Black Country - *See it in colour*

Black Country Green Growth Plan

Updated appendices

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On behalf of the Black Country LEP Green Growth Working Group.

Executive summary

This Green Growth Plan sets out a strategy and delivery mechanism to generate up to £1 billion of GVA for the Black Country, working largely from existing assets and skills.

Our vision is to position the Black Country as a leading centre for manufacturing and deployment of key technologies and solutions underpinning the growing global low carbon economy. These technologies cut across all sectors, but will have a particular impact in the energy, construction, housing and transport industries.

The approach we propose will also provide immediate benefits to residents of the Black Country in the form of reduced fuel poverty, higher disposable incomes, and improved quality of life.

This vision will create skilled jobs and wealth for the people of the Black Country. It will be achieved by:

1. A focused approach to two specific, high value segments of the green economy
2. Building on existing Black Country assets and strengths
3. Working with local partners and across wider LEP focus areas and themes: in particular using LEP support to catalyse and facilitate LA-led projects in this area
4. Emphasising the development of local leadership and delivery capabilities
5. An integrating theme and headline project – the People's Power Station, establishing the Black Country as a national and international leader in smart energy.

The targeted market segments already represent more than £1 trillion of global demand per year. The scale of demand for these products and services is projected to more than double by 2050.

The Black Country has unique assets in its location, the nature of its existing manufacturing base, and its buildings. These assets are particularly well suited to securing competitive advantage in the identified areas of the rapidly changing energy and waste industries.

The pathway to growth set out in this plan starts by stimulating long-term demand for key products and services locally, focusing in particular on products which reduce fuel poverty and improve quality of life and income levels of Black Country residents. This increased local demand is complemented by programmes to develop sub-regional capabilities in selective areas. Investment risks are made manageable and a series of cornerstone projects provide the catalysts for local economic engagement.

The plan identifies more than 15 provisional cornerstone projects divided into three groups: quick wins, medium-term priorities and longer-term strategic initiatives. A delivery mechanism is proposed to accelerate project development, secure the specialist external investment required, and ensure continued focus on the ultimate plan goals. The mechanism is a small Hub at LEP level, operating as facilitator and portfolio manager and working with senior-level local champions and leaders in each of the four Black Country LAs. A draft terms of reference is included in this plan.

Initial investment of the order of £0.5m is required to establish this central Green Growth Hub. The immediate next steps are to prepare a detailed business plan for the Hub and to start to collate the data already held across LAs which will make project scoping and prioritisation efficient.

Introduction: The opportunity in the Black Country

There are just under 500,000 households and 40,000 businesses in the Black Country, spending over £1.5 billion a year on fuel to power their buildings, vehicles and homes and generating more than 500 000 tonnes of domestic waste and more than 3.2 million tonnes of commercial and industrial waste[1]. By 2026 the aim is to increase the number of homes by 63,000 and add over 1000 ha of quality employment land.[2]

Evidence of demand

The potential economic value of processing these value streams locally in more environmentally-friendly ways is approximately £1 billion a year (see table 1). Additional, longer-term value can be created through local employment, innovation, carbon reduction and the creation of new industrial sectors.

Table 1 – Potential economic value streams[3]

Current activity	Estimated scale in the Black Country	Estimated annual value locally	Potential GVA opportunity
Domestic energy use	500,000 homes	£5-600 million	£100-£200 million p.a.[4]
Non-domestic energy use	40,000 businesses	£80-£100 million	£10-£20 million p.a.[1]
Transport services	500,000 households	£1000-2000 million	£100-£200 million p.a.[5]
Waste processing	3.7 million tonnes	-	£400-£600 million p.a[6]
		Total	**£0.61-£1.02 billion p.a.**

In practice, this GVA might be created by:

- Insulating solid walls to reduce energy bills for houses and business
- Manufacturing electrical and thermal storage technologies enabling communities to secure revenue from the energy markets
- Extracting valuable metals and components from waste for re-manufacturing

[1] Black Country Core Strategy 2012.
[2] The Black Country, State of the Sub-Region, Feb 2013.
[3] This analysis is further validated by the analysis done by Birmingham University, who identified a GVA opportunity of £266 million for the Black Country from energy alone in their mini-Stern review.
[4] Many studies have shown that savings of 15-30% are economically deliverable in most buildings (especially old ones) offering financial benefits to both occupants and installers. GVA is created in the construction sector and through occupiers spending fuel bill savings in local shops.
[5] These figures are based on ONS statistics for 2010 using 50%-100% of annual average household spend on transport, excluding car purchase. GVA opportunity comes from displacing traditional transport with electric vehicles powered by locally-produced electricity, car clubs and other sustainable mobility options.
[6] Based on a DEFRA (2011) estimate of the value available nationally from effective waste management, pro-rated to the Black Country using Black Country waste as a percentage of the national total.

- Designing and deploying new building control technologies enabling local trading of energy surpluses
- Burning or digesting waste to extract energy and selling this
- Piloting new transport systems integrated into urban energy networks (e.g., electric vehicle batteries used for storage and rapid response electricity supply into the national grid).
- Pooling waste industrial heat and combining it into district heating schemes to reduce heating costs for local communities

The demand for energy efficiency technologies and services in the UK alone is immense. DECC estimate there are more than 7million homes which will need insulating by 2050[7] and the variety and scale of this challenge provides considerable scope for innovation in systems and technologies.[8]

The Birmingham mini-Stern review[9] identifies economic (i.e., cost-effective) investment potential of £1.268 billion to deliver 645 jobs and £266m of revenue savings in the Black Country from the energy sector alone.

Characteristics of the green economy

The advantages of the green economy are that it can create value and wealth:

- quickly
- using existing assets
- in a way accessible to local skills

In particular, the green economy provides a distinctive and clear pathway for a sub-region with a strong manufacturing and engineering legacy to create entirely new industry sectors and centres of expertise, as has been demonstrated in Germany, Denmark and China during the past decade (see box for an example). Unlike efforts to 'catch up' or compete with established global industries in sectors such as automotive manufacturing or biotechnology, growing a regional industrial sector based around environmental technologies does not face quite such serious challenges of competition from incumbents. The challenges are instead those of innovation, which include

International example

Freiberg, Germany

Freiberg, Saxony, is a historic mining and industrial metalworking town located in the former East Germany. By 2013 it had become the 'silicon valley' of a unified Germany. The largest employer in the sub-region is Solarworld AG, a global solar company employing 2500 people with sales of over EUR500m. The company was founded two years after the fall of the Berlin Wall in 1992, and by 2000 had 90 employees. During the past decade it has grown exponentially, building manufacturing facilities which produce more than 1GW of solar modules a year (equal to the total number ever installed in the UK). These products are exported worldwide.

Solarworld's success is built on the historic materials science and manufacturing skills of its home region and stable energy market regulation and management in its home market, underpinning a competitive initial market for green technologies and products.

[7] http://blog.decc.gov.uk/2013/07/03/tackling-the-solid-walls/
[8] https://www.innovateuk.org/competition-display-page/-/asset_publisher/RqEt2AKmEBhi/content/scaling-up-retrofit-of-the-nation%E2%80%99s-homes?p_p_auth=R3sN1GLE
[9] The Centre for Low Carbon Futures, "The Economics of Low Carbon Cities", 2012.

those of creating industries without the benefit of existing champions at political levels, often cutting across organisational and sector boundaries. Local leadership is therefore vital, and will be a strong feature of this growth plan.

The environmental technologies sector is seen as a major growth opportunity worldwide. Recent estimates of the global market for green technologies suggest the market for environmental goods and services already exceeds £1 trillion per year[10] and this is increasing at around 5% per year even during the recession. *New* market opportunities will potentially exceed £2 trillion a year by 2050, broken down broadly as illustrated in table 2 below.

Table 2 – Potential economic value streams

Sector	Estimated new global market (£ bn p.a.) by 2050	Source
Low carbon energy	£600-£1800 billion	IEA and World Bank[11]
Waste management	£310 billion	UNEP, 2012
Total	**£910-£2110 billion**	

This plan begins by setting out a vision for Green Growth and the contribution it could make to the economic development of the Black Country. Section 3 shows how this will build on existing strengths. Section 4 describes the specific market failures and challenges which will need to be overcome if this sector is to achieve its potential for the sub-region. The final sections describe the proposed mechanisms for overcoming these challenges and ensuring the plan succeeds.

[10] UN, 2012.
[11] Vision 2050, WBCSD 2010.

Our vision

Our vision is to position the Black Country as a leading centre for manufacturing and deployment of key technologies and solutions underpinning the growing global low carbon economy.

The approach we propose will also provide immediate benefits to residents of the Black Country in the form of reduced fuel poverty, higher disposable incomes, and improved quality of life.

Environmental technologies and green growth are potentially very broad in scope, and a focused approach is necessary if the Black Country is to secure distinctive competitive advantage and maximise the economic benefits locally.

While green growth and carbon reduction potentially cut across all other sectors of economic activity, it's also important that they are seen and approached as value adding with clear pathways to economic value, rather than potentially additional barriers to growth.

The strategy for the Black Country is therefore to focus on two specific markets for environmental technologies, building on the existing strengths, assets and activities of the sub-region to create a distinctive and strong regional competitive advantage and national leadership position in these sectors.

The two sectors selected for focus are localised energy and waste management. These are defined and developed below.

Localised energy

The market for localised energy solutions in the UK is estimated by the government to be worth £3-5bn per year by 2020 and up to £34bn per year by 2050[12]. Growth in this market is driven by reductions in technology costs; a drive for greater efficiency in energy production, distribution and use; desire to bring energy and fuel bills down; and national and international climate change targets. Examples of the technologies which will be required are:

- Low cost electricity storage technologies at all scales from domestic batteries to grid scale storage and including electric vehicle batteries and charging points

What is localised energy?

Localised energy covers all building and human scale energy technologies such as energy efficiency technologies (insulation, building controls, draught proofing, efficient boilers etc) micro-generation (solar, heat pumps, small wind turbines).

It also includes 'smart local grids' and district heating schemes, local energy storage, energy service companies, and ways to integrate transport and energy systems at local level.

In terms of business models, localised energy solutions represent a shift away from a small number of global energy companies to communities taking more control over their own energy bills and participating as producers in the energy market, generating revenues and wealth rather than acting as passive consumers.

Localised energy projects will include housing refurbishment schemes, district energy schemes, local renewable energy projects, smart grid developments, demand management projects, and new kinds of infrastructure for strategic developments.

[12] Technology Strategy Board, November 2013.

- Efficient local-scale heat and power generation engines fuelled by gas, biomass, hydrogen and waste for use in district heating and combined heat and power schemes
- Innovative IT solutions (including monitoring and control equipment) to manage energy demand and use in buildings, with effective and engaging (well-designed) interfaces
- Improved distribution network technologies such as substations, voltage protection devices, cabling, and controls
- Energy efficiency technologies for buildings, including insulation, ventilation and airtightness products
- Micro-generation technologies for buildings, including heat pumps, efficient boilers, solar technologies
- Technologies and approaches which support more efficient installation and maintenance of local energy solutions

Development of a nationally-leading localised energy sector in the Black Country will build on the following existing assets of the sub-region:

1. An urban environment with high density of energy demand
2. Inefficient buildings, with considerable scope for economic investments to reduce excessive energy bills
3. The existing manufacturing base and workforce with good construction and manufacturing skills
4. Excellent relationships with leading construction and energy companies already based locally, including Carillion, E.ON, British Gas and Western Power Distribution
5. Leading and innovative social landlords controlling large numbers of properties such as the local authorities, Accord, Black Country Housing and Walsall Housing Group.
6. A substantial programme of infrastructure and strategic investment (City Deal, i54 etc) able to provide hub sites for new kinds of networks
7. The Black Country's central UK location.

Waste management

The UK waste management market is worth at least £7.5bn in GVA to the UK economy a year, and employment in waste processing offers GVA per employee of between £32,800 and £99,800 per head[13]. The highest GVAs are in converting waste to energy, and the lowest in composting.

Growth in this market is driven by increasingly stringent regulations aimed at diverting waste from landfill, in turn driven by lack of space. The shift from

What is waste management?

The waste sector includes all solid waste (municipal solid waste) including special waste streams such as electrical and electronic equipment, vehicles, construction and building waste, biomass and healthcare and hazardous waste. It excludes waste water.

Green growth in the waste sector is driven by a shift from inefficient waste disposal methods such as incineration (without energy generation) and landfill, towards integrated waste management. This creates demand for technologies and approaches to reduce, reuse and recycle waste streams.

The overall emphasis and economic driver is resource efficiency.

[13] Ekosgen Report for BIS, 2011.

waste disposal to waste treatment generates multiple opportunities for waste processing and handling technologies.

Examples of the technologies and economic opportunities in this sector include:

- Plant and machinery for separating, sorting and treating waste
- Technologies to reuse or recycle waste streams (remanufacturing)
- Technologies to extract energy from waste
- Waste storage technologies
- Waste mining technologies
- Waste transport technologies
- Testing and sampling technologies
- Process control and automation technologies

Development of a nationally-leading waste management sector in the Black Country will build on the following existing assets of the sub-region:

1. Significant existing activity, particularly in metal recycling
2. The sub-region's manufacturing competence
3. The Black Country's central location in the UK and proximity to major population centres
4. The high density of population and industry in the sub-region itself, creating a diversity of waste sources and applications

There are strong areas of overlap between the two focus sectors. For example, waste to energy offers the highest GVA in the waste sector, and construction materials and batteries represent over 50% of all waste processed in the UK[2].

Pathways to economic growth

Both waste and localised energy are distinctive sectors in that local authorities have substantial powers and responsibilities which can be used to stimulate demand. This provides a pathway to locally-driven economic growth and jobs, supported initially by external seed funding and investment.

The classic pathway is illustrated in the diagram below. Local authorities reduce the risk of investments by guaranteeing 'anchor' demand and minimising regulatory barriers and risks. This attracts investment, supported by public subsidy (e.g., EU structural funds) where substantial market barriers or failures exist. In exchange for

International example

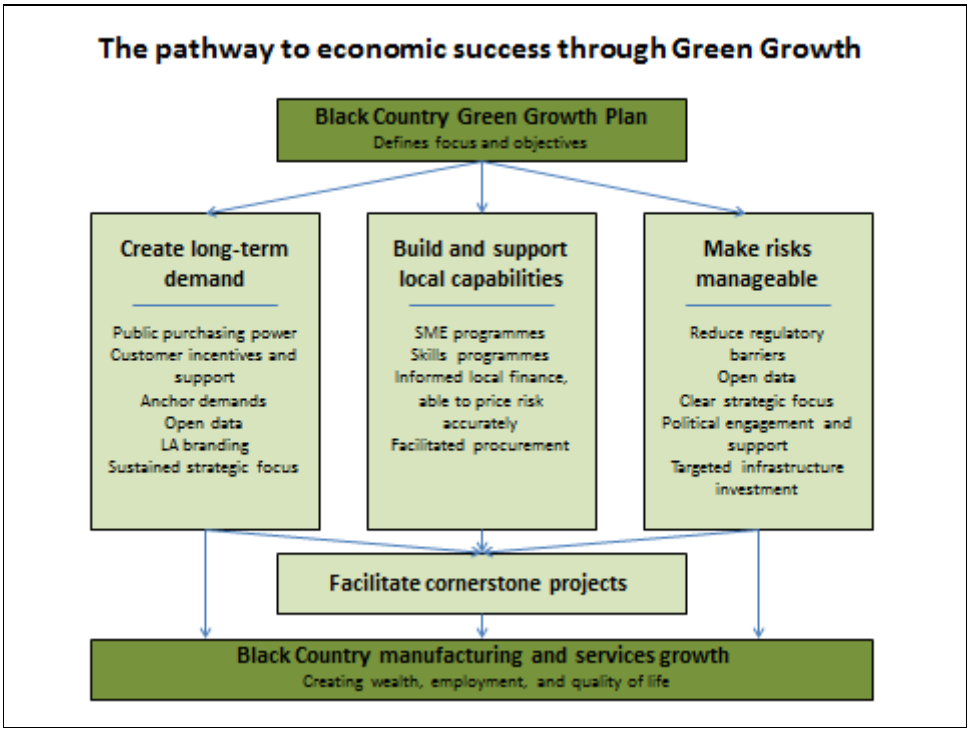
Hammerby, Stockholm

Stockholm is a slightly smaller municipality compared to the Black Country, with just over 400,000 households. Hammerby was a 15 year project between 1997 and 2012 to develop 15,000 homes and 10,000 jobs through regenerating former docks and industrial areas.

The project systematically used a Local Investment Programme to stimulate innovation and deployment of new waste and energy technologies in the development. The twin pillars of this programme were innovation and partnership. The approach involved special competitions for innovations, pilots and prototypes, resulting in 97 awards to local companies to develop and incorporate new environmental technologies in the development.

The overall design was driven by an ambitious vision, stated simply as delivering a development at least twice as good in terms of energy and environmental performance as standard approaches.

reducing risk, the local authorities secure immediate revenue streams. In addition, the investment creates demand for specialist technologies and services locally, and a cluster of skills and new businesses are attracted to the area, supported by complementary training and skills support programmes. Sustained support over multiple local authorities across the Black Country ultimately creates sufficient local demand to support manufacturing businesses, able to export their products and skills from a secure base (i.e., with solid local demand).



There are already a wide range of opportunities and projects in the Black Country which could support this pathway (listed in full in appendix I). These include:

*The **People's Power Station** is a simple vision to drive growth. Create the world's first virtual power station by giving the people of the Black Country the infrastructure they need to become active participants in the UK energy system, buying and selling their individual energy demand and supply capabilities to reduce their energy bills by 30% (see below).*

- The People's Power Station – a project to establish a critical mass of localised energy and demand management projects, offsetting the need to construct new fossil-fuel-fired power stations.
- Remanufacturing initiatives to convert waste into high value raw materials
- Imaginative use of the canal network, for example as part of an integrated energy/mobility project
- Smart business parks and strategic developments
- A green growth leadership development scheme

Projects have been classified into three broad priority areas for the purposes of this plan.

1. **Quick wins.**

   These should deliver immediate revenue to local communities and public bodies, require minimal or limited development and could be started in the next twelve months.

Examples are solar farms on contaminated land, waste brokerage schemes and area-based insulation schemes.

2. **Medium-term priority projects.**

   These have potential to deliver significant revenue and local economic opportunity but will require consultation and development work to detail their scope, secure necessary stakeholder buy in and put in place robust management plans. These projects are more likely to start in 2015-17 and will require some initial development funding.

   Examples would be community energy companies, district heating schemes, waste remanufacturing and mining initiatives.

3. **Longer-term strategic initiatives**

   These projects will build on the success of the quick wins and medium-term projects to deliver 'game-changing' strategic impact to the Black Country, potentially supporting many hundreds of jobs and bringing long-term economic and social benefits to the sub-region.

   This category might include establishing a national centre of excellence for local energy storage, remanufacturing facilities, reinventing the canal network as a modern mobility and energy nexus.

Project example -The Peoples Power Station

Modern information, communication and building technologies provide the capability to control energy supply and demand in ways unimaginable when the current UK power grid was developed in the mid-twentieth century. Applied systematically across communities (on an 'opt-in' basis) and supported by the right infrastructure and business models, these offer potential to reduce household energy bills by up to 30%[14] a year and engage individuals actively as economic participants in the energy system.

For example, by switching off certain types of heating, refrigeration or air conditioning systems for very short periods of time (so users don't notice) across many thousands of buildings, demand on the UK power system can be reduced, avoiding the need to engage (or build) multi-billion pound generating stations.

There are established revenue streams from this kind of activity, currently accessed only by large industrial companies, but innovative community-level business models are now emerging enabling individual households to take advantage.

A project across the Black Country will establish the sub-region as a national and global leader in smart energy management, providing a focus for technological innovation, inward investment and economic growth.

[14] Encraft 2013, TSB Study into Modern Infrastructure for New Housing.

Building on existing strengths

Work by Sustainability West Midlands[14] and Atkins[15] suggests that the construction and manufacturing sectors present the greatest opportunities for developing a low carbon economy in the Black Country because these are currently the sectors with the bulk of existing private sector employment. This historic structure of local employment means that there are a core of construction and manufacturing skills and businesses to draw on.

However, these analyses also note that the public sector is by far the dominant employer across the sub-region, accounting for more than 50% of jobs. This in itself creates opportunities to use public procurement and access to potential customers in the region (e.g., public sector staff) to support demand, and initiatives such as Find it in Sandwell are already demonstrating how public procurement can be made more accessible to local SMEs. It also emphasises the need to improve the resilience of the sub-region by creating more jobs locally in the private sector.

Several Councils have energy frameworks and strategies at various stages of development[16]. These include lists of potential projects such as district heating, local renewables and waste to energy projects. Such work provides a valuable starting point for developing fundable investment projects aligned to this plan. There is also an existing energy services company (ESCO) - the Black Country ESCO - which has been operating for more than a decade, largely working with statutory utility energy efficiency schemes to maximise local benefits.

In addition to the local authorities themselves, there are innovative housing providers based in the region. Accord, Walsall Housing and Black Country Housing (BCHG) all have track records of sponsoring highly innovative green growth projects – for example, the current Accord ERDF-funded Smart Grid project, the trials of hydrogen fuel cells at BCHG, and the use of ground source heat pumps to supply high rise blocks in Walsall.

In addition, the planned development of the City Deal, Housing and Enterprise Zone sites across the LEP area create economic opportunities to build in green infrastructure (smart grids, local energy and waste facilities) from the outset.

In the corporate sector, Carillion are based in the Black Country and have led the way nationally in delivering large scale energy efficient housing refurbishment schemes; E.ON has its UK smart meter centre of excellence and domestic insulation HQ in Kingswinford and runs a training academy in Tipton; and Western Power Distribution have a facility in Willenhall where they are trialling a nationally-leading grid scale energy storage technology in partnership with Sheffield University.

The University of Wolverhampton has expertise in waste and fuel cells[17], and is developing expertise in energy efficiency for the built environment through their current ERDF-funded BECCI project. They are seeking to develop more substantive testing and brokerage facilities to support local SMEs and innovation in the low carbon built environment sector over the next 12-18 months.

[14] West Midlands Low Carbon Evidence Base, May 2013
[15] Opportunities in the Low Carbon Economy (by LA), May 2010
[16] Sandwell and Wolverhampton provided drafts or recent studies identifying potential projects.
[17] See http://www.wlv.ac.uk/default.aspx?page=28802

Overcoming challenges

Attempts to drive economic growth by supporting the low carbon economy in the Black Country face serious and systemic challenges. The region lags the rest of the country in terms of new business creation, suffers from a lack of employment opportunities and has a £6.2bn output gap compared to the performance of the rest of the UK economy.[18]

From the perspective of Green Growth specifically the key challenges are likely to be:

- lack of higher level technical skills
- lack of senior political and officer support
- lack of local technical and commercial leadership
- lack of access to long-term finance

Higher level technical skills will be necessary to support long-term businesses able to compete nationally and internationally. The sub region needs to attract and retain graduate level technologists able to innovate and exploit innovations. This will require creation of a critical mass of companies and projects locally, supported by a culture of innovation and a high quality living and working environment.

Political and stakeholder support is critical to the many initiatives necessary to build and sustain demand for environmental technologies locally. The low carbon sector is one of the fastest growing industrial sectors worldwide, but it does not yet have the established global corporations and organisations to lobby politicians and represent the interests of the sector in strategic debates at regional level. Such support is particularly important to green growth and environmental technology projects because they tend to be cross-cutting and affect many interest groups.

Sustained and effective local leadership is also vital to low carbon initiatives. It's in the nature of localised energy and waste projects that the opportunities for wealth creation are local – i.e., they vary from one locality to another because the waste streams are different, the local renewable resources are different, and the local energy demand profiles are different. This means that no green growth strategy will succeed unless there is good quality technical and commercial leadership on the ground locally. In the case of the Black Country this means in each of the four local authorities as a minimum. Cross-LEP and regional organisations can support such leadership, but they cannot replace it.

Access to finance is fundamental to supporting significant growth. Green growth requires long-term specialist finance because many projects are characterised by 20-30 year returns, which are very low risk to financiers who understand the technologies and context. Such finance can be difficult to find in the UK, although there are excellent models in Germany and elsewhere.

There will also be a need to reduce reliance on a small number of large employers in the sector. The sub-region's vulnerability to this has recently been illustrated by the closure of two nPower sites in Oldbury and Kingswinford, with the loss of 1000 jobs.

[18] State of the Sub-Region, February 2013, Black Country LEP

Delivering success

The challenges inhibiting the Black Country from realising the benefits of Green Growth are common to all potential projects in the portfolio. For this reason the most effective way to deliver the vision outlined in this plan successfully will be to establish a focused Green Growth delivery vehicle for the Black Country.

The proposal is to establish such a vehicle at LEP level, with a draft terms of reference set out in appendix II below. The objective is to maximise the economic benefit to the LEP from Green Growth, and establish a long-term centre of the low carbon economy in the region.

The working title for the delivery vehicle is The Black Country Green Growth Hub. It is expected to require a small core staff with access to relevant technical, commercial, legal and project finance skills. The Hub should be self-funding within 2 years, using a model similar to Woking where a percentage of returns from projects are returned to the Hub for reinvestment and to cover running costs.

The Hub will effectively work as a specialist project developer and investment portfolio manager in the localised energy and waste sectors, with a balanced mix of incentives covering economic and social returns (jobs created and CO_2 emissions reduced) as well as normal financial returns.

Opportunities for cross-LEP working

There are many opportunities for cross-LEP working and sharing of best practice in Green Growth, and the Hub should act as a conduit for knowledge transfer from and to the Black Country from the wider LEP community. In particular, some funding and expertise is only likely to be available at regional or national level. In addition, there are likely to be benefits for all LEPs to differentiate offers and sectoral emphases so that complementary and distinctive centres of expertise can develop, and cross-LEP working will help facilitate such complementarity.

For example, Birmingham University are developing specialist expertise in grid scale energy storage which might complement developing Black Country expertise and activity at community level. Aston University have a European centre of expertise in bioenergy and biogas (EBRI) and Warwick expertise in solar materials.

Some existing EU funding can also be accessed across LEPs. This includes the Climate-KIC project run from Aston University, the BECCI project at Wolverhampton; Sustainable Building Futures at Coventry, and forthcoming Horizon 2020 and SIF funds.

UK example

Woking Borough Council

Woking Council achieved 99.3% self-sufficiency in energy supply, generated over £5m in savings, reduced fuel costs to social housing tenants to less than 7% of the state pension, and established a trading subsidiary (Thameswey Energy) which generates revenue for the Council by developing and managing district energy schemes across the UK.

As stated on the Council website, this was achieved by consistent political and technical leadership over almost 20 years, starting in the mid-1990s.

"These achievements are due to the on-going support of Council Members and the commitment of Chief Officers, Service Heads and dedicated teams of Council Officers together with the specialist knowledge and enthusiasm of Energy Services Manager, Allan Jones MBE".

The importance of local leadership

The development of effective locally-based technical and commercial leadership is fundamental to realising the full benefits of Green Growth in the Black Country. The Hub will take specific responsibility for developing these leaders, and this is expected to form the basis of an early Hub project.

Partnership

This focused and clear plan, backed up with effective and well-informed local leadership, will provide a basis for developing strong partnerships with delivery partners, many of whom are already working in the sub-region. E.ON, Wates and Carillion contributed to development of this plan, British Gas already have a partnership with Walsall Housing Group through the Surefire Framework, and Western Power Distribution have nationally-leading innovation projects in the sub-region.

We anticipate developing additional partnerships with global waste management and information and communications technology companies as part of delivering our vision.

Timescale and costs

An indicative cost to establish a Black Country Green Growth Hub is likely to be of the order of £0.5m, to cover two years' operating costs up to a point where it can become self-funding. In principle it could be operating within 3-6 months. Development of a detailed business plan is the next step.

Next steps

The next stage is to develop a detailed business plan for the Green Growth Hub, working with representatives of all four local authorities and the LEP.

This plan should include:

- preliminary budgets and projected investment returns for at least the 'quick win' projects already identified
- outline business cases for the longer-term projects and initiatives
- a developed vision for the People's Power Station to support communication and engagement with this plan across the LEP area

This activity should include consolidation of other work and project ideas being developed within LAs and as part of cross-LEP work with SWM and others.

There is also value in consolidating publicly-owned data to support project development – for example heat maps, waste flows, building stock data. This will allow more accurate and rapid identification and evaluation of project opportunities and validate the overall business case for the Green Growth Hub. Much of this data already exists and is held in multiple locations; a useful and low cost first step for the Green Growth Hub would be to collate it all together in one place as a shared resource to support delivery of this plan.

Appendix I. Preliminary project portfolio

Category 1 – Quick Wins (2014-15)

Project title	Description	Outline costs and benefits	Potential funding sources[19]	Potential direct jobs (estimated)	Proposed lead
Black Country Green Growth Leaders	Leadership development programme for engineers and commercial managers based in the Black Country to enable local project leadership and enterprise, across the public, private and social housing sectors	Critical enabler to all other projects Cost: £500k p.a.	**EU SIF**	3-5	LEP
Establish Green Growth Hub	See Green Growth Plan and terms of reference	Cost: £500k over two years Benefit: minimum £2.5m over 5 years	**EU SIF**	3-5	LEP
Pop up power stations	Use of redundant and waste land for (temporary) solar parks (and possible anaerobic digestion (AD)). Sites selected where suitable infrastructure exists (e.g., old industrial locations) and land is likely to take 10+ years before development. This could also include growing energy crops on contaminated land for use in AD only.	Projects offering ROI of 10-12%. Investment up to ~£5m Exportable expertise and local solar pv and AD enterprises	**UCEF, EU SIF, Private**	10-100	New local enterprise(s)

[19] See key at end.

Project title	Description	Outline costs and benefits	Potential funding sources[19]	Potential direct jobs (estimated)	Proposed lead
Smart business parks	Flexible distributed energy and waste infrastructure for existing business parks and industrial estates; collective management of energy and waste	Project fundable by current TSB call for local energy solutions £0.5-£1m initial pilot.	**TSB, USEF, EU SIF, LCNF, HNDU, Private**	10-100	New local enterprise(s)
Energy Services Company (ESCO) for public buildings	Focused organisation(s) to optimise energy use in Council and other public buildings using local staff and skills and procuring all support services locally. Maybe generalised, building on existing Black Country ESCO, to create larger ESCO following Thameswey model.	Reductions of 10-15% in annual public sector energy bills. The Thameswey model uses Public Works Loan Board funds to invest in energy projects.	**City Deal, USEF, HNDU, Private**	5-20	LA-controlled new local enterprise
Waste flow optimisation	Working with NISP on a project specifically to audit and optimise flows of waste (specifically commercial waste) within the Black Country, identifying opportunities for re-manufacturing and value creation.	Costs are data gathering and facilitation only ~£100k.	?	?	New local enterprise
Immediate non-domestic building refurbishment projects	Energy efficient refurbishment of public buildings, financed by Salix recycling funds, Green Deal and similar schemes. Also using RE:FIT2 funds available to public organisations,	Mostly grant funded provided sensible buildings selected. Some management fees could flow to LAs or Hub.	**Salix, RE:FIT, PWLB, GDC**	50-100	LAs/Asset owners

Project title	Description	Outline costs and benefits	Potential funding sources[19]	Potential direct jobs (estimated)	Proposed lead
Housing refurbishment and retrofit projects	Energy efficient refurbishment of social and private housing, financed by ECO Green Deal and similar schemes.	Mostly grant funded provided sensible buildings selected. Some management fees could flow to LAs or Hub.	**ECO, GDC**	50-100	Asset owners in partnership with utilities
Small-scale district heating schemes	Tower blocks, sheltered housing etc, financed using renewable heat incentives and ECO and using biomass and/or heat pumps in some cases.	Biomass-fired schemes likely to have payback within 5 years.	**ECO, GDC, USEF, HNDU, Private**	5-30	Asset owners

Category 2 – Medium-term priorities (2015-17)

Project title	Description	Outline costs and benefits	Potential funding sources	Potential direct jobs (estimated)	Proposed lead
People's power station	Widespread deployment of energy demand management technologies (e.g., local storage and building controls) and infrastructure supporting local heat and power generation and distribution (district heating networks) at a scale which enables national investment in new power stations to be avoided/reduced. Builds on work by SHAP. There is an opportunity to secure national leadership in this field, working with partners such as Western Power and E.ON.	At a practical economic level, studies currently underway suggest that above a minimum economic scale of around 2000 households, these kinds of initiatives can generate £200+ a year per household in additional income and energy savings. Likely costs up to £12m, but mostly private finance and inward investment.	**EU SIF, LCNF, TSB, GIB, EU2020**	10-100	New local (community) enterprise, supported by LAs/LEP

Project title	Description	Outline costs and benefits	Potential funding sources	Potential direct jobs (estimated)	Proposed lead
Black Country Green Investment Finance	Mini-Green Investment Bank for the Black Country, taking a long-term view of local low carbon infrastructure investment and improving access to finance for SMEs. This would almost certainly be best pursued as a collaboration between LEPs.	Commercial returns over a longer timescale than normally considered by financial institutions, but to projects and businesses backed by long-term demand for their services and products from the public sector and through infrastructure.	**EU SIF, GIB, Private, PWLB**	2-5	WM LEPs
Heat pumps and micro-generation project	A project to promote widespread adoption of heat pump and micro-generation technologies (e.g., small scale anaerobic digestion) on appropriate sites to support and take advantage of the Peoples' Power Station. All with significant and accessible local supply chain opportunities.	Commercial returns with some public funding for promotion and activities to ensure effective integration into the built infrastructure.	**Private, ECO, USEF, GDC**	20-100	Local innovator/new enterprise

Project title	Description	Outline costs and benefits	Potential funding sources	Potential direct jobs (estimated)	Proposed lead
Local district heating and CHP networks	Distinct from the People's Power Station, there are existing opportunities in Wolverhampton and probably across the sub-region for one-off small schemes. This project would start from mapping waste heat available across the sub-region and looking for local demand applications. Other opportunities exist in new build housing (e.g., Bilston Urban Village) and using new Sandwell Hospital as a hub. The canal network could be used to make the pipe infrastructure costs lower.	Investments of £5-£25m offering commercial returns and significant revenues to LAs. Infrastructure can be funded using EU and Green Investment Bank.	**HNDU, ECO, USEF, Private, PWLB**	10-50	LA/Community in partnership with utility
Community energy storage	By storing locally-generated electricity or heat at community level, it can be traded at times of peak demand and the benefits shared locally. There are lots of technologies competing to deliver this capability at lowest cost (flow batteries etc). Could link to advanced manufacturing activities.	Substantial R&D and development funding currently available through OFGEM and TSB. Builds on WPD work in Willenhall with scope to develop national centre of excellence.	**LCNF, EU2020, TSB, EUSIF**	10-50	LA/Community in partnership with WPD

Project title	Description	Outline costs and benefits	Potential funding sources	Potential direct jobs (estimated)	Proposed lead
Green infrastructure for strategic sites	Exploring ways of linking specific green growth projects to sites likely to be developed in the next few years; integrating green growth into the wider LEP development plan at a practical level.	Returns of 10%+ possible from modern infrastructure on new housing developments, reducing resident energy bills by 30%+. Investment £1-£10m per development.	**City Deal, EUSIF, TSB, LCNF**	10-50	LEP
Off-site manufacturing and refurbishing buildings	Ways to improve the efficiency of construction, including retrofit and modern methods of construction. Accord already active in this area. Carillion heavily involved in retrofit across the region.	Opportunities to attract ECO funding (or its replacement). Immediate benefits to residents in reduced fuel bills.	**TSB, EUSIF, EU2020**	10-100	Asset owner
Small scale waste to energy plants	Anaerobic digestion plants locally where suitable waste streams and heat demand exists (needs to be supported by mapping exercise).	Very attractive economics provided supported locally.	**TSB, Private**	10-30	Local industrial partner/innovator

Category 3 – Strategic initiatives (2016+)

Project title	Description	Outline costs and benefits	Potential funding sources	Potential direct jobs (estimated)	Proposed lead
Imaginative use of the canal network	As part of an integrated energy/mobility project (Mobility hub?) to support lower cost and higher quality local mobility while also improving the local energy distribution network. E.g., electric vehicle (or boat) charging points powered by small hydropower stations on locks	Needs development	**EU SIF, City Deal**	tba	LEP
Re-manufacturing	Extracting high value from otherwise potentially wasted resources (electronics, automotive) and building on the audit and mapping exercise completed as a quick win. Firms such as Caterpillar, Ricoh already involved.	Needs development	**EU2020, EUSIF**	tba	External industrial partner
Optimising (re-) use of underground resources	Use of redundant mine workings (e.g., coal mine methane, coal gasification, carbon storage.) Possible mining of old landfill sites for metals and raw materials. Use of aquifers for heat pumps.	Needs development	**GIB, TSB, EU2020, EUSIF**	tba	Asset owner

Project title	Description	Outline costs and benefits	Potential funding sources	Potential direct jobs (estimated)	Proposed lead
National centre of excellence for application of local energy storage	This is a key technology for the future of electricity and heat networks worldwide. A more strategic project could develop on the back of successful pilots in categories 1 and 2.	Needs development	**TSB, LCNF, EU2020, EUSIF**	tba	University

Key to potential funding sources

Fund	Description	Notes
EUSIF	EU Structural and Investment Funds	Managed by the LEP. Require match.
ECO	Energy Company Obligation Funds	Negotiated from the utilities (£0.5-£1bn p.a)
TSB	Technology Strategy Board	BIS funding against national strategic technology priorities. Must be business led projects. Typically (£0.5-£4m per project).
GDC	DECC Green Deal Communities	£80m pot 2014-15. Must be LA led projects, £2-£4m.
UCEF	DECC Urban Community Energy Fund	£10m pot for project development. Mix of grant and loan. (£10k-£130k)
GIB	Green Investment Bank	
Private	Private investment	Minimum typically £10m. Need strong revenue streams, for

Fund	Description	Notes
		example, feed-in tariffs or renewable heat incentive.
PWLB	Public Works Loan Board	Lower cost loans to LAs. Must demonstrate loan can be repaid through revenues.
HNDU	DECC Heat Networks Delivery Unit	Feasibility funding for district energy networks (£10-£150k)
LCNF	Low Carbon Networks Fund	Controlled by DNOs, up to £20m per project.
EU2020	Horizon 2020 R&D funding from the EU	Must be transnational partnership projects
City Deal		£20m available. Must generate revenues.
Salix	Revolving loan fund for energy efficiency investments in public buildings	Can use local contractors.
REFIT2	London framework for public bodies to secure private finance for energy efficiency work	Local job creation and economic opportunity may be limited as must use a small number of large national contrcators.

Appendix II. Draft terms of reference for a Black Country Green Growth Hub

Objective

The objective of the Black Country Green Growth Hub is to maximise the economic benefits for the Black Country of low carbon development and to establish the sub-region as a national leader in this emerging sector.

Scope and activities

The Black Country Green Growth Hub will focus specifically on encouraging and supporting economic activity in the localised energy and waste management sectors. It will have a remit to work collaboratively with the four local authorities and LEP to:

- identify and prioritise project opportunities within this scope offering maximum economic benefit to the Black Country, particularly projects which create demand for local services and products
- identify, develop and support local technical and commercial leadership capability in each of the four local authority areas to support delivery of these investment projects
- work collaboratively with neighbouring LEPs and other political regional and national co-ordinating bodies to ensure Black Country LEP activity secures maximum learning and support from best practices elsewhere, where appropriate and helpful
- maximise access to investment and funding that's available (often in specialist funds, such as DECC's Heat Networks Fund, the EU ELENA and EEEF funds etc)
- work collaboratively with local higher education institutions and business support services to ensure appropriate skills and business support services are provided to complement investment projects, particularly for ambitious and high growth SMEs
- facilitate the delivery of project opportunities by securing the necessary development and early stage funding and engaging local stakeholders appropriately to structure and manage project risks (including planning risks)
- establish appropriate governance and ownership structures for each investment reflecting the roles and interests of the various parties (e.g., if the public sector control most of the risks, they should secure most of the rewards).
- provide expert advice and support to procurement processes and on-going project governance as required and appropriate (to each case)
- support development and investment partners in understanding and managing risks associated with long-term low carbon investments
- ensure green growth opportunities are maximised on strategic development sites within the Black Country

Governance and location

The Black Country Green Growth Hub will be located in the Enterprise Zone and report to the LEP board.

Funding

The Green Growth Hub should be funded by taking a share of the revenues from the commercial projects it facilitates, with initial set up costs supported by the LEP.

Performance measurement and incentives

The Green Growth Hub should be measured against key performance indicators as follows:

- Jobs and GVA created for the Black Country
- Investment returns secured
- CO_2 emissions reduced