TEN POINT PLAN FOR GREEN GROWTH IN THE MIDLANDS ENGINE

JULY 2021
THE POWER OF PARTNERSHIP

Our Ten Point Plan for Green Growth in the Midlands Engine sets out, with a unified voice, the Midlands Engine Partnership’s collective plan: actions to be taken in partnership which will accelerate both the Midlands and the UK’s path to net zero.

We would like to thank all our partners from right across our region for contributing their valued time and immense expertise. Together, we have set out how we can drive collective action today to safeguard the environment for future generations; and how we will capitalise both on the wealth of economic opportunities presented by the shift to low carbon and enabling nature’s recovery.

In particular, we would like to thank teams from: Browne Jacobson LLP for ensuring and enabling powerful regional engagement; the National Trust for providing crucial environmental insights and in-depth expertise; and the Energy Research Accelerator for their vast technical leadership.

We have collectively developed this plan with our partners, making shared investments and joint commitments. We will continue to work together, as our key milestones below set out, with urgency and purpose - a powerful partnership force with the ability to harness vast region-wide expertise and strengths, as we galvanise our efforts at pace to shape our green future.
The Midlands is the UK’s original industrial powerhouse; the birthplace of the Industrial Revolution, leading the world in manufacturing ingenuity and invention. Now, the Midlands is seizing the opportunity to forge the future once more.

Tackling climate change and nature’s decline are the most pressing issues of our age and we have just one opportunity - now - to make the changes that are urgently needed. The Government’s Ten Point Plan for a Green Industrial Revolution sets out the approach to build back better and accelerate our nation’s path to net zero. In response, we have brought together a powerful collaboration of leaders and innovators from every part of the Midlands, to deliver our Ten Point Plan for Green Growth in the Midlands Engine.

Ambitiously adding value, bringing pace and harnessing the immense power of partnership working, our Ten Point Plan sets out how the Midlands Engine Partnership will work together to drive change, create opportunities and deliver Green Growth. Never more than now has the spirit of collaboration, which we enjoy across our region, been more central to our future success. Working together, we can and we will ensure our economic recovery and community prosperity - underpinned by sustainable growth and by working to safeguard our environment for today’s and future generations.

Both low carbon energy transformation and active steps to harness and grow natural capital are creating phenomenal opportunities for our region to build on our strengths. In our Plan, we have set out how we will translate opportunity into reality, securing success through the power of partnership - driving economic and environmental impact at scale in every part of our region.

Our partners across the Midlands are already leading in, and will remain at the heart of, the UK’s Green Industrial Revolution. We will do so by remaining ambitious, with planned actions at scale, driven by the challenge we face and urgency of need. In co-authoring our Plan, with shared commitments for delivery together, our partners agree: now is the time to stand together, to act in concert and accelerate our impact, together.

Through the Midlands Engine Partnership, we will.

Sir John Peace, Chairman, Midlands Engine

At the heart of economic recovery and levelling up in the Midlands is net zero growth. This will require urgent, collective action across many areas and these are now, thanks to the collaborative work of more than 300 voices from across the Midlands, prioritised in this regional Ten Point Plan for Green Growth in the Midlands Engine. This Plan is the key to the Midlands Engine unlocking potential and driving the actions that will benefit communities, businesses and the natural environment in every part of our region.

As the world begins to recover from the devastating impact of the pandemic, there is huge potential for a broader transformation; one that will enable our country to build back better, supporting green jobs and accelerating our path to net zero. The Prime Minister’s Ten Point Plan for a Green Industrial Revolution will mobilise £12 billion of government investment, and potentially three times as much from the private sector, to create and support up to 250,000 green jobs.

This Government will turn the UK into the world’s number one centre for green technology and finance, laying the foundations for decades of economic growth by delivering net zero emissions in a way that creates jobs and allows us to carry on living our lives. We will position the UK to take advantage of export opportunities presented by low carbon technologies and services into new, global emerging markets - providing jobs and reinvigorating our industrial heartlands.

With its expertise and the opportunities available, I believe that the Midlands can play a leading role in the Green Industrial Revolution. From global leadership in battery electric vehicles, decarbonising transport, low carbon hydrogen and energy efficient buildings, to pioneering economic regeneration focused on net zero and the vast potential that could be created by the region’s two new Freeports: we can and we will drive sustainable change for our communities and economies.

Working together in powerful partnerships, across the Midlands, the UK and the world, now is the time to forge a greener, more prosperous future for us all.

Robert Jenrick, MP, Secretary of State for Housing, Communities and Local Government
TEN POINT PLAN FOR GREEN GROWTH IN THE MIDLANDS ENGINE 2021

Rachael Greenwood, Executive Director, Midlands Engine

are actively demonstrating our shared commitment, innovation and leadership as a region at the centre of our region’s future sustainability and success.

There has never been a stronger rationale for collaborative action to bring about change than the threefold challenge we face today: the stubborn, structural challenges in our regional economy; the severe impact of the Covid-19 pandemic fiercely exacerbating regional inequalities; and the undeniable level of threat posed by the climate emergency.

Our Partnership’s Ten Point Plan for Green Growth brings together an impressive spectrum of expertise across the uniting power of the Midlands Engine. Working together as businesses, public sector partners, academics, thought leaders and conservation specialists to implement our Ten Point Plan, we are actively demonstrating our shared commitment, innovation and leadership as a region at the centre of shaping a green future... for the Midlands, our nation and our world.

Rachael Greenwood, Executive Director, Midlands Engine

We are thrilled to be involved in the Midlands Engine Ten Point Plan for Green Growth. Having supported from the beginning, we have seen the hard work and dedication from all parties involved. We have learnt so much from every stage, speaking to a wide range of stakeholders from industry, academia and the public sector. We are looking forward to continuing our involvement to help mobilise and deliver the actions presented in our Ten Point Plan in partnership with the Midlands Engine and other partners, as we embark together in leading the Green Industrial Revolution for our region, and the UK.

Peter Ware – Partner and Head of Government Sector, Browne Jacobson

Throughout the Green Growth Conversation, National Trust, alongside other conservation NGOs, has been working with the Midlands Engine Partnership. We believe local and regional partnerships will play a crucial role in delivering the societal shifts needed to meet net zero targets, ensure targeted action for nature’s recovery and provide high quality accessible green space for all.

The plans include levelling up on green and blue infrastructure investment, restoring and protecting natural assets and building early momentum to ensure nature-based solutions play a key role on the path to net zero. We look forward to continuing to work with Midlands partners to deliver on this ambitious Plan.

Paul Forecast, Regional Director, National Trust

The evidence base underpinning our Green Growth Conversation is critical, and the Midlands Engine Observatory is delighted to support the work on the development of our Ten Point Plan. The mapping of current activity and identification of future priorities and potential impact towards net zero is essential to the future of the Midlands Engine economy. As the economy recovers from the impact of the pandemic and transitions to the new trade arrangements, diversification and growth of our business base and skills will be key.

Professor Delma Dwight, Director, Midlands Engine Observatory

EDF fully supports the Midlands Engine’s Ten Point Plan for Green Growth, which is aligned to our ambition to help Britain achieve net zero. As Britain’s largest generator of low carbon electricity, with growing expertise in the production and use of green hydrogen, we look forward to continuing collaboration with a number of local stakeholders to support the decarbonisation of the region.

Rebecca Rosling, Head of Smart Customers, EDF Energy

The Midlands Engine Ten Point Plan for Green Growth is a hugely important piece of work which I have been supporting, both from a professional perspective and as a Midlands parliamentarian, and Co-Chair of the Midlands Engine All-Party Parliamentary Group. This Plan, the first of its kind in any region in the UK, is both crucial and timely. Crucial, because the transition to net zero will have a massive impact on our region’s economy, home to the UK’s world beating manufacturing sector. And timely, because in the year that the UK plays host to COP26, the Midlands will lead the way in showing our determination to achieve clean, green, sustainable growth.

Lord Daniel Ravensdale, Co-Chair Midlands Engine APPG

Our Ten Point Plan for Green Growth in the Midlands Engine provides vision and pathways for regional economic recovery. It clearly demonstrates how communities can work together and be more resilient when facing challenges, by developing the regional green economy in partnership with other regions in the UK. We are delighted to work with many experts from different sectors and play a key role in developing this stimulating Ten Point Plan.

Professor Upul Wijayantha, Loughborough University

We are excited by the potential for the Midlands Engine area to lead the Green Recovery for the UK. Our Midlands Energy Hub has identified the potential for the low carbon economy, facilitating access to this sector for SMEs, communities and individuals. In collaboration we can simultaneously boost the economy and work towards net-zero.

Wayne Bexton – Corporate Director for Growth and City Development (SRO for the Midlands Energy Hub)
THANK YOU TO OUR GREEN GROWTH PARTNERS

Over 300 leading voices from right across the Midlands have contributed insights and intelligence to help ensure that our Ten Point Plan: captures the exceptional green potential of our region; identifies the best opportunities for us to collaborate with and complement each other; and has the power to drive economic and environmental impact at scale.
THE MIDLANDS CONTEXT

In every part of the Midlands, pace is gathering around rich and diverse specialisms in low carbon energy based on historic sector strengths, wide-ranging natural assets, and ever-more-urgent needs and opportunities. This includes helping to grow the Low Carbon Environmental Goods and Services Sector, for which a Midlands Low Carbon Sector Study has been carried out. Our Ten Point Plan for Green Growth complements the groundbreaking work of our Local Enterprise Partnerships, Local Authorities, Combined Authority, businesses, universities and environmental organisations - a pan regional vision and mission, supporting everyone across our Partnership to connect, amplify initiatives and showcase areas of expertise. Together, we will achieve the maximum benefit and value for the Midlands.

WEST MIDLANDS COMBINED AUTHORITY
- Strengths in automotive and future green mobility technologies, low carbon technology, aerospace (precision component manufacturing) and innovative supply chains
- Predominantly urban - high demand for power, heat and transport for the population and the economy - decarbonisation is key to the WMCA green agenda
- WM2041 Five Year Plan published in 2021 outlining the actions needed to deliver a 33% reduction in carbon emissions by 2026 on the way to net zero by 2041. The plan has the full support of local authorities, a £5 million initial investment and has workstreams around clean energy, transport, net zero homes, natural capital, and green skills
- Key green projects such as district energy schemes and heat networks, HydroFlex and the West Midlands Regional Energy System Operator (RESO)

THE BLACK COUNTRY
- Strengths in science, research and innovation
- Projects include: Repowering the Black Country - an ambitious and bold plan to deliver the world’s first zero carbon industrial cluster enabling clean GVA growth of £16 billion by 2030

GREATER BIRMINGHAM AND SOLIHULL
- Strengths in green innovation and energy and low carbon technologies R&D
- Projects include: the Clean Air Hydrogen Bus Pilot, Tyseley Energy Park Refuelling Station, and Project 3D - a digital initiative to help decarbonise Birmingham in a decade

COVENTRY AND WARWICKSHIRE
- Strengths in transport technology design, R&D and manufacturing, which employs 50,000+ in Coventry and Warwickshire across aero, auto, rail and marine
- Projects include: Coventry set to become UK’s first £50 million All Electric Bus City, the Very Light Rail system development of rolling stock and rail infrastructure and supporting businesses with energy and environmental management through Business Sustain and the Green Business Network

WORCESTERSHIRE
- Strengths in geothermal heat with ambitions to increase local energy generation
- Currently a net importer of energy but with significant energy generation resources
- Healthy low carbon sector
- Projects include: the Worcestershire 5G Testbed, which has now been transitioned into a sustainable model, and the geothermal heat study which indicated real potential for developing sustainable heat networks in many parts of the county, including Offenham

THE MARCHES
- Strengths in traditional manufacturing are now driving innovative firms in high-tech agriculture, the automotive supply chain and environmental and recycling technology
- Centre for UK agriculture innovation and low carbon transition
- National leader in the deployment of anaerobic digestion plants
- Projects include: Investigating the use biomass pyrolysis to convert waste streams into carbon-negative products like biochar, biogas and bio-oils, and a focus on renewable and low carbon energy production, installation and servicing technologies at Herefordshire and Ludlow College Energy Training Centre

STOKE-ON-TRENT AND STAFFORDSHIRE
- Strengths in increasing renewable energy supply and decentralised energy provision
- Powerhouse Central Stoke-on-Trent and Staffordshire City Deal
- Home to Stoke-on-Trent College’s District Heat Academy
- Projects include: the UK’s first at scale low carbon heat network within Stoke-on-Trent, and a £140 million Energy from Waste Plant at Four Ashes in South Staffordshire, and the Smart Energy Network Demonstrator (SEND) project at Keele University

DERBYSHIRE AND NOTTINGHAMSHIRE
- Strengths in manufacturing, with the second highest manufacturing GVA (£8.1 billion)
- World-leading manufacturers in green innovation including in wind, nuclear, building technologies and alternative fuels
- Largest cluster of transport manufacturing and R&D in the country
- Projects include: Net Zero Masterplan led by East Midlands Development Corporation and Nuclear AMRC Midlands - a new industrial R&D centre in Derby where partners are developing a £20 million bespoke research facility for the UK’s nuclear supply chain

GREATER LINCOLNSHIRE
- Strengths in renewable energy production, offshore wind and next generation technologies
- Home to heavy industry and South Humber in the north of the county and a celebrated tourism industry and the Humber estuary deep sea port in the east
- South and central areas are world leaders in Agri-Food and Agri-Tech
- Projects include: Able Marine Energy Park, Humber Zero carbon capture and storage, and Sleaford Moor Enterprise Park - a 37-acre eco-conscious business development

LEICESTER AND LEICESTERSHIRE
- Strengths in science and technology, with two specialist enterprise zones
- Supporting the development of local supply chains
- Improving the effectiveness of local companies to supply low carbon products and services
- Projects include: the development, in partnership, of the East Midlands Airport Freeport - a site of regional and international importance bordering the counties of Leicestershire, Nottinghamshire and Derbyshire
The Midlands Engine Partnership is unlike any other in the UK. We are a unifying, pan regional force spanning 65 Local Authorities, one Combined Authority, 20 universities, nine Local Enterprise Partnerships and over 800,000 businesses. We are also the first such Partnership in the UK to propose how stakeholders from right across our region will come together to deliver a greener future for our communities as we both safeguard our environment and grow our economy.

Economic recovery and levelling up in the Midlands will have Green Growth and our move to net zero growth at its heart. This will require collective action across multiple areas. To inform such action, the Midlands Engine has led a regional Green Growth Conversation, connecting an impressive spectrum of more than 300 business leaders, parliamentarians, local government champions, thought leaders, researchers, and conservation and wildlife specialists to share insights and intelligence.

Our Ten Point Plan has been developed with input and leadership from partners from every part of our region. Recognising that our region is rich in potential and diverse in scope and capacity, it sets out how, where and when we can act in true collaboration - to add value, connect and amplify our region’s exceptional leadership and innovation in low carbon to benefit the Midlands and the UK.

The Plan prioritises ten key areas for action that will: benefit every part of our region; enable us to build back stronger, better and greener; and effectively accelerate our path to net zero.

The role of the Midlands Engine in all of this is to connect, champion and amplify. We will be successful through our collective effort, with each partner working to their own strengths, supporting and complementing each other to add value.

Together, we are greater than the sum of our parts - dynamic advocates for our region, benefitting every partner, every business and every community through our shared regional vision.
The activity identified in our Ten Point Plan will have a fundamental impact on the people, places and businesses of the Midlands.

By 2041 we will achieve:

**PEOPLE**

**MORE THAN**

196,000 JOBS

36% CO₂ REDUCTION = 20.8 MILLION TONNES

**PLACES**

**MORE THAN**

**PROSPERITY**

£24.2 BILLION GVA


Our partners at WSP consulting have reviewed each of the actions in our Ten Point Plan and identified what these mean in terms of potential economic, environment and community impact, including:

- **Jobs and GVA** - new jobs will bring increased opportunities for our communities and GVA growth will help close the regional £76 billion productivity gap
- **Carbon reduction** - collective actions will drive forward sustainable, green solutions, accelerating decarbonisation towards net zero targets
- **Sustainable Development Goals** - delivery will aid and underpin levelling up through activity aligned to UNESCO goals

More information on the data we’ve used and methods we’ve applied to assess the potential impact of our plan is available from the Midlands Engine Observatory.

The Midlands will play an important role in the UK’s Green Growth and our net zero transition. Be it manufacturing the electric vehicles or heat pumps that we will all come to use, or as a hub for the huge offshore wind deployment, the Midlands will be central to the green economic growth and skills which underpin our low carbon future. We’re pleased to have supported Midlands Engine in developing this Ten Point Plan which identifies the actions required.

Barny Evans, Strategic Advisory Net Zero, WSP

Focus areas  

**Economic impact**  

**Carbon impact**  

**Sustainable Development Goals**

1. GREEN BUILDINGS

Increasing GVA via 30,000 new green jobs

3% CO₂ reduction via retrofitting housing stock

SDG 1, 2, 7 and 13

2. NET ZERO TRANSPORT

New Gigafactories employing 8,000 people

12% CO₂ reduction via electric vehicle usage

SDG 3, 8 and 13

3. NATURE’S RECOVERY

3,000 new forestry workers

1.1% reduction emissions via 15% tree coverage across the region

SDG 3, 8, 13, 14 and 15

4. BLUE-GREEN PLACES

£6 benefits for every £1 investment in active travel

Increase urban green spaces

SDG 3, 8, 10, 11 and 14

5. LOW CARBON HYDROGEN

£3.3 billion GVA and 14,000 jobs supporting hydrogen technologies sector

Maritime sector reducing CO₂ by 1.3% nationally

SDG 7, 8 and 9

6. CLEAN ENERGY

3,000 new green jobs in offshore wind and solar

7.3% CO₂ reduction through offshore wind

SDG 1, 7, 8 and 13

7. SMART ENERGY

£1 billion savings to Midlands Engine residents

Effective energy usage reducing CO₂

SDG 1, 7 and 8

8. GREEN INNOVATION

£2.3 billion additional investment in Midlands Engine R&D

Enabling new technologies

SDG 8, 9 and 13

9. ENERGY WORKFORCE

100,000 new Midlands Engine jobs in the sector by 2030

10% CO₂ reduction via new low carbon heating alternative

SDG 7 and 8

10. GREEN FINANCE

New models of green finance unlocking funding

8.2% CO₂ emissions reduced via new home efficiency

SDG 8, 9 and 13
TEN POINT PLAN FOR GREEN GROWTH IN THE MIDLANDS ENGINE

PLACES

1. GREEN BUILDINGS
   Improve energy efficiency and decarbonise heat

2. NET ZERO TRANSPORT
   Lead the transition to reduce emissions

3. NATURE’S RECOVERY
   Protected and productive natural assets

4. BLUE-GREEN PLACES
   Where people and nature flourish

ENERGY

5. LOW CARBON HYDROGEN
   Pioneer, commercialise and deliver hydrogen solutions

6. CLEAN ENERGY
   Sustainable energy generation and storage

7. SMART ENERGY
   Develop digital infrastructure to decarbonise

ENABLERS

8. GREEN INNOVATION
   Green design and making for economic growth

9. ENERGY WORKFORCE
   Highly skilled, inclusive and diverse

10. GREEN FINANCE
    Invest and enable to unlock opportunity
PLACES

1. **GREEN BUILDINGS**
   Improve energy efficiency and decarbonise heat

2. **NET ZERO TRANSPORT**
   Lead the transition to reduce emissions

3. **NATURE’S RECOVERY**
   Protected and productive natural assets

4. **BLUE-GREEN PLACES**
   Where people and nature flourish
1 GREEN BUILDINGS
Improve energy efficiency and decarbonise heat

The Midlands will lead the UK in the shift to energy efficient buildings and away from fossil fuel sources for heating, significantly reducing greenhouse gas emissions. With a threefold focus on designing and building new greener buildings, retrofitting existing buildings to improve energy efficiency and developing next generation low carbon heating technologies, we will also create new jobs, skills and supply chains in our region.

AIMS
✓ Reduce greenhouse gas emissions
✓ Reduce energy demand
✓ Improve energy security
✓ Support innovation
✓ Create exports in low carbon heating
✓ Create high-value jobs, particularly in SMEs

Substantial growth opportunities exist, including:
► The development of next generation low carbon heating appliances to support the housing retrofit sector.

The Midlands has significant capability in green heating technology, including Vaillant’s renewable heating solutions using heat pump systems and cylinders, as well as solar thermal hot water solutions, and Worcester Bosch which has developed a hydrogen boiler and aims to be a centre of excellence for this technology. Work is already underway at Worcester Bosch to develop next generation low carbon heating appliances and enable the housing retrofit sector.

We have the potential to create thousands of new manufacturing jobs and skills, including in the service sector, through the transition of low carbon heating engineers.

► Taking a leading role in constructing energy efficient new buildings and homes.

We have huge potential to build on groundbreaking projects, such as the Nottingham City Homes Pilot to retrofit housing association homes and the Net Zero Neighbourhood concept to help tackle fuel poverty in the West Midlands. The Midlands also has an opportunity to take a leading role in constructing energy efficient new buildings and homes, as well as building a workforce that is skilled and knowledgeable in low carbon energy technologies such as district heating, hydrogen, air and ground source heat pumps and geothermal. Plus, we will demonstrate leadership in heating, developing regional energy planning capability to support local authorities in making the right choices, as demonstrated through the West Midlands Combined Authority SMART Hub and Net Zero Neighbourhood Demonstration programme.

Our region has some of the most nationally significant district heating programmes.

► Nottingham is one of the largest district heating networks in the UK and one of the most established. It has proven the long-term viability of heat networks and continues to be a pioneering project which stands as an example to other cities which are adopting this technology decades later.

► The Birmingham district heating system provides heating, together with cooling, to many of the municipal buildings in the city.

► The Coventry network is connected to waste plant energy and Stoke is developing a network which could combine the waste heat from industry, waste processing and geothermal.

► Midlands universities have world leading expertise in thermal energy. Academics at De Montfort University, Leicester have been leading just one of four test sites across Europe to demonstrate and monitor how to use heat energy stored in the ground using next generation geothermal heat pumps.


3 Energy Saving Trust, ‘Heating and hot water’, [online]. Available at: https://energysavingtrust.org.uk/advice/heating-and-hot-water/#text=Electric%20heating%20is%20one%20of%20the%20most%20expensive,article%20text=Electric%20heating%20is%20one%20of%20the%20most%20expensive,article%20text=Electric%20heating%20is%20one%20of%20the%20most%20expensive (Accessed: March 2021)


**TEN POINT PLAN FOR GREEN GROWTH IN THE MIDLANDS ENGINE 2021**

1. **Develop a pan regional zero carbon homes route map**
   Focused on shared goals to unlock barriers to supply chain growth, skills, innovation and programmes for existing homes including a balance of new sites (e.g. as part of the East Midlands Development Corporation plans) and more challenging opportunities across the region to alleviate fuel poverty. To include work with the WMCA SMART Hub and regional partners to support their goals to encourage low carbon construction methods.

2. **Work with partners to undertake a regional study on low carbon buildings and heat**
   Subsequently, engage with policy makers to make evidence-led recommendations for interventions, including:
   - Opportunities to augment building regulations.
   - Driving forward innovative pilots in the region, focused on future technologies.

3. **Work in partnership to secure the establishment of a National Centre for Decarbonisation of Heat in the Midlands**
   This will involve:
   - Establishing the Midlands as a national leader in low carbon heat by bringing together partners and industry to develop large-scale net zero demonstrators. These will include new build sites as part of the East Midlands Development Corporation plans.
   - Advocating on behalf of the region for the construction of a National Centre for Decarbonisation of Heat at Tyseley Energy Park.

### IMPACT POTENTIAL

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<tr>
<th>Economic</th>
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<td>£3.4 BILLION</td>
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Economic
The Midlands is uniquely placed to contribute to and benefit from the government targets to deploy heat pumps. Deploying around 200,000 a year by 2040 in the region will require nearly 30,000 trained people and give manufacturers in the area a huge opportunity.

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<th>Carbon</th>
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<td>1.8MtCO₂ (3% OF 2018 EMISSIONS)</td>
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By retrofitting home energy efficiency we can reduce home energy bills in the region by £290m, reduce greenhouse gas emissions by 1.75MtCO₂ (3% of 2018 emissions) per annum by 2040 and improve thermal comfort.

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<th>Sustainable development goals</th>
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<td>30,000 JOBS</td>
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These measures will reduce poverty (SDG1), improve health (SDG2) and provide clean energy, reducing GHG emissions (SDG7 and SDG13), whilst providing jobs.

### CASE STUDIES

**TRENT BASIN COMMUNITY ENERGY SYSTEM**

Part of a major regeneration project in Nottingham known as Project SCENe (Sustainable Community Energy Networks), this groundbreaking ‘living lab’ community energy scheme, enables residents to generate, store and use solar electricity and will provide around 500 contemporary, high quality, low carbon homes at the edge of the city centre. Led by the University of Nottingham, this project demonstrates a unique collaboration between the renewable energy industry and academia.

**WORCESTER BOSCH**

Based in the Midlands, Worcester Bosch is the UK market leader in domestic boilers. The company’s current product range includes renewable technologies such as heat pumps and solar water heating systems. Over the last few years, they have developed a prototype boiler that can run on 100% hydrogen gas. The prototype has been designed to also run effectively on natural gas. This means that in the future, if hydrogen gas becomes reality, those who have a ‘hydrogen-ready’ boiler can simply convert to hydrogen without the need for an entirely new heating system.

**INDUSTRY PARTNERS**

Using hydrogen for heating buildings unlocks huge economic benefits for the Midlands region, for example in hydrogen-ready boiler manufacturing, fuel cell development and scaled green hydrogen production. 

Dr Angela Needle, Director of Strategy, Cadent Gas
Home of the UK automotive industry, the Midlands is in the vanguard of low carbon transport innovation, including battery electric vehicles and fuel cell technology. By strengthening this sector further, our region will play a major part in delivering UK Government ambitions to accelerate the shift to zero emission public, private and industrial vehicles. We will also protect jobs in the Midlands, boost export potential and drive down our CO₂ and NOx emissions.

AIMS

- Reduce greenhouse gas emissions
- Protect existing and create new regional jobs
- Accelerate shift to net zero vehicles
- Integrate energy and transport plans across the region

OPPORTUNITY

The Midlands is an internationally significant hub for the automotive industry, employing more than 293,000 people.¹ We are home to seven volume car manufacturers, seven commercial vehicle manufacturers and 16 of the world’s top 20 automotive suppliers. A number of the country’s leading brands are based in the region, including:

- Toyota’s first European car plant was set up at Burnaston, Derbyshire in 1992. Since opening, the plant has manufactured over four million cars and was the first Toyota plant outside Japan to start making hybrid cars in 2010 when it began manufacturing the Toyota Auris.
- Jaguar Land Rover has a long-established heritage in the Midlands, with operations in Solihull, Wolverhampton, Coventry and Warwickshire. The company has announced that all vehicles will be available as all electric variants by 2030.²
- Aston Martin Lagonda has its Global Headquarters in Warwickshire where the company plans, designs and builds its cars for global distribution. It is due to build its new full electric cars in the UK from 2025.
- World class automotive supply chain
- Spearheading Innovation

Midlands businesses and our region's universities are spearheading innovation through projects such as the £130 million UK Battery Industrialisation Centre (UKBIC) which focuses on large-scale manufacture of batteries enabling the scale-up of UK battery manufacturing. For the Midlands to retain leadership in transport technologies, continued investment in R&D and innovation is needed, recognising the regional strengths of the Warwick Manufacturing Group - the lead centre for Vehicle Electrification and Connected and Autonomous Vehicles within the High Value Manufacturing Catapult network, and Mira Technology Park whose Southern Manufacturing Sector provides approximately 2.5 million sq ft of automotive-related advanced manufacturing facilities. The Advanced Propulsion Centre too was set up to research, develop and commercialise the technologies for the vehicles of the future, and to do this, it manages a £1 billion investment fund which will safeguard and create over 30,000 jobs over the next ten years.³

There is also the opportunity to look to the future and create the next generation of mobility technology, including Connected and Automated Mobility (CAM) solutions as is currently being developed in the West Midlands by Midlands Future Mobility.

- Spearheading Innovation

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- World class automotive supply chain

Our mobility supply chains and skills base are ideally located for trialling and implementing new low carbon transport infrastructure projects. Battery Electric Vehicles (BEVs) are being developed at pace by private sector expertise in the Midlands, such as Jaguar Land Rover and Aston Martin Lagonda. Meanwhile, electric vans are being developed and built in the Midlands by London Electric Vehicle Company. Major Midlands-based retailers, such as Central England Cooperative, are actively developing EV charging points across their property estate and local government is looking at how to support all forms of transport in the transition from fossil fuels.

There is an opportunity to ensure that the whole supply chain underpinning the scale-up of electric vehicle manufacturing is based within our region. The proposed battery Gigafactory in the West Midlands will be a key ingredient, but there will be opportunities that lie beyond traditional vehicle production, including battery recycling and reprocessing, such as that being developed by start-up Fenix Battery Recycling in Willenhall.

The Midlands sees the highest amount of road freight in the UK, accounting for 45% of all rail freight and 30% of lorry freight. Sustainably refuelling the enormous volume of heavy goods vehicles travelling through our region presents unique infrastructure challenges and opportunities. Some fleets are already switching to biomethane, others are advocating overhead power line solutions (catenary systems) to recharge HGV batteries on the move, and many believe that hydrogen refuelling may be the future.

1. Map and future-proof our region’s charging and refuelling infrastructure and connect key stakeholders to foster a coordinated charging and refuelling infrastructure strategy.
   Enabling authorities and businesses to plan strategically and improve the visibility of such projects across the region, promoting Government and consumer awareness, in turn increasing investment prospects and encouraging early consumer adoption of BEVs and alternative fuel vehicles. In addition, working with WMCA to support its infrastructure for Zero Emissions Vehicles Strategy.

2. Develop a regional BEV and charging and refuelling skills strategy.
   Enhancing our region’s skilled automotive workforce and regional positioning in the vanguard of the electric and alternative fuel vehicle revolution. This will bolster our region’s position as lead candidate for new national and grant-funded projects and inward investment.

3. Develop and promote the Midlands Engine as a centre of excellence for BEVs and charging and refuelling technologies.
   Building on the concentration of automotive businesses, supply chain and know-how in the area. Seize opportunities for the region to take a leading role in the development of next generation batteries and battery recycling, as well as other refuelling infrastructure.

4. Work through partnership to enable energy and transport infrastructure plan integration across our region.
   Work with partners to ensure the integration of energy and transport infrastructure plans for our region. This will involve building on the work carried out by Cenex (funded by Midlands Energy Hub and commissioned by Coventry City Council) which provides intelligence and highlights options for a strategic network of multimodal transport hubs across the Midlands.

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**Impact Potential**

- **£916 Million GVA**
- **7.0 MtCO₂ (12% of 2018 emissions)**
- **8,000 Jobs**

**Economic**

By 2030 all new cars made in the UK will be electric, requiring more than 60GWh of batteries, requiring around four “Gigafactories”, with the Midlands the ideal location, employing 8,000 people.

**Carbon**

The switch to electric vehicles could reduce greenhouse gas emissions by as much as 7MtCO₂ (12% of 2018 emissions) per annum by 2040, as well as improving air quality and reducing noise.

**Sustainable development goals**

By delivering on active travel people we can improve health (SDG3) and reduce GHG emissions (SDG13), whilst protecting and creating jobs (SDG8).

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**Case Studies**

**UK Battery Industrialisation Centre**

The £130 million UK Battery Industrialisation Centre (UKBIC) is a pioneering concept in the race to develop battery technology for the transition to a greener future. The unique facility provides the missing link between battery technology, which has proved promising at laboratory or prototype scale, and successful mass production. Based in Coventry, the UKBIC is bringing together manufacturers, entrepreneurs and researchers to lead the race to develop battery technology for the transition to a greener future.

*DISCOVER THE PROJECT*

**Tyseley Energy Park Refuelling Station**

The UK’s first multi-fuel, open access, low and zero carbon fuel refuelling station is the result of a five-year collaboration between the private and public sector. The unmanned facility is available 24/7 for refuelling, with integrated pay at pump options, and currently offers hydrogen, biodiesel and electric vehicle charging with Bio-CNG to follow in 2022. From the summer of 2021, TEP refuelling station will service 20 hydrogen double-decker buses purchased by Birmingham City Council.

*DISCOVER THE PROJECT*

**Industry Partners**

“Toyota has pioneered low and zero emission technology from hybrid to hydrogen and is pleased to support the Midlands, where we have our manufacturing plant, on the journey to net zero and beyond.”

Jon Hunt, Manager, Alternative Fuels, Toyota
3  

**NATURE’S RECOVERY**  
Protected and productive natural assets

Clean air and water, fertile soil, beautiful landscapes, rich biodiversity: our economy and our people depend upon our region’s natural assets. We will invest in them urgently and consistently to maximise the carbon storage potential of our land, ensure a sustainable and attractive environment for our people and visitors, and a productive asset for agriculture. The recovery of the natural environment is a crucial element of the Midlands’ economic and social health.

**AIMS**

- Invest in woodland, peatland and other carbon sinks
- Deliver long-term environmental resilience
- Enhance biodiversity
- Improve health and wellbeing
- Encourage green tourism and boost visitor economy
- Create more jobs in the green economy
- Increase cycling and walking

**OPPORTUNITY**

Change in land use has been one of the key drivers in the global decline of biodiversity. Intensively farmed land, deforestation, drainage of peatland and the pollution of waterways have all had an impact on the quality of the environment.

In the Midlands, forests, grasslands and other landscapes remove 2,670kt of carbon a year.1 But lack of appropriate market incentives and pan regional collaboration and in some cases lack of land availability, coupled with under-investment in natural assets, have prohibited positive change. We must protect our irreplaceable habitats such as ancient woodlands and veteran trees. With early investment in peatland and wetland restoration, we can rapidly increase the carbon capture and carbon storage functions of this land. A focus on restoring peat moorlands in the Midlands will mean working with nature to develop low cost, high impact nature-based solutions, contributing to both climate mitigation and biodiversity targets.

1 Ten Points for Green Growth in the Midlands Engine 2021

**OUTSTANDING NATURAL ASSETS**

The Midlands boasts some of the country’s most wonderful landscapes: Sherwood Forest, the Peak District, the Shropshire Hills, the Lincolnshire Wolds, the Malvern Hills and Cannock Chase. Every year, our region’s outstanding landscapes receive tens of millions of day visits. In 2019, there were over 230 million day visitors in the Midlands Engine area, spending £7.2 billion.2 These woodlands and landscapes must be invested in, not just for environmental reasons, but because they are vital for our people’s quality of life and for our visitor economy which accounts for one in ten jobs3 in our region and £10 billion GVA.4

With the creation of the National Forest 25 years ago, the Midlands has already pioneered a model for investing in woodland to benefit biodiversity, leisure tourism and decarbonisation. Our region also has many pockets of fragmented woodlands which provide an exceptional opportunity to create both rural and urban woodland corridors, allowing us to lock in carbon at the same time as providing wildlife habitat, a more resilient landscape and health benefits for communities. There is potential to develop this at scale by expanding the National Forest with east-west corridors. This ambition aligns with Government recommendations to increase woodland cover from 13%-19% across the UK to help reach net zero targets.

As we look ahead to Birmingham 2022, steps are being taken to ensure this is the most sustainable Commonwealth Games to date with initiatives such as Severn Trent Water’s Commonwealth Forest - the creation of 2022 acres of forest as well as 72 tennis-court-sized mini forests across West Midlands urban areas.

Woodland creation and tree planting will form a key part of the climate mitigation pathway by locking up and storing carbon, helping to clean up air pollution, stabilising soils and reducing run off into rivers, and providing valuable wildlife habitat for a wide range of species. At the same time, through robust policy and sympathetic development, we must protect our irreplaceable habitats such as ancient woodlands and veteran trees.

In addition, we must recognise the importance of peatland. When peatland is functioning well it is wildlife rich, provides safe drinking water, minimises flood risk and sequesters carbon. With early investment in peatland and wetland restoration, we can rapidly increase the carbon capture and carbon storage functions of this land. A focus on restoring peat moorlands in the Midlands will mean working with nature to develop low cost, high impact nature-based solutions, contributing to both climate mitigation and biodiversity targets.

TEN POINT PLAN FOR GREEN GROWTH IN THE MIDLANDS ENGINE 2021

CASE STUDIES

NATURAL RIVERS AND GREEN CORRIDORS PROJECT

Natural Rivers and Green Corridors is a three-year project to improve woodlands, grasslands, wetlands and watercourses along the River Rea and its tributaries in South-West Birmingham and the River Tame in West Birmingham. As well as improving habitats for wildlife, the project will benefit communities by making local green spaces more attractive and encouraging healthy lifestyles. The project is a partnership between Birmingham City Council, the Environment Agency and the Wildlife Trust for Birmingham and the Black Country.

RECONNECTING SHERWOOD FOREST

Landowners and a wide range of partners are working together to restore and reconnect Sherwood Forest to the wider landscape and City. An internationally renowned wood, important for wildlife and tourism, Sherwood Forest has been one of the first projects to receive funding through the Government’s Green Recovery Challenge Fund. A focus on restoration, ancient trees, forest expansion and forestry skills and jobs will see Sherwood and the surrounding area maximise its environmental and economic potential.

IMPACT POTENTIAL

£394 MILLION GVA
608 KtCO\(_2\) (1.1% OF 2018 EMISSIONS)
3,000 JOBS

Economic
To expand woodland cover across the Midlands, we will need nearly 3,000 forestry workers which will create local jobs and generate £394 million worth of economic value.

Investment in pan regional natural capital will maximise ecosystem services including clean water, clean air, productive soils - all reducing costs to society and businesses.

Carbon
By reaching the 15% tree coverage targeted for the UK, by 2040, 500ktnCO\(_2\) would be captured each year, the equivalent of 1.1% of total emissions in the Midlands.

Sustainable development goals
One way to work towards SDG#13 is to plant more trees. When the Midlands meets the UK targets for tree coverage of 15%, we will have over 400 million more trees, more than 36 per person.

ACTIONS

1 Establish and convene a Midlands Engine Natural Capital taskforce
   Develop partnership approaches between business, environmental specialists and Government to make recommendations on how to embed natural capital into the Midlands regional economy, and to enable steps to link and increase knowledge exchange and development of spatially-based data.

2 Develop the Midlands Forest vision with National Forest, Woodland Trust and other partners, expanding forestry and woodland cover across the Midlands
   Create conditions to ensure increased support for adoption of and investment in the Midlands Forest vision, and support initiatives such as the West Midlands Virtual Forest and Severn Trent Water’s Commonwealth Forest.

3 Work to shape policies and regional approaches which can significantly increase space for nature and carbon sinks
   Through the work of the Midlands Engine Natural Capital taskforce, actively identify ways through which to contribute to Government’s commitment of protecting 30% of land for nature by 2030, and ensure a lead role in peatland restoration.

4 Advocate for the Midlands to be at the forefront of delivering key nature conservation policies
   Work with partners such as the Midlands Engine Observatory and the West Midlands Natural Capital Board to ensure contemporary understanding of this dynamic policy area including Local Nature Recovery Strategies, the emerging Environmental Land Management Agreements to promote sustainable farming, and Biodiversity Net Gain opportunities soon to become mandatory following the Environment Bill’s enactment. Support development of ambitious targets with local, regional and national policies as enablers for delivery and change.

DISCOVER THE GOALS

DISCOVER THE PROJECT

DISCOVER THE PROJECT

DISCOVER THE PARTNERS

Image courtesy of Sherwood Forest Trust

Toby Bancroft,
Regional Director, Central England, Woodland Trust

“We are facing a twinned crisis of nature and climate emergencies, the need to act is now urgent. The Midlands can rise to this challenge, working together protecting and enhancing our landscapes for all.”

DISCOVER THE GOALS
Providing green and blue spaces in our cities, towns and villages is as important for the wellbeing of our region’s people as it is for climate change resilience. By collaborating with business, industry, public bodies, and landowners to develop our green and blue infrastructure, we will enhance quality of life in the Midlands, boost the visitor economy, improve flood and carbon management, and protect nature.

**Aims**

- Reduce greenhouse gas emissions
- Improve health and wellbeing
- Improve water management systems
- Encourage green tourism and boost visitor economy
- Reduce heat island effect
- Improve wildlife natural habitats
- Enhance biodiversity

**Opportunity**

Natural England has estimated that £2.1 billion per year could be saved in health costs if everyone in England had good access to green space due to increased physical activity in those spaces.1 Time spent in natural green spaces has also been shown to improve mental health and wellbeing, and reduce stress, anxiety and depression. Urban green space in the Midlands generates benefits to physical health and mental wellbeing valued at an estimated £2.4 billion per annum.2

The Midlands is home to some of the greenest cities in the UK, with over 5,000 green spaces in urban locations, representing 30,000 hectares of land, which attract an estimated 109 million visits annually.3 By investing in improving accessibility in 2,000 of these spaces, it is estimated that annual visits will increase by around 89 million.4 This would lead to substantial increases in physical health and mental wellbeing valued at an estimated £2 billion per year.5

Providing green space is also important for climate adaptation. It is likely that in the Midlands, urban areas will experience higher temperatures than rural areas due to the ‘urban heat island effect’.6 Creating a network of parks and green spaces across cities and towns, like the creation of the West Midlands National Park, will give more people access to nature near to where they live while increasing resilience to future climate pressures; supporting sustainable transport through cycle and walking routes, contributing to air quality; and improving biodiversity by maximising space for nature and connecting places. Increasing our urban woods and planting more street trees to combat pollution, capture carbon and provide summer shade will also be a part of climate adaptation for our towns and cities, mitigating the urban heat island effect.

In terms of blue infrastructure, the Midlands is well served by two key river basins (the Severn and the Humber), significant canal and river heritage and the Sherwood Sandstone Aquifer. Our waterways are multi-functional assets. Not only do they form part of our cultural and natural heritage, through new innovations they can potentially form ‘Information Superhighways’ and act as sources of thermal energy generation and cooling. They are also important resources for carbon storage, water supply, nature and the wellbeing of local communities.

Managing water will be crucial for both flood risk and water scarcity issues in the Midlands. Land availability, funding and lack of an integrated vision between landowners and Government departments are key inhibitors to realising opportunities. In rural areas, however, agricultural policy is changing and this offers a golden opportunity to look at sustainable water management through strategic land use changes.

Catchment scale broad partnership projects, such as the River Severn Regional Growth Zone, and the River Trent Partnership will play a key role by enabling partners to work together and maximise the economic, social and environmental benefits of landscape scale cooperation. Similarly, looking after our coast and coastal communities to maximise Green Growth benefits will be important in the Midlands.
**Actions**

1. **Convene and advocate for cross-sector and multi-agency collaboration at scale for nature based solutions and catchment scale cooperation**  
   Bringing together partners from across NGOs, public bodies, industry and the Midlands Engine Observatory to identify opportunities to share data and to work at scale in partnership to develop the region’s blue and green infrastructure.

2. **Work with Government and partners to deliver proposals for the East Midlands Development Corporation ‘Masterplan for Net Zero’**  
   Focusing on communities ‘living, making and moving’ by investing in green infrastructure to drive net zero ambitions and to support the levelling up agenda - to include putting green spaces at the heart of new developments to bring positive benefits to people, places and the environment.

3. **Advocate on behalf of the region for connected towns and cities through the creation of natural and active travel corridors**  
   Supporting and championing partner initiatives, and provide evidence to promote wilder, healthier towns and cities with nature corridors and infrastructure that facilitate sustainable and active travel.

**Case Studies**

**Masterplan for Net Zero - East Midlands Development Corporation**

The East Midlands Development Corporation is pioneering a new approach to economic regeneration by focusing on the delivery of large-scale sustainable developments with the potential to achieve direct impact on net zero. It is focused on new communities ‘living, making and moving’ with net zero built into developments from the start. The initial focus is on creating new green spaces, parks, sustainable transport and net zero housing, and on ensuring nature corridors and habitat connection within the area.

**Connected Coast - Bringing a Green Agenda to Lincolnshire’s Coast**

Led by East Lindsey District Council, a green agenda is being mapped on the Lincolnshire coast and written into the Town Investment Plans for both Skegness and Mablethorpe. The agenda will focus on investing in green infrastructure to support the local communities. The vision is for Mablethorpe and Skegness to make distinctive contributions to a Connected Coast through a programme which diversifies their economies, builds their skills base and establishes them as national test beds for future living and natural resource management.

**Impacts Potential**

**Increase Urban Green Spaces**

**Economic**

We will encourage connected cities across the Midlands through the creation of natural and active travel corridors. On average, investment in active travel measures generates £6 of benefit to society for every £1 spent.

**Carbon**

Every year, urban green spaces in the Midlands sequester 100,000 tonnes or £6 million worth of CO₂ (0.2% of 2018 emissions).

**Sustainable Development Goals**

Our investment in the creation of new green and blue spaces will help to reduce inequality (SDG#10), improve health and wellbeing (SDG#3) and create sustainable communities (SDG#11).

**£6 Benefits for Every £1 Investment in Active Travel**

"By cleaning our rivers, restoring our landscapes and creating new wildlife-rich spaces across cities, towns and countryside, the Midlands Engine Partnership can establish our region as a beacon - a place where people and nature thrive."

Paul Wilkinson, Chief Executive, Nottinghamshire Wildlife Trust
ENERGY

5 LOW CARBON HYDROGEN
Pioneer, commercialise and deliver hydrogen solutions

6 CLEAN ENERGY
Sustainable energy generation and storage

7 SMART ENERGY
Develop digital infrastructure to decarbonise
Thanks to exceptional business, industry and academic innovation, the Midlands is already pioneering next generation, cost-effective hydrogen technologies, with powerful potential to scale up. A pan regional hydrogen task force will ensure that the Midlands Engine capitalises on the opportunities presented by hydrogen, playing a national leadership role in decarbonising transport, logistics and heating, creating jobs and accelerating net zero UK.

First hydrogen-powered train in the UK, as part of the HydroFLEX project, and is now working to retrofit old diesel rollingstock.

A number of key locations in the Midlands, including Worcester and Derby, are developing additional hydrogen refuelling infrastructure plans which can provide key elements of a wider system. Meanwhile, the potential for inland hydrogen production is being explored at sites across the Midlands. Plus, Cadent is exploring the possibility of a 100% hydrogen local transmission pipeline for the blending of hydrogen into the natural gas network. These activities are all part of the rapidly evolving thinking around low carbon hydrogen that is being supported by organisations including Midlands Engine, Midlands Connect, Cenex, the Midlands Energy Hub, the Energy Research Accelerator and Transport for West Midlands.

Private sector investment and investigation

The Midlands Engine has an established consortium of industry partners in the hydrogen technologies sector: the Midlands Hydrogen and Fuel Cell Network. Our region has distinctive capabilities in broad based manufacturing and advanced manufacturing, and sector strengths in energy, the future of mobility and autonomous transport.

The international Hydrogen Council suggests that by 2050 there will be a $2.5 trillion market for hydrogen and fuel cell equipment, providing sustainable employment for more than 30 million people. The UK has established its own Hydrogen Advisory Council to inform the development of hydrogen as a strategic decarbonised carrier, amplified by ambitious targets in the Government’s Ten Point Plan for a Green Industrial Revolution.2

Hydrogen facilities and infrastructure

Significant investment is targeting development of low carbon hydrogen facilities and infrastructure right across the Midlands to enable our region’s national leadership and support our Ten Point Plan for Green Growth. For example, Tyseley Energy Park in Birmingham has now installed a 3MW electrolyser fed by a biomass plant, providing the largest scale green hydrogen for hydrogen-powered buses. The facility is presently exploring scaling up hydrogen production to cater for several hundred trucks, with a 35 MW plant with 350 MWh of storage. Plus, the University of Birmingham in collaboration with Porterbrook has developed the first hydrogen-powered train in the UK, as part of the HydroFLEX project, and is now working to retrofit old diesel rollingstock.

AIMS

- Reduce greenhouse gas emissions
- Capitalise on regional, world-leading hydrogen expertise
- Reduce energy costs and imports
- Improve energy security
- Create high-value jobs
- Increase public and private investment opportunities
- Strengthen regional leadership in transport, logistics and heating sectors

2. Prime Minister’s Office, 10 Downing Street and The Rt Hon Boris Johnson MP, ‘PM outlines his Ten Point Plan for a Green Industrial Revolution for 250,000 jobs’, [online] Available at: https://www.gov.uk/government/news/jm-outlines-his-ten-point-plan-for-a-green-in-
   dustrial-revolution-for-250000-jobs (Accessed: March 2021)
1. Establish a Midlands Engine Hydrogen Network and develop a Midlands Engine Hydrogen Technologies Strategy
   Enabling our region to:
   - Establish a strong regional voice and articulate / evidence current and future economic growth potential across our region.
   - Define and demonstrate a timeline for the regional hydrogen technologies manufacturing USP.
   - Identify and design interventions to overcome barriers to sector growth.
   - Create a regional industry platform around the core supply chain clusters to encourage strategic investments.

2. Advocate for a major hydrogen freight and logistics demonstrator linked to our region’s two Freeports
   Positioning the Midlands Engine as a significant contributor in the transition to hydrogen – leading in hydrogen technologies. Build on our region’s leading role as a national logistics hub and create demand for the development of refuelling infrastructure, grow market confidence in hydrogen-fuelled heavy goods vehicles, and catalyse the market for the hydrogen truck manufacturing sector.

   By including the public sector and other major organisations with requirements at scale for alternative fuels (public transport, refuse collection vehicles and service vehicles) and linking to major logistics infrastructure and manufacturers, we will grow with pace and scale, with appropriately leveraged Government funding and wider investment.

### CASE STUDIES

#### H2GEAR - INTELLIGENT ENERGY

Intelligent Energy, a Loughborough-based fuel cell engineering company, has been selected to develop its leading lightweight fuel cell modules for aerospace as part of the H2GEAR programme. As well as developing the next generation of fuel cell technology, this programme supports the growth of manufacturing in the East Midlands. Intelligent Energy is planning to increase its manufacturing capability with a new state-of-the-art Gigafactory facility in the region, positioning the East Midlands as a centre of hydrogen fuel cell manufacturing in the UK.

#### HYDEPLOY AT KEELE

HyDeploy at Keele is the first stage of a three-stage pioneering hydrogen energy programme and is the first project in the UK to inject hydrogen into a natural gas network. This groundbreaking live demonstration of hydrogen in homes aims to prove that blending up to 20% volume of hydrogen with natural gas is a safe and greener alternative to the gas we use now and provides reduced energy costs for consumers without them having to change their appliances.

### IMPACT POTENTIAL

- **£3.3 BILLION** Economic
- **0.75 MtCO$_2$** Carbon
- **14,000 JOBS** Sustainable development goals

According to the UK Hydrogen Task Force, scaling up hydrogen solutions could unlock £3.3 billion in GVA and support 14,000 jobs by 2035.

The Humber is a key area for low carbon freight facilities in the Clean Maritime Plan. The maritime sector is set to decrease GHG emissions by 50% in 2050 (compared to 2008). This would reduce UK’s emissions by 0.75 MtCO$_2$ per annum (1.3% of 2018 emissions).

By identifying the opportunities for hydrogen we can provide clean energy (SDG7), innovation and growth (SDGs 8 and 9).

Image courtesy of Keele University

“"The Midlands is the heart of the UK automotive and logistics industry. It is the ideal place to develop and demonstrate hydrogen heavy duty vehicles and green hydrogen refuelling infrastructure.”

Robert Evans, CEO, Cenex
CLEAN ENERGY
Sustainable energy generation and storage

The way we generate and store energy is at the heart of our region's path to net zero. The Midlands has phenomenal capability in renewable energy, bio-energy and energy storage, and ambitious plans to grow this sector. We will support our region and people to move away from fossil fuels, securing the renewable, sustainable and reliable sources of power we need for future economic prosperity and unlocking major new opportunities for business and industry.

AIMS
- Reduce greenhouse gas emissions
- Coordinate development of energy systems
- Reduce energy costs and imports
- Improve energy security
- Create high-value jobs
- Increase regional innovation

OPPORTUNITY
Currently only 37% of the electricity generated in the UK comes from renewable sources.\(^1\) Electricity demand is projected to double by 2050 and this, combined with national low carbon targets, means a four-fold increase in clean electricity generation is needed.\(^2\)

In the Midlands, this provides economic growth opportunities through the development of a range of initiatives including:

► Renewable energy generation and storage
The Midlands consumes 16% of Great Britain’s electricity\(^3\) and we have 19% of England’s total renewable energy generation and there is an opportunity for the Midlands to play a more significant role in the future of our energy systems. For example, the development of ABLE Marine Energy Park (AMEP) in Lincolnshire and the completion of Hornsea Two, the biggest and best value offshore wind farm in the world, provides a unique facility that can be integrated into wider strategic planning.

The Midlands is also home to a number of energy sites that have either already or are about to be decommissioned as the use of coal is phased out. This will result in a loss of generating capacity but will also create a number of major sites already linked to the energy network that could be repurposed for 21st century low carbon energy projects such as the Ratcliffe-on-Soar power station. Future opportunities include developing large-scale onshore wind, anaerobic digestion, geothermal and mine water heat recovery.

► Nuclear energy
The UK Government’s Ten Point Plan for a Green Industrial Revolution prioritises small-scale nuclear energy generation and there is an opportunity for the Midlands to play a more significant role in this. In particular, opportunities exist linked to the development and deployment of Small Modular Reactors (SMR) and nuclear fusion, through the Spherical Tokamak for Energy Production (STEP) programme which is currently considering two Nottinghamshire sites, among others across the country, to construct a prototype fusion powerplant. Our region already hosts important components of the UK’s nuclear skills base, in particular with Rolls-Royce, the project lead for the SMR programme, and a branch of the Nuclear Advanced Manufacturing Research Centre, NAMRC, both located in Derby.

\(^1\) Friends of the Earth, ‘Renewable energy in the UK’, [online]. Available at: https://friendsoftheearth.uk/climate/renewable-energy-uk-how-wind-wave-and-sun-will-power-uk (Accessed: May 2021)
\(^5\) ibid
TEN POINT PLAN FOR GREEN GROWTH IN THE MIDLANDS ENGINE 2021

1. Ensure the continued growth and jobs creation in the renewable manufacturing sector
   Working with local and national Government to accelerate and scale emerging and fledgling industrial sectors in low carbon, such as heating and transport. We will also promote the success of offshore wind in the Humber estuary and seek to expand investment in onshore wind, anaerobic digestion and solar energy.

2. Enable widespread roll out of renewable energy generation with the BEIS-funded Midlands Energy Hub
   Develop plans for growing and leveraging joint ventures for public/private partnerships in energy projects - where these can grow supply chains and enable private sector investment, delivering economic growth and regional skills. Work will build on the Midlands Energy Hub’s “Establishing public-private Joint Ventures and partnerships for investment in and delivery of energy schemes” goals. This will enhance focus, and grow capacity and efficiency in our implementation of renewables and low carbon technology programmes and investments.

3. Enable the scaling up of regional nuclear research and generation activity
   Advocating for investment and supporting the use of Midlands-based sites for energy generation and research activities. We will commission a review of current infrastructure to understand and identify existing facilities, expertise and capacity as well as opportunities for further growth.

IMPACT POTENTIAL

£369 MILLION

4.2 MtCO₂

(7.3% OF 2018 EMISSIONS) BY 2030

3,000 JOBS

Sustainable development goals

Providing clean energy (SDG7) will spur economic growth (SDG8) and reduce poverty (SDG1) and address climate change (SDG13).

CASE STUDIES

ABLE MARINE ENERGY PARK

Situated in the widest part of the Humber Estuary, the ABLE Marine Energy Park will be a bespoke port facility for the renewable energy sector, particularly offshore wind, representing a £450 million investment by ABLE. It is designed specifically for the marine renewables sector providing a multi-user facility for the manufacture, storage, assembly and deployment of next generation offshore wind turbines and their associated supply chain(s), all in the heart of the largest offshore wind market in the world.

DISCOVER THE PROJECT

NUCLEAR ADVANCED MANUFACTURING RESEARCH CENTRE MIDLANDS

Nuclear AMRC Midlands is a new industrial R&D centre at Infinity Park, Derby, providing facilities for manufacturers to develop technology demonstrators and test ideas. The centre is currently working with local partners to develop a £20 million bespoke research facility focusing on later-stage development in technology areas which will deliver the maximum impact for the UK’s nuclear supply chain, creating 70 jobs and helping to reboot the local economy after the Covid-19 crisis.

DISCOVER THE PROJECT

ECONOMIC

By 2030 employment in the offshore sector in the Midlands could increase ten-fold across management, technical and skilled manual roles. Energy storage and smart energy management will be crucial in integrating it to our system. The logical location for this will be on our coastline where we already have the biggest offshore wind farm.

SUSTAINABLE

Solar power on homes in the Midlands alone has the ability to reduce GHG emissions by 187ktCO₂. The UK’s offshore wind fleet is due to more than treble in size by 2030. Based on existing deployment, this could mean that over 3 million homes in the Midlands are powered by offshore wind by 2030, reducing emissions by 4.2MtCO₂.

DISCOVER THE GOALS

“...The Humber will be critical in delivering the Green Agenda and AMEP will play a key role. As the big space in the right place it will provide bespoke facilities for the manufacture and installation of offshore wind components.”

Neil Etherington, Group Development Director, Able UK

INDUSTRY PARTNERS

The co-operative

Central England Co-operative

ENGIE

Kew

Orsted

Penny

Phillips

PLB

REM

Siemens

UK

Liquid Gas

McAuley

Nuclear AMRC
7 SMART ENERGY  
Develop digital infrastructure to decarbonise

Over the next decade, digitising the energy system will transform the way we generate, use and profit from energy. The Midlands has rapidly developed capability in digital infrastructure, particularly in transport, manufacturing and healthcare. By applying the same leadership and ingenuity to energy data and digitalisation, including smart grids and AI, we will improve efficiency, increase consumer value, unlock business potential, future-proof power supply and effectively decarbonise.

AIMS
- Deliver smart energy systems
- Provide technology flexibility
- Optimise energy supply
- Meet future energy demand
- Create opportunities for businesses offering energy services
- Increase green consumer choice
- Enhance resilience of green infrastructure

Digital technology, from smart meters to supercomputers, weather modelling and AI, could deliver nearly one third of the carbon emissions reduction required by 2030.1 Smart grids offer considerable opportunity for energy decarbonisation; linking renewable power to vehicle to grid (V2G) and using AI to optimise supply across the different energy types results in a more sustainable energy system. By adopting a smart grid approach in our region, we could significantly cut emissions, address fuel poverty and reduce consumer bills.

► Building on sector-leading projects
The Midlands Engine Partnership is a centre of excellence in digital innovation, home to the first UK multi city 5G testbed and the worlds first 5G connected forest - world famous Sherwood Forest. We are also the first region in England to have a digital and connectivity map, allowing us to shape policy, target investment and plan strategically.

Digital will play a pivotal role in the green industrial revolution and through our pan regional Digital Strategy Board we will continue to bring together digital experts, technology firms and public sector influencers to: accelerate infrastructure role out; remove barriers to digitalisation; and ensure connectivity continues to underpin regional competitiveness and community prosperity for every part of our region. Plus, we will continue to build on our sector-leading projects, which include:

- The Black Country, home to over 3,000 energy-intense manufacturing businesses, is aiming to deliver the world's first zero carbon industrial cluster through a range of measures including cost-efficient energy infrastructure and greater resource efficiency.
- In Rugeley, the West Midlands Combined Authority is involved in a zero carbon scheme to deliver a Smart Local Energy System following the decommissioning of the local coal power station.
- Keele University has developed the Smart Energy Network Demonstrator, using its campus to establish an intelligent energy system that can optimise low-cost and low carbon energy use.
- Green Smart Community Integrated Energy Systems (GreenSCIES), is a project in Sandwell looking at a new smart energy grid which channels waste heat generated by industry to heat homes and businesses.

► Private sector opportunities
Effective use of digital technology globally could reduce carbon emissions by 15%. The Midlands is home to organisations such as National Grid and Energy Systems Catapult and a number of nationally distinctive programmes are paving the way for the development of the sector in areas including: Local Area Energy Planning, which proposes new smart measures for local networks to support rising electricity demand from renewable sources; and enhanced data collation, cybersecurity and substation analysis.

► Energy data
Standardisation of energy data and access to energy data are also crucial to the low carbon transition and futureproofing our energy systems. The public sector could play a vital role in becoming a conduit for knowledge and data sharing through partnerships, such as the Midlands Engine. According to the National Infrastructure Commission, integrated digital energy systems could save consumers up to £8 billion a year.2 Better understanding energy usage in our region will lead to more accurate forecasted energy requirements for better planning, and consumer awareness campaigns to change behaviours.

Advocate on behalf of the region for major new initiatives associated with the digital energy sector
Promoting improved smart infrastructure across the region which will involve: piloting smart energy network demonstrations that encompass business, industry and housing; enhancing digitalisation of our regional city energy systems; developing local area energy plans; and ensuring capacity to connect low and zero carbon technology.

Ensure greater data consistency, data sharing and transparency
Working with the Midlands Engine Observatory and the West Midlands Centre for Climate Data, create a regional data network, bringing together local authorities, customers, operators and investors to identify and overcome key barriers and to support the planning and implementation of new projects, of which digitalisation, data capture and transparency are integral components of infrastructure development.

Work in partnership with the Midlands Energy Hub and key stakeholders to evaluate the impact of the Midlands Low Carbon Sector Study
With a view to providing an updated evidence-base to understand the current state of the Low Carbon Environmental Goods and Services Sector in the Midlands, where support is needed to help grow this sector, and the role the sector can play in driving low carbon recovery from Covid-19.

Ensure continued investment in the Midlands Engine Partnership’s digital connectivity and digital competitiveness goals
To enable infrastructure applications to be delivered with greatest impact and to provide the infrastructure within which an ecosystem can grow for green energy and smart energy application roll out.

The National Infrastructure Commission estimates that smart energy management can save Midlands energy consumers >£1 billion a year by 2030. This will enable consumers to make green choices and adapt to changes in future demand, create more opportunities for businesses offering energy services, and reduce fuel poverty.

Government research shows we can make energy savings of more than 10% in the commercial sector, just by managing energy smartly. This would equate to a Midlands GHG emissions saving today of 250ktCO₂ (0.5% of 2018 emissions) and £85m per annum.

By embracing the smart energy revolution we can generate economic growth (SDG8) and increase our ability to use clean energy (SDG7), whilst reducing bills and increasing competitiveness (SDG1).

Siemens have demonstrated potential cost-effective decarbonisation through more effective utilisation and coordination of current and planned generation assets. Siemens experts worked with a wide range of local stakeholders using bespoke digital modelling tools, based on real-time data, and have shown how a more coordinated net zero system could supply up to 50,000 users with carbon neutral electricity or supply Birmingham airport with green electricity, heating and cooling.

E.ON is the energy consultant for GreenSCIIES, providing advisory and technical oversight for a revolutionary low carbon smart energy grid in the West Midlands. This smart energy grid will harness waste heat from office buildings, data centres and the public transport network and share it locally as a lower impact and lower cost transport, power and heat source. It will provide an answer to the challenges of powering inner cities of the future and combating the climate crisis, and transforming lives, homes and businesses into sustainable energy districts.

A drive to grow skills, investment and jobs in smart technologies is crucial in delivering net zero, for both homeowners and to large-scale industry alike. We need a smarter, greener economy for the Midlands and the UK.

Dr Nina Skorupska CBE, Chief Executive, Association for Renewable Energy and Clean Technology (REA)
ENABLERS

8 GREEN INNOVATION
Green design and making for economic growth

9 ENERGY WORKFORCE
Highly skilled, inclusive and diverse

10 GREEN FINANCE
Invest and enable to unlock opportunity
The shift to low carbon is a huge opportunity for business, industry and job creation in the Midlands. We will foster a rich innovation environment, supporting our world-leading inventors, entrepreneurs, leaders and researchers to develop and commercialise new ideas for the economic good of our region and nation, and for wider societal benefit. By investing now in next generation manufacturing processes and resilient supply chains, we can minimise environmental impact and resource use.

**OPPORTUNITY**

The Midlands is the undisputed manufacturing heartland of the UK. Of the 2.7 million people employed countrywide in this sector, almost 556,000 are based in the Midlands - equal to 12.5% of our region's total employment and a much higher percentage than England's average of 7.9%. We export around £50 billion worth of goods each year and 86% of this is manufactured goods, in both cases more than any other region.1

**Leadership in green making**

Such renowned leadership in manufacturing represents a corresponding opportunity for leadership in low carbon manufacturing. The Midlands is home to some of the UK’s most innovative businesses in this area including major global names and established SMEs, as well as a nationally significant transport and mobility cluster, and all have been swift to develop new collaborative, electric, low carbon transport systems, which can effectively accommodate highly efficient batteries and new vehicle construction.

Strong, extensive supply chains across our region are driving new low carbon industries from heating and green construction, to electric transport and carbon capture storage. We can call on expertise from some of the best R&D-focused universities in the UK, as well as the Energy Research Accelerator which continues to develop the next generation of energy leaders. Plus, we are supported by the UK’s Catapult network which offers a platform for developing new collaborations on decarbonisation. The Midlands is home to six Catapult bases and centres.2 At the heart of ‘making’ is the Manufacturing Technology Centre in Coventry, which continues to inspire UK manufacturing on the global stage. Based in Birmingham and Derby, Energy Systems Catapult supports companies to develop products and services in relation to energy systems, covering electricity, heat and combustible gases. High Value Manufacturing Catapult supports companies to develop and manufacture, and drive train development.

Midlands innovation stakeholders include large firms such as Jaguar Land Rover, that recently announced a new strategy to go all-electric by 2025. Our region’s SMEs are also responding to the low carbon challenge in ever-more creative ways: making the world’s first serviceable, upgradeable and recyclable lithium batteries, for example, and offering a flexible version of technology that could effectively accomplish negative carbon from multiple feedstocks.

**AIMS**

- Reduce greenhouse gas emissions
- Support investment in decarbonisation
- Reduce energy costs
- Drive economic growth
- Establish the UK and Midlands as a centre of excellence
- Futureproof business strategies

**OPPORTUNITY**

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**Powerhouse for research and development**

As identified by UKRI, the Midlands has the greatest geographical concentration of R&D infrastructures in the energy sector across the UK. This provides the most significant national potential to drive innovation in the development of low carbon systems and it is a leading position that the Midlands Engine will reinforce.

R&D programmes are already focusing on areas such as battery developments, software for connected and autonomous vehicle-related analysis, sustainable energy sources and fuel cell technologies. Our region has pioneered hydrogen for heat through the HyDeploy programme, established a template for the integration of smart energy systems in new building housing at the Trent Basin and pioneered low carbon transport such as hydrogen-powered trains. Rugeley power station stands as a national benchmark in how to transition from high to low carbon, and support community development. Plus, our region’s strength in wind make this key low carbon area worth £4.4 billion through activities such as control systems development and manufacture, and drive train development.

**Supporting innovation**

We will continue to foster our region’s rich innovation environment. A combination of a diverse R&D landscape coupled with input from a wide range of industries and supported by our region’s Catapults will enable our green recovery and create a mutually beneficial competitive advantage for the region. This will bring affordable energy solutions to consumers - stimulating growth in the Midlands and the rest of the UK.3


Energy Systems Catapult was set up to accelerate the transformation of the UK’s energy system and ensure UK businesses and consumers capture the opportunities of clean growth. The organisation works with innovators from companies of all sizes to develop, test and scale their ideas. Projects in the Midlands such as the Innovator Challenge support our region’s SMEs to develop and commercialise products and services to enable low carbon solutions.

**Uniper**

Uniper is exploring a range of lower carbon energy projects, including the development of an energy from waste facility at its Ratcliffe-on-Soar power station site before the coal-fired power station closes in line with government policy by 1st October 2025. Known as the East Midlands Energy Re-Generation (EMERGE) Centre, the proposed facility would help meet the UK’s ambitions to reduce waste and manage its impact on the environment, reducing CO₂ emissions, and meet landfill diversion targets. EMERGE is part of a wider vision for Ratcliffe to move towards becoming a zero carbon technology and energy hub for the East Midlands.

**The Midlands is a bedrock of manufacturing, home to the first industrial revolution and now well placed to lead the green revolution. Industry is innovating to create new technologies, jobs for the future and achieving net zero.”**

Charlotte Horobin, Region Director Midlands and East of England, Make UK
ENERGY WORKFORCE
Highly skilled, inclusive and diverse

The low carbon energy transformation cannot happen without the right skills. From apprenticeships to PhDs and workplace learning, the scale of upskilling and reskilling required is enormous. One in four of all England’s jobs in energy are in the Midlands and key energy regional priorities, such as retrofitting buildings, heating, manufacturing and automotive, will place huge demands on skills. We will invest now to build tomorrow’s energy workforce with diversity at its heart, not just for our region but for the whole UK low carbon sector.

AIMS

- Create high-value jobs
- Join up reskilling programmes by building sector networks
- Drive economic growth
- Support the transition to net zero

OCCURRPTY

There is opportunity for our region to have a better-paid workforce, developing and implementing solutions for the low carbon transition and beyond.

The transformation to sustainable energy systems requires new skills growth, upskilling and reskilling in order to provide this growing sector with carbon literate expertise and leadership. We must keep pace with emerging skills requirements as technologies shift. Our region’s large scale coal stations have long been responsible for meeting a significant proportion of UK power generation. The transition from carbon intensive to zero carbon will provide a valuable opportunity to reskill the existing workforce and create high-value new jobs to meet the low carbon energy skills needs of the future.

Across the Midlands, there could be an estimated 194,000 jobs working in low carbon sectors by 2050.1 Key to this in the Midlands are the retrofitting of homes and buildings and the heat and automotive sectors. There is also an opportunity to focus on SMEs and their business needs, since SMEs make up 99% of the regional economy.2

As technologies develop, skills requirements will change and we must adapt quickly and flexibly in our skills provision. The region’s skills providers must work collaboratively, building on our world class Higher Education and Further Education network, to provide progressive pathways to learners at all stages of their careers. Having a curriculum focused on net zero ambitions is key and it will be important to provide opportunities and facilities to learn on the job, trialling new technologies and hands-on experience at large scale demonstration sites across the region.

The Midlands is already home to green skills assets:

- The District Heat Academy at Stoke-on-Trent College will meet the skills needs over the coming decades of the Stoke-on-Trent District Heat Network infrastructure project.
- City of Wolverhampton College is working in partnership with the West Midlands Combined Authority and Duplex Business Services (DBS) to deliver a range of programmes in electric vehicle and green technologies to address this skills gap, providing our local community with the knowledge, skills and qualifications needed to access these new job opportunities.
- WMG Academy Trust operates WMG Academy

Coventry and WMG Academy Solihull, with the aim of encouraging young people to study science, technology, engineering and maths. The Academy is supported by a number of industry partners including Aston Martin, Balfour Beatty, Jaguar Land Rover, National Grid, Oleo, Rolls-Royce, Tata Motors and Vinci.

- The Unipier Engineering Academy offers innovative, accredited and engaging technical training programmes for the engineering, manufacturing and energy sectors, including apprenticeships and bespoke training solutions.
- The Association of School and College Leaders (ASCL), based in Leicester, is the leading professional association and trade union for all school and college leaders. They support and represent more than 20,500 school and college leaders of primary, secondary and post-16 education from across the UK and will be instrumental in engaging pupils in Green Growth topics.
- The East Midlands Development Corporation is working with partners to provide continuous pathways for learning across net zero priorities and aims to use their physical development sites as live learning environments.

The energy sector remains one of the least diverse sectors, both in the UK and internationally. This poses a significant risk to the future workforce, in terms of limiting creativity and restricting access to talent, at a time when both will be in high demand to meet the needs of the sector in rising to the challenge of net zero carbon. Diversity is also important in addressing the socio-technical challenges that the UK faces; a diverse team has a better understanding of how change will impact a wider sector of society, along with a broader set of perspectives to approach a problem. In the Midlands we plan to develop reskilling programmes with diversity and inclusion at their heart.

**CASE STUDIES**

**CATCH - INDUSTRIAL BUSINESS SUPPORT FACILITY**

CATCH is an industry-led partnership that supports the process, energy, engineering and renewables industries in Yorkshire and the Humber. It has a number of member networks, including on industrial decarbonisation and hydrogen, as well as training packages for people working in the sector in the Humber region. CATCH operates the world renowned £12 million training facility in North East Lincolnshire and boasts impressive facilities including a live three-storey process plant, as well as engineering workshops and classrooms.

**NEW MODEL INSTITUTE FOR TECHNOLOGY AND ENGINEERING**

NMITE is a new higher education institution in Hereford which focuses on engineering subjects. Although still a relatively small sector, environmental technologies represents one of the fastest growing sectors in the Marches. NMITE as an organisation has invested in its own green solutions including solar panels and an electric-only vehicle policy and their engineering team is passionate about designing energy efficient, low carbon products that are fit for today’s purpose without compromising our future.

**IMPACT POTENTIAL**

- **£10.7 BILLION**
  - Economic
  - There are expected to be 700,000 more jobs in the UK low carbon sector by 2030, of which nearly 100,000 would be in the Midlands. We need the workforce to undertake them. This is particularly important as jobs in the low carbon sectors are paid almost 23% (~£6,500 more per annum) more than the average wage.

- **5.5 MtCO₂**
  - Carbon
  - The conversion of gas boiler installers towards low carbon alternatives will enable the reduction of 5.5MtCO₂ (10% of 2018 carbon emissions) domestic emissions per annum by 2041.

- **94,000 JOBS**
  - Sustainable development goals
  - Enabling the workforce to make the change to low carbon industries will provide secure and productive employment and decent work for all (SDG8) and provide more clean energy (SDG7).

**DISCOVER THE GOALS**

**PARTNERS**

“Partnerships between industrial training providers, such as Uniper’s Engineering Academy and universities, schools and colleges, are essential to delivering the green skills needed to enable a decarbonised future.”

Nick Booth, Head of Engineering Academy, Uniper
Investment in our region’s net zero energy infrastructure, including wind and solar, low carbon heating, greener buildings and transport, will require access to public and private sector finance. In the Midlands, we are trialling new models of sustainable finance to unlock green sector funding. By collaborating with the finance sector, we will maximise investment opportunities and ensure fair distribution of finance, supporting our region’s world-leading innovation and dynamic SME community.

**AIMS**
- Unlock innovation and decarbonisation initiatives
- Drive economic growth
- Fund nature’s recovery
- Fund net zero energy infrastructure
- Aggregate investment opportunities
- Facilitate deployment of projects at scale

In 2021, two key initiatives are driving green projects allowing deployment at scale.

- **Investment opportunities**
  - Hydrogen freight and logistics demonstration and scale-up programmes
  - Implementation of next generation nuclear
  - Expansion of low carbon transport and infrastructure
  - Business support programmes to replace existing ERDF programmes
  - Nature recovery network projects and nature-based solutions
  - Natural capital development
  - Blue and green infrastructure programmes
  - Support for the development of a heat manufacturing and services sector

To support innovation and the SME community, aggregating regional innovation, as opposed to a dispersed innovation base, will also provide a more attractive proposition to the investment community. Such a scale is required to increasingly attract investors and demonstrate competitiveness and capability compared to other areas such as the golden triangle of Oxford, Cambridge and London.

**Opportunity**
New approaches for financing projects, such as green bonds, will give the Midlands Engine an opportunity to unlock financing of infrastructure projects allowing deployment at scale.

In 2021, two key initiatives are driving green finance and investment and we expect continued growth in this market:

- The new UK Infrastructure Bank will be allotted £15 billion to fund at least £40 billion worth of public and private projects, beginning in spring 2021.
- £15 billion will be deployed into green bonds, including for retail investors, to help fund the country’s transition to net zero by 2050.

The Midlands has considerable opportunities to invest in the net zero transition. Further public and private investment will support an already thriving environment to achieve greatest impact and more profitable collaboration, accelerating our region’s leadership in energy and transport infrastructure development, and our path to zero and low carbon innovation.

Analysis linked to the levelling up agenda highlights that the Midlands has received significantly less public sector funding in a range of areas, including infrastructure, than other regions, particularly London and the South East. There is now significant political interest in reversing this trend. Similarly, regional investment in R&D has been recently identified as being imbalanced across the UK, with the Midlands receiving the lowest public sector investment in the UK.

The growing interest from the finance sector is an opportunity to work in partnership to develop investment programmes that will deliver new green infrastructure, from low carbon generation through to greener buildings and homes. There is huge potential to develop programmes that are attractive to investors, while ensuring that some less attractive but essential propositions also benefit to avoid cherry picking. Initiatives such as the Green Entrepreneurs Programme, which is being delivered by the University of Derby in partnership with Derbyshire County Council, provide funding for businesses interested in developing and investing in green energy and carbon reduction schemes. There will be a need for the public and private sectors to work hand in hand to maximise the potential of public investment.

**Regional Opportunities**
- **Expansion of underpinning research and innovation**
- **Duplicate the successful development of the offshore wind sector in the Humber region to shape investment into renewable generation using onshore wind and solar**
- **The next phase of heat retrofit and prototyping projects and low carbon heating finance**
- **The transition of our coal power stations**
- **Decarbonisation of our industry and manufacturing base**
- **Building green homes at scale**
- **Developing the Freeport around East Midlands Airport integrating low carbon solutions.**

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TEN POINT PLAN FOR GREEN GROWTH IN THE MIDLANDS ENGINE 2021

**IMPACT POTENTIAL**

**NEW MODELS GREEN FINANCE UNLOCKING FUNDING TO MIDLANDS RESIDENTS**

**Economic**
- Based on the UK R&D investment target, private sector investment in R&D in the Midlands will need to increase by £1.9 billion annually by 2027. We will need to work with Government and the finance industry to develop models of green finance to unlock funding from both the public and private sector to support Green Growth.

**Carbon**
- Meeting the Net Zero target will require unprecedented levels of investment, and therefore green finance is central to meeting our ambitions. For example, home improvement loans aimed at owner-occupiers in the Midlands (able-to-pay market) to install low carbon heating and energy efficiency could lead to 4.7 MtCO₂ reductions in 2040 (8.3% of 2018 emissions).

**Sustainable development goals**
- Green finance will unlock economic growth (SDG8), develop the infrastructure we need (SDG9) and accelerate action on climate change (SDG13).

**CASE STUDIES**

**BRITISH BUSINESS BANK INVESTMENTS LTD - GREEN FUNDS**

The British Business Bank Investments Ltd unlocks new forms of finance to support small businesses. It has invested in various green-related funds, including €6 million into WHEB’s private equity fund, ‘Green Growth Fund 2’, which has raised €118 million with the balance coming from private sector investors; and investment into the UK Future Technology Fund and Hermes Environmental Innovation Fund which together make up £22 billion of investment capital for important sectors like clean technology and advanced manufacturing.

**DE-CARBONISE PROJECT**

Operating in Derby and Derbyshire, DE-Carbonise offers a comprehensive programme of assistance for SMEs seeking to reduce their carbon emissions in operations, production and supply chain. SMEs access a suite of carbon reduction support including a carbon reduction audit and report; grant funding (between £1,000 and £20,000) to implement carbon reduction recommendations; technical support, consultancy and process improvements from academic teams within Derby University; and cohort-based learning and development for smart manufacturing and sustainable supply chain innovation.

**ACTIONS**

1. **Identify and support expanded and innovative methods of securing investment and raising capital for businesses in the region**
   - Exploring new funding routes and working with partners, together with Government to:
     - Create an investable pipeline of Green projects.
     - Raise funds to invest in projects and enable re-financing out of initial government investment.

2. **Provide rapid, clear routes to funding for regional R&D and innovation**
   - Working with national funding bodies (e.g. BEIS, Innovate UK) to deliver scale of investment and appropriate funding for our region. Work with partners, including local government, to attract investment into incubation and business development facilities for SMEs, accelerating commercialisation.

3. **Explore the creation of a fund to directly support green sector start-ups**
   - With particular attention focused on strategic areas, consider how to optimise links between R&D funding and investment in industry, to attract venture capital, start-up entrepreneurs and investors into our region to grow a larger and dynamic start-up community.

4. **Advocate on behalf of the region for the work of the Midlands Energy Hub**
   - Work to match developing projects through the Midlands Energy Hub with green investors and other key stakeholders.
   - Champion achievements and advocate for contiguous investment programmes, linked to a clear investment pipeline, around which long term economic growth and supply chain resilience can be enabled.

**ECONOMIC BASED ON THE UK R&D INVESTMENT TARGET, PRIVATE SECTOR INVESTMENT IN R&D IN THE MIDLANDS WILL NEED TO INCREASE BY £1.9 BILLION ANNUALLY BY 2027. WE WILL NEED TO WORK WITH GOVERNMENT AND THE FINANCE INDUSTRY TO DEVELOP MODELS OF GREEN FINANCE TO UNLOCK FUNDING FROM BOTH THE PUBLIC AND PRIVATE SECTOR TO SUPPORT GREEN GROWTH.**

**CARBON MEETING THE NET ZERO TARGET WILL REQUIRE UNPRECEDEDENT LEVELS OF INVESTMENT, AND THEREFORE GREEN FINANCE IS CENTRAL TO MEETING OUR AMBITIONS. FOR EXAMPLE, HOME IMPROVEMENT LOANS AIMED AT OWNER-OCCUPIERS IN THE MIDLANDS (ABLE-TO-PAY MARKET) TO INSTALL LOW CARBON HEATING AND ENERGY EFFICIENCY COULD LEAD TO 4.7 MtCO₂ REDUCTIONS IN 2040 (8.3% OF 2018 EMISSIONS).**

**SUSTAINABLE DEVELOPMENT GOALS GREEN FINANCE WILL UNLOCK ECONOMIC GROWTH (SDG8), DEVELOP THE INFRASTRUCTURE WE NEED (SDG9) AND ACCELERATE ACTION ON CLIMATE CHANGE (SDG13).**

**8.2% CO₂ EMISSIONS REDUCED VIA NEW HOME EFFICIENCY**

**NEW MODELS GREEN FINANCE UNLOCKING FUNDING TO MIDLANDS RESIDENTS**

**4.7 MtCO₂ PER ANNUM (8.3% OF 2018 EMISSIONS)**

**SUSTAINABLE DEVELOPMENT GOALS**

**Green finance will unlock economic growth (SDG8), develop the infrastructure we need (SDG9) and accelerate action on climate change (SDG13).**

**8.3% CO₂ EMISSIONS REDUCED VIA NEW HOME EFFICIENCY**

**NEW MODELS GREEN FINANCE UNLOCKING FUNDING TO MIDLANDS RESIDENTS**

**4.7 MtCO₂ PER ANNUM (8.3% OF 2018 EMISSIONS)**

**CASE STUDIES**

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**IMPACT POTENTIAL**

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**Economic**
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**Sustainable development goals**
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MIDLANDS ENGINE PARTNERSHIP ACTION FOR GREEN GROWTH

1. GREEN BUILDINGS
Improve energy efficiency and decarbonise heat

1. Develop a pan-regional zero carbon homes route map
2. Work with partners to undertake a regional study on low carbon buildings and heat
3. Work in partnership to secure the establishment of a National Centre for Decarbonisation of Heat in the Midlands

2. NET ZERO TRANSPORT
Lead the transition to reduce emissions

1. Map and futureproof our region’s charging and refuelling infrastructure and connect key stakeholders to foster a coordinated charging and refuelling infrastructure strategy
2. Develop a regional BEV and charging and refuelling skills strategy
3. Develop and promote the Midlands Engine as a centre of excellence for BEVs and charging and refuelling technologies
4. Work through partnership to enable energy and transport infrastructure plan integration across our region

3. NATURE’S RECOVERY
Protected and productive natural assets

1. Establish and convene a Midlands Engine Natural Capital taskforce
2. Develop the Midlands Forest vision with National Forest, Woodland Trust and other partners, expanding forestry and woodland cover across the Midlands
3. Work to shape policies and regional approaches which can significantly increase space for nature and carbon sinks
4. Advocate for the Midlands to be at the forefront of delivering key nature conservation policies

4. BLUE-GREEN PLACES
Where people and nature flourish

1. Convene and advocate for cross-sector and multi-agency collaboration at scale for nature based solutions and catchment scale cooperation
2. Work with Government and partners to deliver proposals for the East Midlands Development Corporation ‘Masterplan for Net Zero’
3. Advocate on behalf of the region for connected towns and cities through the creation of natural and active travel corridors

5. LOW CARBON HYDROGEN
Pioneer, commercialise and deliver hydrogen solutions

1. Establish a Midlands Engine Hydrogen Network and develop a Midlands Engine Hydrogen Technologies Strategy
2. Advocate for a major hydrogen freight and logistics demonstrator linked to our region’s two Freeports
3. Work with partners to undertake a regional study on low carbon heating and heat
4. Advocate on behalf of the region for the work of the Midlands Engine Hydrogen Technologies Strategy
5. Establish a Midlands Engine Hydrogen Network and develop a Midlands Engine Hydrogen Technologies Strategy
6. Convene a steering group to support the mapping and development of green and low carbon manufacturing and supply chains across the Midlands
7. Advocate for a major hydrogen freight and logistics demonstrator linked to our region’s two Freeports

6. CLEAN ENERGY
Sustainable energy generation and storage

1. Ensure the continued growth and jobs creation in the renewable manufacturing sector
2. Enable widespread roll out of renewable energy generation with the BEIS-funded Midlands Energy Hub
3. Enable the scaling up of regional nuclear research and generation activity

7. SMART ENERGY
Develop digital infrastructure to decarbonise

1. Advocate on behalf of the region for major new initiatives associated with the digital energy sector
2. Ensure greater data consistency, data sharing and transparency
3. Work in partnership with the Midlands Energy Hub and key stakeholders to evaluate the impact of the Midlands Low Carbon Sector Study
4. Ensure continued investment in the Midlands Engine Partnership’s digital connectivity and digital competitiveness goals

8. GREEN INNOVATION
Green design and making for economic growth

1. Develop an innovation pathway to promote sustainable technologies and enable the development of system level demonstrators
2. Convene a steering group to support the mapping and development of green and low carbon manufacturing and supply chains across the Midlands
3. Review rapidly the Midlands energy R&D infrastructure to support commercial development and investment
4. Work with partners, including Sustainability West Midlands, to examine pan-regional opportunities for circular economies

9. ENERGY WORKFORCE
Highly skilled, inclusive and diverse

1. Bring together skills leads from across the region to deliver a Green Growth skills supply and demand assessment, responding to a dynamic sector
2. Advocate for funding and investment to support new low carbon skills programmes
3. Develop a programme to support the growth of a diverse and inclusive Green Growth and energy workforce

10. GREEN FINANCE
Invest and enable to unlock opportunity

1. Identify and support expanded and innovative methods of securing investment and raising capital for businesses in the region
2. Provide rapid, clear routes to funding for regional R&D and innovation
3. Explore the creation of a fund to directly support green sector start-ups
4. Advocate on behalf of the region for the work of the Midlands Energy Hub

UNDERPINNING DELIVERY
(1) Empowered partnership; strong regional voice
(2) Evidence and Intelligence Midlands Engine Observatory
(3) Delivering impact through a campaign of regional, national and international events
(4) Leveraging resource, funding and opportunities to engage with the development of Government policy
**GOVERNANCE OVERVIEW**

**We have developed our Ten Point Plan in partnership - and we will implement it in partnership**

The Midlands Engine Partnership brings together our region’s Local Authorities and Combined Authority, Local Enterprise Partnerships, universities, NGOs, and over 800,000 businesses.

Our Partnership has a distributed leadership and distributed delivery model at its heart and as we take forward our Ten Point Plan to mobilisation, this shared approach will continue. Delivery will be co-ordinated by the Midlands Engine Green Growth Board, which will act as a vehicle through which oversight will be brought, actions can be tracked and partner progress can be fed back. The Board will lead the future evaluation of our Plan too – ensuring we achieve the goals set in partnership, and we remain ambitious in future refreshes of our Plan over time.

The Board brings together leaders and experts from right across our Partnership, supported by specialist panels as and when additional technical expertise is required. The Midlands Engine Green Growth Board sits within our wider, existing Partnership structure, benefiting from operational oversight and leadership from the Midlands Engine Operating Board and strategic guidance from our Midlands Engine Executive Board.

“We are collaborating with other Green Growth Partners to create our plans in support of actions outlined in this Plan. We see huge potential for creating low carbon hydrogen production clusters in the Midlands helping to decarbonise homes and businesses. This, in turn, will help support innovation and Green Growth.”

*Sally Brewis, Head Of Regional Development, Cadent Gas Ltd*

“We are delighted to be involved in and support the Midlands Engine Partnership in this Green Growth agenda and look forward to working with colleagues in the mobilisation and delivery of an ambitious Ten Point Plan, a plan that aims to benefit all parts of the Midlands as we accelerate programmes and initiatives to reach net zero.

*Steve Scrimshaw, Vice President, Siemens Energy UK&I*

**Sustainability West Midlands is committed to supporting the Midlands Engine Partnership in the delivery of this Ten Point Plan and facilitating collaboration between cross-sector stakeholders in the low carbon sector. Our network of stakeholders is extensive and regional knowledge comprehensive - we look forward to being a part of the implementation of the actions in the Plan.”

*Anna Bright, Chief Executive, Sustainability West Midlands*

“Businesses in the Midlands are creating a greener, cleaner future for the UK. As momentum builds in delivering a greener economic recovery it’s important for businesses to have access to funding and support especially for low-carbon projects and sustainable business practices. By working together through the Midlands Engine Partnership, with oversight from the Green Growth Board, there’s no doubt that businesses can deliver a low carbon future across the Midlands and the UK.”

*Grant Peggie, Director, UK Funding Team, British Business Bank*

**NEXT STEPS FOR DELIVERY**

Exceptional work in low carbon is already underway across our vast Partnership landscape, making the Midlands a leading location for Green Growth. But the potential for more is phenomenal and this Plan gives us the focus to complement existing partner initiatives, and to co-develop and deliver new innovations and opportunities.

To deliver our Ten Point Plan we will bring together stakeholders from diverse sectors, and commission specialist and technical support where necessary. Work will be driven via clear plans with milestones to ensure that progress is made at pace, overseen by the Green Growth Board and supported by additional panels, working groups and project-specific arrangements as required.

Through the Midlands Engine Partnership, our region’s business leaders, parliamentarians, local government champions, thought leaders, researchers and conservation specialists are working to accelerate action and implementation, together.

Through true collaboration and an incredible shared desire to make things happen, we will act on the wealth of opportunities presented by low carbon to benefit every part of our region.

**ACCELERATED MOBILISATION**

**H2GVMids Demonstrator**

The Midlands is a hive of hydrogen activity, from production and distribution to end-use technology manufacturing. We are also the UK’s logistics hub with 35% of all warehouse space and two Freeports. As such, a range of our region’s private and public sector partners have put forward a joint-bid to develop a hydrogen fuel cell vehicle demonstration of HGV trucks and so drive forward zero emission transport.

**Hydrogen Technologies Strategy**

Hydrogen stands at the forefront of the Government’s ambitious plans for a Green Industrial Revolution. The Midlands Engine is now working with partners to set out our strategy for how we will contribute to UK hydrogen ambitions. We are home to all elements of the hydrogen value chain and have impressive research expertise. Our strategy is setting out our important role in the UK hydrogen landscape.

**Events programme**

Underpinning delivery of our Ten Point Plan will be an impressive 12-month campaign of regional, national and international partner events.
# Timeline for Green Growth Activity

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<tr>
<th>Period</th>
<th>Event Description</th>
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| **JULY 2021**| - Midlands Engine Partner Launch Event: Ten Point Plan for Green Growth  
- Cities and Net Zero - Virtual Panel  
- Unlocking Green Finance Across the Midlands  
- Midlands Engine Hydrogen Technologies Strategy  
- Green Growth Board Launch                                                                                                                   |
| **SUMMER 2021**| - Ten Point Plan for Green Growth in the Midlands Engine Roundtable  
- Green Growth Seminars and Workshops                                                                                                                                                                   |
| **AUTUMN 2021**| - Sector showcases and study visits  
- Showcasing exemplar facilities and projects across the Midlands                                                                                          |
| **SEPTEMBER 2021**| - Decarbonising Industry Event  
- Midlands Engine Observatory Quarterly Economic Briefing - Green Growth                                                                                          |
| **OCTOBER 2021**| - HM Government Global Investment Summit (London)                                                                                                                                                                    |
| **NOVEMBER 2021**| - COP26 Glasgow Summit  
- Young People’s Green Growth Assembly                                                                                                                                                                   |
| **2022**| - Midlands Engine Investment Summit  
- Green Growth Annual Impact Statement  
- Through the Green Growth Board, the Midlands Engine Partnership will review the delivery of our Ten Point Plan and publish the first Green Growth Annual Impact Statement. |