30 “virtual” tenants accommodated in 130,000 Sq. ft. of office and lab space. The BioCity model of offering business accommodation and a range of support services to grow a local cluster of critical mass is equally applicable to the low carbon sector. There is the potential to replicate the BioCity “recipe” via the incremental development of a series of networked low-carbon business centres across the LEP area.

The **Nottingham CleanTech Centre** was established in 2012 and is now nearing full occupancy. The analysis and experiences to date of the Nottingham CleanTech Centre points to the need to provide support to SMEs which goes far beyond just providing business accommodation. The local sector is characterised by small early stage companies or entrepreneurs who need to be “**guided, trained, helped, networked, financed, mentored and tracked**”.

Evidence suggests that the business environment offered by the Cleantech Centre is greatly valued by tenants as it fosters;

- Peer-to-peer learning between businesses, for instance with regard to accessing funding
- Supply chain opportunities
- Business collaborations across a diverse range of companies
- Access to business mentoring and guidance via an “Entrepreneur in residence”
- Access to Student interns or Graduate Placements via a scheme managed by the Centre
- The “buzz” of being part of a community and a growing successful sector

There is anecdotal evidence to suggest that increasingly low-carbon companies want to locate to buildings with good environmental performance and that small workshop space is increasing in demand again. Access to next stage “grow on space” will be particularly important to ensure a through-put of companies moving through Incubation Centres and releasing space for new business start-ups.

The Nottingham CleanTech Centre is now exploring options for a second centre. In addition **New College Nottingham** has recently announced plans to create a £2.3 million Sustainable Construction Innovation and Enterprise Centre to be built at

Basford Hall which will include 12 units for new “green” construction businesses and shared workspace. A new Innovation Centre is proposed, within the **Derby Innovation Hub** at the Global Technology Campus while the Nottinghamshire County Council Growth Plan will “**Support the opening of a new Clean Tech Centre in South West Nottinghamshire**”. Nottingham Energy Partnership is currently considering moving to a new building which will have limited space for cleantech businesses while the existing Markham Environment Centre also provides accommodation for nine SMEs.

### Nottingham CleanTech Centre

The Nottingham CleanTech Centre was established in 2012 to provide a home for entrepreneurs, start-ups and small companies developing products or businesses relating to all aspects of clean technologies. The Centre is managed through Inntropy, which is run by experienced entrepreneurs with successful business and technology backgrounds.

The Centre provides serviced offices, virtual office packages, meeting rooms and a variety of business mentoring options.

There is enormous scope to link current and future Innovation centres to provide a networked ladder of property accommodation and create economies of scale in relation to low-carbon business support activities across the LEP area. In addition such a network of Incubation Centres can provide placement opportunities with start-ups in incubation environments and encourage young people to consider small innovative companies as a first choice career alternative. Such a model could ultimately provide apprenticeships and real world experience in a small business environment and create a bridge between small companies and FE/HE.

### ACTION POINT 18

D2N2 will actively support proposals from both public and private sectors to develop Business Incubation Centres catering for low-carbon businesses across the LEP area.

### 3) LOW CARBON SME SUPPORT

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#### 4) NETWORKING

In the Carbon Trust research “*Networking*” and face-to-face events was rated amongst SME’s as being of more importance than access to skilled staff. Similarly a survey undertaken of members of the GreenTech Business Network also identified the benefits to SME’s of regular networking meetings in terms of showcasing business success stories, fostering collaborative partnerships and strategic alliances, sharing of good practice and linking companies to support services etc.

A number of networks have functioned in recent years across the LEP area which have proved invaluable in terms of highlighting to local companies the business opportunities emerging across the low-carbon sector and providing them with the opportunities where they can meet with their counterparts. However many of these Networks have been dependent on short-term funding and have often been time-limited.

#### ACTION POINT 19

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D2N2 will review the range of low-carbon networks, explore the scope for rationalisation and will support a programme of networking events on the proviso that they cover the LEP area and foster collaborations amongst low-carbon SMEs.

#### 5) RESEARCH & DEVELOPMENT SUPPORT

A number of businesses who were interviewed while compiling this study spoke positively about the support they had received from local Universities through projects such as the Future Factory, ETC and Accelerating a Low Carbon Economy. In many cases the technical advice, networks and student placements had been key to the development and commercialisation of their low-carbon technology.

A number of new initiatives are currently being developed by the respective Universities who are also collectively working on research to develop D2N2’s wider innovation offer. It is proposed therefore to await the outcome of this work before considering if anything further needs to be put in place in relation to specific local Universities and research institution support services geared to the needs of low-carbon companies.

### 3) LOW CARBON SME SUPPORT

## 6) PROCUREMENT

A problem often referred to is that local SMEs are not able to access large scale public sector contracts, due to a combination of their size and the complexity and requirements of the tendering processes. This becomes a self-fulfilling prophecy in that SMEs don't tender for such work as they are convinced they stand little chance of winning such contracts.

There is an enormous scope to link SMEs and social enterprises to local procurement opportunities - for example Notts County Council spends approximately £200 million a year in the local economy with 18,000 suppliers, as part of a total £512 million budget

Many Companies also having to respond to supply chain pressures to demonstrate how sustainable their products are in terms of energy efficiency and carbon emissions. The more progressive SMEs are also realising that by embracing sustainable practices this will give them a competitive edge in the market.

Derby City Council is keen to explore local procurement accreditation and mechanisms to match vendors to procurers and open up new procurement opportunities. A number of imaginative procurement models are currently being developed by organisations such as the Future Factory and Nottingham Energy Partnership to assist SME's to respond to such supply-chain pressures and secure contracts. These can involve working with large scale public-sector bodies to identify contract opportunities, packaging these into a series of component modules that comply with legislative frameworks and in parallel providing tools and support to SME's to help them develop the necessary competencies to be able to submit successful contract tenders - for example being able to demonstrate Environmental Management Systems compliance. In addition University-based organisations such as ETI, ACLE and the Future Factory can offer advice and help in relation to prototyping, product development expertise, quality standards accreditations, student placements and measurement of the carbon footprint of SME's services etc. Other suggestions include having a "promoting innovation requirement" in local procurement schemes as incorporated in the national SBRI programme.

### ACTION POINT 20

A number of procurement models and support services are currently being developed by a range of organisations to enable low-carbon SMEs to respond to supply-chain pressures and successfully tender for major contracts while at the same time helping public sector organisations develop more cost effective and sustainable procurement policies. D2N2 will work with organisations delivering procurement projects to assess their effectiveness and to determine how such services can be enhanced with the LEP's support.

4energy Ltd, a Nottingham-headquartered venture, develops low energy cooling hardware and software for building infrastructure in the ICT industry. These systems help protect sensitive electronic equipment from the detrimental effects of temperature whilst reducing the energy and costs used in air-conditioning.

4energy has been in existence for seven years and has successfully worked with corporate clients including Vodafone, Virgin Media, BT, D-Telekom, China Mobile and China Telecom delivering significant energy and cost savings in Data Centres, Telecom Base Stations and other equipment rooms.

4energy now employs approximately 80 people, half of which operate from the UK and half from its global subsidiaries. Exporting is an essential part of 4energy's businesses as the majority of its revenues are generated from its presence outside of the UK in Germany, Egypt, and China.

### 3) LOW CARBON SME SUPPORT

#### 7) EXPORT

A key finding of the Carbon Trust research is that low-carbon SMEs are almost twice as likely to have export customers as small businesses in other industries; three quarters of low-carbon SMEs contacted planned to enter or expand exports to a new market in the next two years. At a local level there are a number of export success stories, for example 95% of Romax's turnover is linked to exports while exporting is an essential part of 4energy's business; the majority of its revenues are generated from its presence outside of the UK in Germany, Egypt, and China.

The UKTI Low Carbon Road show held at East Midlands Airport in October 2012 was a successful event incorporating a familiarisation event and company introductions for International buyers. There is considerable scope to build on this activity.

#### ACTION POINT 21

The LEP will support the work of the UKTI in helping low-carbon businesses develop export markets via a series of trade delegations, attendance at exhibitions, introductions to potential overseas buyers etc.

#### 8) CELEBRATING SUCCESS - MARKETING OUR "OFFER"

##### Romax Technologies

Romax Technologies provides engineering services and advanced software to 16 of the top 20 automotive companies, and the aerospace rail, and bearing sectors. According to Dr.Poon, Romax's founder, growth has been consistent at 20 per cent/annum and is set to increase. "Six years ago I reoriented the company towards renewable energy – wind turbine and reduction of carbon emissions for vehicles. We are three years ahead of other companies waking up to this market."

Romax are currently having a new HQ building being built at the University of Nottingham Innovation Park. More than 95% of Romax's business comes from outside the UK, and the workforce is equally international – the UK office plays host to 15 different nationalities.

The Nottingham Cleantech Centre recently convened a meeting of low-carbon SMEs to discuss how the sector is currently marketed. Such businesses feel there is a complete absence of marketing collateral which celebrates many low-carbon business success stories and "sells" our "offer" to both an internal and external inward investment audience. Previous brochures and materials, which are still in circulation, are woefully out of date and reflect badly on D2N2's low-carbon credentials.

There is also anecdotal evidence that some established companies felt they received little in the way of public acknowledgement and credit for their contribution in creating jobs for the local area during a period of recession.

#### ACTION POINT 22

D2N2 will, in conjunction with Invest in Nottingham and Invest in Derby, commission the production of a marketing "tool kit" with a focus on celebrating local low-carbon SME success stories.

### 3) LOW CARBON SME SUPPORT

## 9) LOW CARBON SKILLS

Recent research work undertaken by Employer First (16) has established that;

- There is no dedicated Low carbon Goods and Environmental Services sector (LCEGS) skills infrastructure. As a result the specific skills demands of these businesses, the majority of whom are SMEs operating in a rapidly evolving market, are insufficiently defined and met.
- The “target driven” approach to skills delivery results in a short-term focus with little consideration given to longer-term skills needs.
- The current system does not deliver the skills required by SMEs who find engagement with providers prohibitive and time consuming due to the complexity of the market.
- There is a shortage of supply of skilled workers entering the sector; with SEMTA evidencing issues within LCEGS sub-sectors for example the engineering sector faces a replacement demand of 200,000 over the next 10 years. Businesses face high costs to seek and hire suitably qualified employees due to the mismatch of local skills. Many local low-carbon businesses, for example, have had to recruit from outside the area despite choosing the region for its strong high tech credentials.
- Young people are not choosing low-carbon careers. A 2011 Association of Colleges survey showed that only 4% of GCSE students were considering a career in engineering and less than 1% in manufacturing. However at a graduate level demand for jobs in this sector appears to be high but candidates find it difficult to gain relevant experience and find secure employment.
- The skills levels of the 25-40 age range are well below national standards defined against OECD international competitiveness levels.

Recent research undertaken by Nottingham City Council has also identified that access to high-level skills is at the core of niche growth sector SMEs. One area where there is a particularly emerging shortage is that of people with higher level skills for designing and managing projects.

As a response to these issues Employer First, a not-for-profit employer-owned and employer-led venture, has been established to address the skills and recruitment challenges faced by the low-carbon sector across the Derbyshire and Nottinghamshire area. The UK Commission for Employment and Skills (UKCES) has provisionally awarded grant funding (subject to contract) to Employer First to enable it to work closely with both national and local colleges and training providers to;

1. Develop, in consultation with businesses, a new low-carbon apprenticeship framework.
2. Connect low-carbon businesses with schools and increase young people's awareness of and aspirations for the sector.
3. Link local people to low-carbon jobs and training opportunities.
4. Up-skill the existing workforces of low-carbon businesses.

This is an important national pilot project as it involves working with businesses to define their skills needs. Previously what has been on offer by way of skills training has often been supply-led rather than demand-driven. However, obviously the success of this project will be dependent on the effective engagement of employers. D2N2 will work with Employer First to build employer involvement and “buy-in” to the project.

#### ACTION POINT 23

D2N2 will provide support to Employer First in building employer engagement into the low-carbon Skills pilot project.

### Low Carbon Construction Skills

Local colleges are gearing up for the training and skill demands of the emerging low-carbon sector. New College Nottingham has recently announced plans to create a £2.3 million Sustainable Construction Innovation and Enterprise Centre to be built at Basford Hall. As well as providing skill training in low-carbon building technologies, the project will also include 12 units for new “green” construction businesses and shared workspace. Similarly Central College are working with SASIE to develop apprenticeship training programmes in a series of renewable energy related technologies at No.1 Science Park.

A number of issues have been highlighted in relation to low-carbon Skill training during the development of this D2N2 Plan;

1. In relation to property retrofitting there is lack of a strategic programme focused approach to project delivery. The transactional nature of “one-off” projects prevents the creation of a visible pipeline of on-going work opportunities which is needed to facilitate the efficient training and recruitment of people into the low-carbon building trades; “there are lots of projects, but they’re boom and bust, so no one will invest in staff or training facilities”
2. SMEs are notorious for not training their staff and when they do it is often inappropriate to their needs. The challenge will be to help employers to better understand and articulate their skills needs, to see the positive fiscal benefits that training can have on their business and to drive up the standards and responsiveness of training available.
3. As D2N2 will in the future have a key role in managing European funding in the region (ERDF & ESF) it can play a role in supporting employer-led skills training to either supplement or enhance the work that Employer First will be undertaking and/or enhance training provision currently available through Colleges or training providers.

D2N2 has a key role to play in supporting the development of an impartial approach to employer engagement in the field of low-carbon skills training and enhancing training provision via its access to sources of public funding.



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## D2N2 PLAN RESOURCING

LEPs have been allocated responsibility to manage the European structural funding Programme 2014-2020. In the case of D2N2 this amounts to €250 million. From this budget allocation a minimum of 20% must be spent on low-carbon project activities according to EU rules. D2N2 will match this European funding allocation from its Single local Growth Fund allocation. This would mean that the LEP had a minimum base budget of circa £85 million between 2014 –2020 to deliver aspects of this low-carbon plan.

This budget would however be supplemented by other funds such as Regional Growth Fund, Growing Places, ECO, private and public sector, HE and FE support and other European funding programmes etc.

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## NEXT STEPS

In terms of developing this consultative draft plan the following are the proposed next steps;

- 1) The draft Plan will be launched by D2N2 on 6th November at the Low Carbon Employment Conference and then made available for a wider consultation.
- 2) Reference Groups are currently being formed for each of Plan's priority themes
  - Smart Energy Communities,
  - Low Carbon Transport Technology,
  - Support for low-carbon SMEs
- 3) Work to develop programme delivery aspects of plan, targets, indicative projects and timeline for actions will take place with the help of the Reference Groups between November 2013 and February 2014
- 4) Delivery of a small number of priority projects to begin work from November 2013 onwards
- 5) Low Carbon Plan and delivery programme to be submitted as core component of the D2N2 Single Local Growth Fund – March 2014

## SUMMARY OF ACTION POINTS

### ACTION POINT 1

As part of its plan to measure progress in achieving its Growth Plan objectives, D2N2 will work with the Local Authorities, University Business Schools and Colleges to put in place research mechanisms to capture growth trends in the low-carbon goods and environmental services (LCEGS)

### ACTION POINT 2

The LEP will provide funding support for both Nottingham and Derby City Councils to take the lead in developing with partner organisations “*Smart Energy Communities*” prioritised delivery and investment plans for their areas. On the basis of such plans D2N2 will enter a dialogue with the respective Cities to;

- Identify which projects the LEP may be able to support.
- Work with Local Authorities and Investors to create innovative funding mechanisms to support the development of major energy infrastructure investments such as district heating extensions.
- Provide capacity and technical support to enable the Local Authorities to secure ERDF and other forms of European funding to support the delivery of their plans.
- Invest in supply chain events, workshops and business support measures in order to link local businesses to these commercial opportunities.

### ACTION POINT 3

The LEP will encourage Local Authorities, Communities and businesses working in Towns and rural areas of D2N2 to collaborate to develop their own “*Smart Energy Communities*” Plans. Such Plans will assess local current and future energy requirements and local resource opportunities. The Plans will contain practical project proposal by which the adoption of renewable energy sources will be encouraged, low-carbon business supply chain opportunities developed, new technologies pioneered and will be the basis for a dialogue regarding potential financial support from D2N2.

### ACTION POINT 4

D2N2 will work with Local Authorities and relevant organisations from across the LEP area and the Utilities to create a programme of neighbourhood-based building retrofit energy schemes incorporating apprenticeship training and targeted supply-chain initiatives. A key element of this work will be to create innovative funding packages utilising ECO finance matched with European funding.

### ACTION POINT 5

D2N2 will also support measures to build better building energy data models linked to the Smart Energy Communities programme to provide organisations and communities with tools which encourage users to benchmark their data against other organisations and building users and share intelligence on energy saving measures.

### ACTION POINT 6

D2N2 will encourage the adoption of sustainable development principles in new-build residential schemes and will target support to capture added benefits relating to the creation of jobs, apprenticeships, training and local supply-chain opportunities and the demonstration of low carbon technologies being developed by local businesses.

### ACTION POINT 7

Establish a **Low Carbon vehicles technologies Task Force** bringing together key organisations from across the LEP area to develop a “*road map*” as to how innovation and commercialisation can be fostered in this sector. The first task of the Task Force will be to map local technology readiness and supply chain strengths and weaknesses.

### ACTION POINT 8

Work with Derby City Council to support the implementation of the **Global Technology Cluster** and its **Innovation Campus** by helping promote and market its inward investment offer, providing technical support and brokering industrial collaborations.

### ACTION POINT 9

D2N2 will support the development of proposals for a **Low Carbon Vehicle Technology Park** at the Hardstaff Group site close to the A453 / M1. This will entail investment to create a Business Park cluster of companies working in low-carbon vehicle technology and will include Industrial units, office campus, test-bed workshops and training facilities in conjunction with local Universities.

### ACTION POINT 10

Enter into a dialogue with Government to determine how local companies can benefit from the recent announcement regarding the creation of a **new Advanced Propulsion Centre (APC)** to support the development of new supply chains for low-carbon vehicles. This Centre will receive £1 billion of Government and Industry investment over the next 10 years. D2N2 will develop a relationship with this project and explore if there is an opportunity for this facility to be based in the LEP area.

## SUMMARY OF ACTION POINTS

### ACTION POINT 11

Explore the potential for collaborative with other LEP's such as those in the West Midlands to achieve investment programmes that have sufficient critical mass. D2N2 will also liaise with the Automotive Council which has been tasked *"to bring together the key automotive LEPs...to determine **strategic priorities** for local and regional implementation of the national strategy"*.

### ACTION POINT 12

Work with the UKTI to build and strengthen our low-carbon vehicle technology sector **inward investment profile**.

### ACTION POINT 13

Seek representation on the Advisory Group being established by The Automotive Council and Engineering and Physical Sciences Research Council (EPSRC) *"to align research funding with industry challenges"*.

### ACTION POINT 14

Provide Innovation support to SME's working in automotive low-carbon vehicle technologies.

### ACTION POINT 15

D2N2 will monitor the progress of funds such as the Derby Enterprise Growth Fund and the NTech fund in supporting the growth of low-carbon companies and extend or replicate these funding pots across the wider LEP area.

### ACTION POINT 16

D2N2 will work with the TSB to put in place a programme of R&D financial support, including potentially an Innovation Voucher scheme, to enable SMEs to develop and commercialise low-carbon technologies.

### ACTION POINT 17

D2N2 will convene a workshop to bring together key individuals and organisations to discuss the issue of technology demonstration and develop a project proposal which builds on the availability of local facilities in order to create demonstration opportunities for local companies.

### ACTION POINT 18

D2N2 will actively support proposals from both public and private sectors to develop Business Incubation Centres catering for low-carbon businesses across the LEP area.

### ACTION POINT 19

D2N2 will review the range of low-carbon networks, explore the scope for rationalisation and will support a programme of networking events on the proviso that they cover the LEP area and foster collaborations amongst low-carbon SMEs.

### ACTION POINT 20

A number of procurement models and support services are currently being developed by a range of organisations to enable low-carbon SMEs to respond to supply-chain pressures and successfully tender for major contracts while at the same time helping public-sector organisations develop more cost effective and sustainable procurement policies. D2N2 will work with organisations delivering Procurement projects to assess their effectiveness and to determine how such services can be enhanced with the LEP's support.

### ACTION POINT 21

The LEP will support the work of the UKTI in helping low-carbon businesses develop export markets via a series of trade delegations, attendance at exhibitions, introductions to potential overseas buyers etc.

### ACTION POINT 22

D2N2 will, in conjunction with Invest in Nottingham and Invest in Derby, commission the production of a marketing *"tool kit"* with a focus on celebrating local low carbon SME success stories.

### ACTION POINT 23

D2N2 will provide support to Employer First in building employer engagement into the Low Carbon Skills pilot project.

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## NOTES

1. Colour of Growth' report from the CBI, published July 2012
2. Statistics quoted are from government sources, collected in a report issued by the Green Alliance think tank and published in August 2012.
3. UK Energy Bill 2013
4. BIS Low Carbon & Environmental Goods and Services Report, July 2011
5. The Low Carbon Economy in Nottinghamshire, East Midlands Development Agency
6. A Draft Low Carbon Action Plan for Nottinghamshire Sector Fix and Action Plan Nottinghamshire County Council July 2013
7. Adapted from Nottingham Energy Strategy 2010
8. Nottingham Future Cities Feasibility Study – CleanTech Business Nov 2012
9. The Nottinghamshire Growth Plan, Nottinghamshire County Council 2013.
10. Local Economic impact study for the Nottingham Energy Strategy - Nottingham Energy Partnership March 2012
11. "Driving success – a strategy for growth and sustainability in the UK automotive sector" Department for Business, Innovation & Skills
12. Derby Growth Plan, Derby City Council
13. Low Carbon Entrepreneurs: The New Engines for Growth - The Carbon Trust and Shell May 2013
14. [http://www.remanufacturing.org.uk/pdf/furniture\\_procurement.pdf](http://www.remanufacturing.org.uk/pdf/furniture_procurement.pdf)
15. Opportunities for the low carbon economy in Derby and Derbyshire, University of Derby 2013
16. Employer First Feasibility Study 2012

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To view our Low Carbon film, go to [www.youtube.com/D2N2TV](http://www.youtube.com/D2N2TV)

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