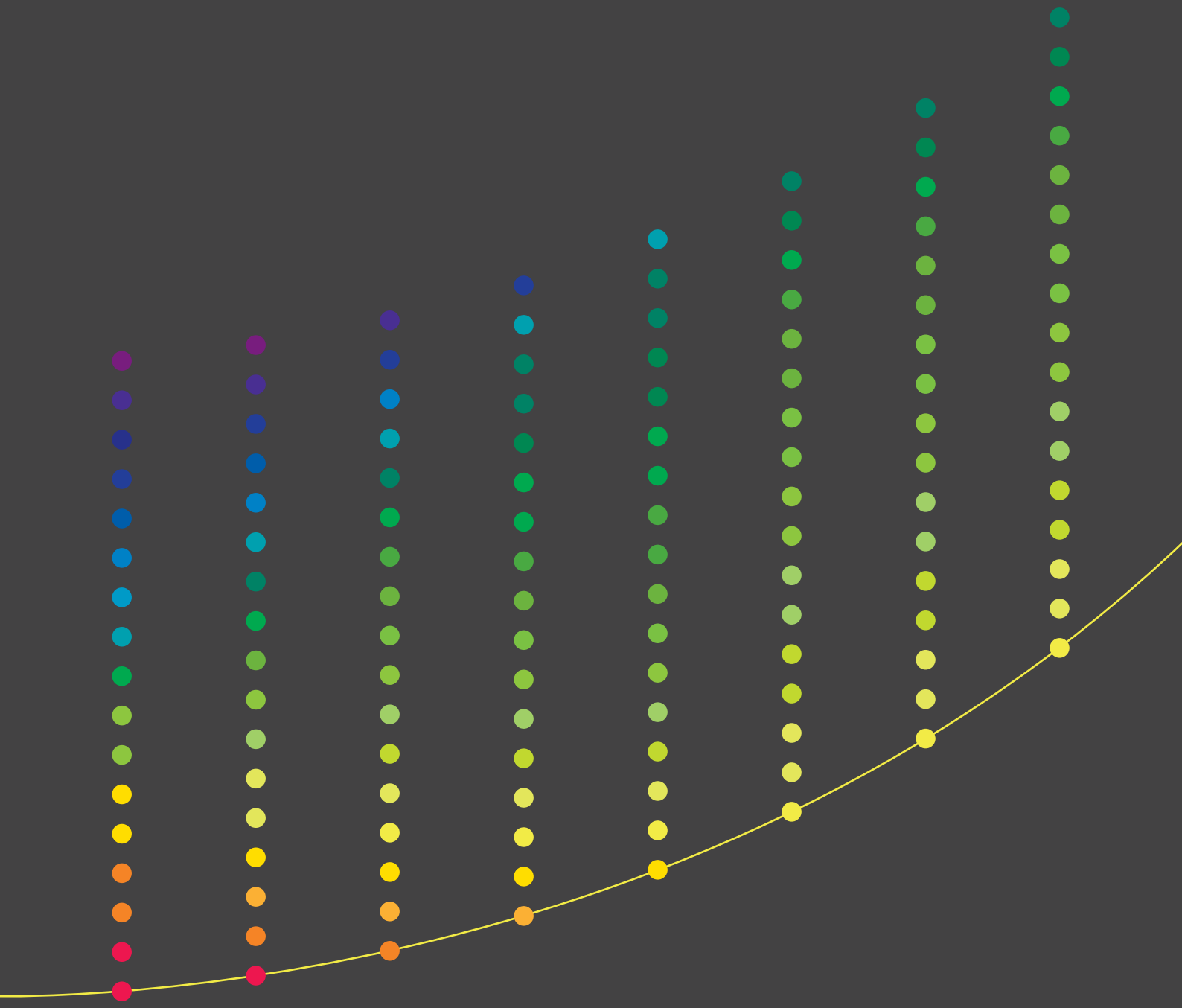
CBI
THE VOICE OF BUSINESS

The colour of growth

Maximising the potential of green business



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With the current levels of economic uncertainty, and prospects of only modest growth in the UK, it is easy to understand why some people are fearful that 'going green' might further dent the economic recovery. For me, this is a false debate.

In this report, the CBI makes clear the case for tackling head-on the critical challenges of energy security, affordability and climate change. It isn't a lofty ideal to aspire to – there is a hard-nosed economic argument that moving to a low-carbon economy can drive significant business investment and create many new jobs across the country.

This is happening now, in every sector, in every region, and if we can build on these foundations, it can be a catalyst to transform our export figures and rebalance our economy over the long-term.

'Green' and 'growth' can go hand-in-hand, but in the current situation there are no guarantees. If the UK is to reach its full potential as a global green market leader, we have to be smarter in our approach. Building confidence in new technologies and markets is essential to get ahead of the game. But if we can't be sure that the policies of today will be the policies of tomorrow, investors will simply spend their money elsewhere. The UK also needs to address the complexity of its policies – to encourage those ready to invest, rather than confuse them.

Finally, we need to think more strategically if we are to make this low-carbon transition a reality and ensure it works for all business sectors. If we cut carbon emissions, but harm those very energy-intensive industries at the heart of the low-carbon transition, then we will have failed. Helping them with the impact of carbon prices is an integral part of the low-carbon revolution.

If we can make the right choices, the UK has the potential to earn a significant prize – grabbing our share of a growing global market and injecting around £20 billion into the economy. Let's not waste this opportunity.

John Cridland
Director-General, CBI

Foreword Ben Verwaayen

We believe that green and growth go together. But that cannot just be a strategy – it must be an execution deliverable. It is not enough that business is simply convinced. It has to be embedded and embraced by society too.

As a business community of the leading companies in the UK, we believe that tackling energy and climate change challenges is one of the single biggest opportunities for our century. It is not an obstacle which is conditioned by tough economic times. Business has proven that green can lead to growth through low-carbon investments and new innovation. And business investment in sustainable solutions can also create tremendous opportunities for economies across the globe, particularly in today's connected world.

In 2007, we stated three components for success. Politicians must give greater priority to the triple challenge of decarbonisation, energy security and energy affordability, consumers have to be empowered to make the right decisions with facts, and business must become green to grow.

In 2012, we stand by these three components and believe the case for putting them at the top of the economic agenda is now more important than ever.

We need to embrace change and new thinking. Business is ready and forging ahead. We need government to help create the opportunity too. The choice is really ours.

Ben Verwaayen
Chairman, CBI Energy and Climate Change Board and Chief Executive Alcatel-Lucent

Executive Summary

Almost four years after the UK's ground-breaking Climate Change Act was passed, and two years since the Coalition government stated its ambition to be the 'greenest government ever', we now find ourselves in a significantly different economic and political climate. With a technical double-dip recession now a reality and private sector growth at the top of the agenda, some are questioning whether there is still room for 'going green'. The business response is definitive and emphatic: green is not just complementary to growth, but a vital driver of it.

One only has to look at the statistics to see the size of the opportunity. In trying economic times, the UK's green business has continued to grow in real terms, carving out a £122 billion share of a global market worth £3.3 trillion and employing close to a million people. And in 2014/15, it is expected to roughly halve the UK's trade deficit. Many of the case studies in this report illustrate the commercial realities of the opportunities presented by tackling our energy security and climate challenges.

However we mustn't fall into the trap of assuming that we can sit back and watch this green growth flourish – global competition to grab these opportunities is fierce, and we cannot afford to take our foot off the pedal. But while business wants to keep up the pace, they are equally clear that the government's current approach is missing the mark, with policy uncertainty, complexity and the lack of a holistic strategy damaging investment prospects. Getting it wrong on the low-carbon transition could lead to slower green growth, with a risk of losing almost £0.4 billion in net exports in 2014/15.

With so much at stake, a smarter and more strategic approach is needed. This requires strong leadership and the right policy framework to unlock business investment, drive markets and excite consumers. This means consistency and certainty – both in policy and in government messaging – to allow businesses to invest with confidence. Decisions this year on Electricity Market Reform will be a key test: getting this policy right, and doing so quickly, is essential to ensuring secure, affordable, low-carbon electricity supplies. And, while this transition can be a good news story for the economy overall, there are costs to be managed. If we are to be market leaders, we need to show the rest of the world that we can do this in a way that works for all parts of the economy.

If we are to capture the full value of the low-carbon transition in the UK, we need to think about what a smarter approach looks like within the context of a broader industrial strategy. We should look to build up and promote UK strengths, identify strategic opportunities and ensure that we have the right institutions and intellectual infrastructure to underpin these activities. In doing so, we can make sure that the UK is best placed to supply – and export – the solutions.

Joining all the dots in a coherent and strategic way could come with a significant economic reward, boosting the UK's economy by just under £20 billion and improving our trade balance by almost £0.8 billion in 2014/15. With our eye firmly on the prize, government and business must work together in a proactive and pragmatic way to fully maximise the UK's green growth potential.

This report argues that:

- The low-carbon economy could be a real engine of growth in the UK
- There is a risk that this potential will not be realised
- Improved conditions are needed to drive low-carbon markets and stimulate investment
- This should be underpinned by a strategic approach to maximise economic value

Recommendations for government:

1 Maintain the UK's ambition

Ensure that the ambition of the 4th Carbon Budget is maintained, if underpinned by a smart UK policy framework which follows the recommendations of this report, and matched with consistent messaging from all parts of government

2 Play a strong role in Europe and internationally

Be at the forefront of shaping the future of the EU Emissions Trading Scheme and global climate negotiations

3 Establish clear and stable market frameworks

Ensure that market signals – particularly within the reformed electricity market – have stability and longevity, with any adjustments made in a pre-defined way

4 Stimulate new consumer markets

Work collaboratively with business to ensure the right mix of incentives and regulation, together with clear and consistent information, is in place to drive demand in emerging markets such as the Green Deal

5 Cut 'green tape'

Reduce complexity in the existing low-carbon policy landscape, including immediate action on the Carbon Reduction Commitment, and take a more strategic approach when developing future policies

6 Reflect the value of all sectors in the economy

Develop a long-term strategy for energy-intensive industries, including the further rollout of realistic sector-specific decarbonisation roadmaps, which will enable them to fulfil their role in the low-carbon transition

7 Build upon the UK's strengths

Play a more proactive role in aligning policy and investment with existing UK strengths, and promoting these abroad

8 Capture greater value from green investments

Identify opportunities to develop domestic capabilities through targeted interventions and longer-term technology road-mapping

9 Facilitate the flow of finance

Give the Green Investment Bank the power to raise funds from the capital markets as soon as is fiscally possible, while ensuring that priority projects are also eligible for direct government intervention in the short-term

10 Develop our 'intellectual infrastructure'

Continue to support the UK's strong innovation ecosystem, and address strategic skills shortages

1 The low-carbon transition could be a real engine of growth in the UK

Securing private sector growth is the primary objective for the UK, and with public sector and household spending likely to be subdued in the coming years the two main engines of growth will be private sector trade and investment. Business delivery of low-carbon solutions has proven itself as a key engine for both of these routes to growth throughout the economic downturn, while new and changing markets present significant future growth opportunities. Beyond this, the low-carbon transition should make our economy more secure and resilient, thus underpinning the UK's long-term economic health.

Green business is generating strong, mainstream growth across the UK

In 2010/11, the UK's green business (see **Exhibit 1**) grew in real terms by 2.3% outstripping the global green business growth rate to carve out a £122 billion share of a world market worth £3.3 trillion[1]. This growth translates into investment and jobs on the ground, with the latest government figures showing that around 940,000 people were employed in green business in 2010/11[2]. This is not driving growth in isolation, but is becoming mainstreamed across all sectors and regions (see **Exhibits 2 & 3**). For example, **Case study 1** shows the type of low-carbon opportunities being pursued in the financial services sector. Indeed, CBI analysis indicates that over a third of the UK's economic growth in 2011/12 is likely to have come from green business (see **Exhibit 4**).

On top of identifiable green business, there are significant productivity gains being made throughout the economy as a result of resources being used more efficiently. Not only will this help to reduce the amount of investment needed in the UK's energy supply, but there are real cost savings to be made. There is potential for businesses to save up to £23 billion a year from improving their resource efficiency[3], with companies such as Sainsbury's (**Case study 2**) leading the way.

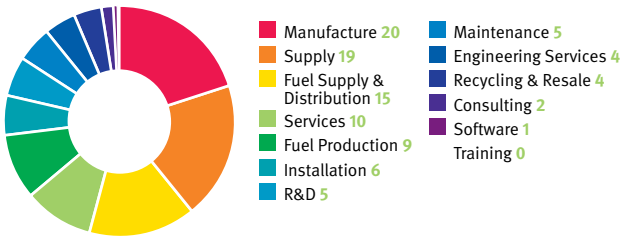
Exhibit 1 What is green business?

The definition of green business in this report is intended to be inclusive, capturing economic activity across all sectors and value chains that contributes, either directly or indirectly, towards reducing environmental impacts or adapting to environmental changes. It is used as an umbrella term, incorporating all related terminology such as sustainable, low-carbon (including nuclear) and cleantech.

The analysis within this report is based on research from the Department of Business, Innovation and Skills (BIS), which uses the similarly broad definition of 'low-carbon and environmental goods and services'. The intention, as stated by BIS, was to fill the gap in current Standard Industry Classification (SIC) codes which do not sufficiently capture all of this activity. These figures cannot, however, reflect all of the productivity gains achieved through the more efficient use of resources.

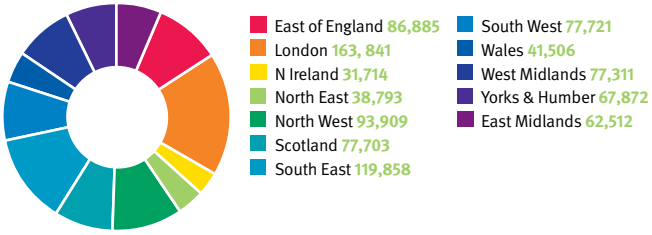
"this is not driving growth in isolation, but is becoming mainstreamed across all sectors and regions"

Exhibit 2 **Market share of green economic activity across the value chain in 2010/11 (%)**



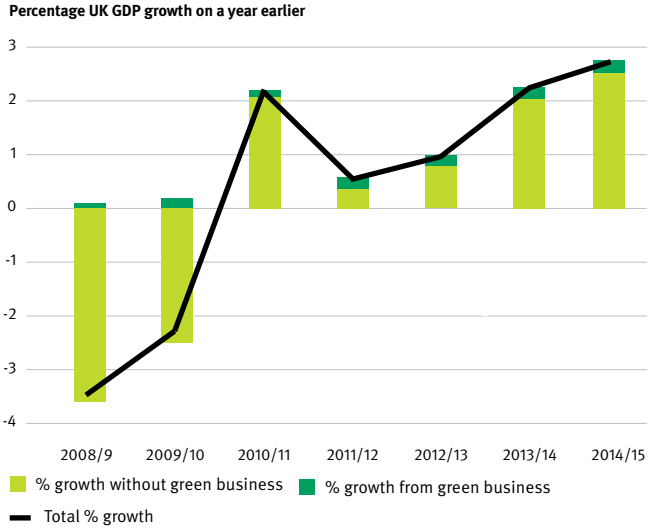
Source: BIS LCEGS data

Exhibit 3 **Jobs per region in green business across the UK in 2010/11**



Source: BIS LCEGS data

Exhibit 4 **Proportion of the OBR's historical and projected UK GDP growth figures attributable to green business**



Source: CBI analysis based on OBR and BIS data

"over a third of the UK's economic growth in 2011/12 is likely to have come from green business"

Case study 1
Lloyds Bank – lending to sustainable projects in mid-sized businesses

Lloyds Bank was the most active lender to the UK renewable energy market in 2011, and lent over £500m to projects globally, supporting onshore and offshore wind, solar and biomass technologies in the UK, Germany and the US. Bloomberg ranks Lloyds as the number one major bank in the UK and the fifth globally in terms of their green credentials.

Building on this strong support to larger scale renewable energy projects, the Lloyds Bank Mid Markets team have embarked on the national roll out of a comprehensive knowledge transfer programme aimed at their front line, risk and financial markets teams to support existing customers developing sustainability strategies and looking to invest in renewable energy projects. The programme is led from the North East and North Cumbria, at an exciting time for the sector in the North East with a number of high profile investments having been announced recently, including Offshore Group Newcastle ('OGN') plans to create up to 1,000 jobs relating to the manufacture of foundations for deep water wind turbine generators.

Lloyds is also part of the Offshore Wind Cost Reduction Task Force announced by Charles Hendry, Energy Minister, in October 2011, working on an action plan to practically reduce the costs of offshore wind development.

Case study 2
Sainsbury's – improving their bottom line through energy efficiency

For many years now Sainsbury's has been running a number of programmes to reduce energy consumption and associated carbon emissions for its main supermarket and convenience stores.

The Carbon Step Change Programme has delivered a number of ground-breaking initiatives into new store design, some of which can be rolled back into the existing estate. As part of the re-fit of the store in Crayford, the building was equipped with a pioneering geo-exchange system which captures natural energy through boreholes hundreds of metres beneath the ground, providing the store with on-demand heating, hot water and cooling from renewable sources. It also included a range of other energy efficiency measures in both the original store and the new extension, including sun pipes to maximise the use of natural light, and daylight dimming for the electric lights. Although the store is now two and a half times its original size, its carbon footprint has remained the same. As a result of the Carbon Step Change Programme, the store has seen a 60% reduction in energy demand from the National Grid, compared to 2005/06.

Since 2007, these initiatives have reduced electricity use in stores by 17.3%, which has allowed Sainsbury's to increase its estate without increasing overall use of energy. In fact there has been an absolute reduction in electricity use of 9.1% despite an increase of over 25% in floor space. This stands Sainsbury's in good stead for its new target of 30% reduction in carbon emissions by 2020.

"without green business the trade deficit in 2014/15 would be around double current government projections"

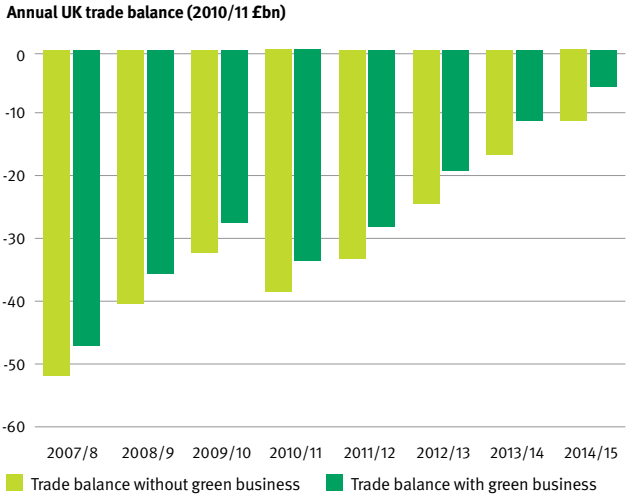
New and changing markets can drive future growth and economic rebalancing

It is clear that the market for green goods and services will continue to expand, underpinned by ambitious policy frameworks both at home and abroad. Government figures show that the UK's green business is set to continue to grow at pace[4]. New markets such as offshore wind promise to deliver a significant amount of inward investment from multi-national companies including a proposed £80m from Siemens and £125m from Gamesa, while the introduction of the Green Deal could help to develop a new market in energy efficiency solutions for buildings. And innovation isn't just driving emerging industries, it is transforming existing ones, such as the automotive industry in the North East, where the UK has recently welcomed major inward investment from Nissan (see **Case study 3**).

And there is an even greater prize to be won by tapping into emerging export markets. The UK is currently in trade surplus in green goods and services to the tune of £5 billion[5], with a host of high-growth companies poised to take a slice of this global opportunity. One such company is Sentec, a mid-sized business which is exporting smart grid and metering technologies to the US and Australia (see **Case study 4**). This strong export performance could help significantly boost our trade balance over the next four years – CBI analysis shows that without green business the trade deficit in 2014/15 would be around double current government projections (see **Exhibit 5**).

These exports look set to continue to head towards high-growth economies. The CBI's 2011 reports on increasing exports[6] and rebalancing the economy[7] stated that re-orientating the UK's exports towards high-growth markets such as the BRICs is a prerequisite for net trade to deliver substantial economic growth, and could be worth a boost of £20 billion to GDP by 2020. While around 5% of total UK exports are to these countries, they account for a greater proportion of green exports, with 7% heading to China alone (see **Exhibit 6**).

Exhibit 5 **Contribution of green business exports to the OBR's historical and projected UK trade balance figures**



Source: CBI analysis based on OBR and BIS data

Case Study 3
Nissan – transforming the automotive market

Nissan is investing £420m in the production of the 100% electric Nissan LEAF and lithium-ion batteries at its Sunderland Plant in North East England. Named European and World Car of the Year, the Nissan LEAF was first launched in Japan for the global market and local production for the European market will start in Sunderland in 2013.

The production of the Nissan LEAF and the batteries, supported by a £20.7m Grant for Business Investment from the UK government, is expected to maintain about 2,250 jobs at Nissan and across the UK supply chain. Including the Nissan LEAF and battery production, the company has announced £912m investment in the UK for its new model range and preparations are now advancing for the Nissan LEAF to be incorporated onto the production lines at Sunderland alongside the company's petrol and diesel models.

Nissan has announced a number of measures that it will take to prepare the European market for this step up in production volumes. The plans focus on improving the environment for electric vehicles and, during 2012/13, will see the Nissan LEAF sold in more markets, by more dealers, with a radically improved quick charging network. All of these actions will lay the foundations for the production of the Nissan LEAF in the UK. Building the car in the UK will reduce lead times, increase supply, mitigate currency fluctuations and reduce the carbon footprint of bringing the car to the customer.

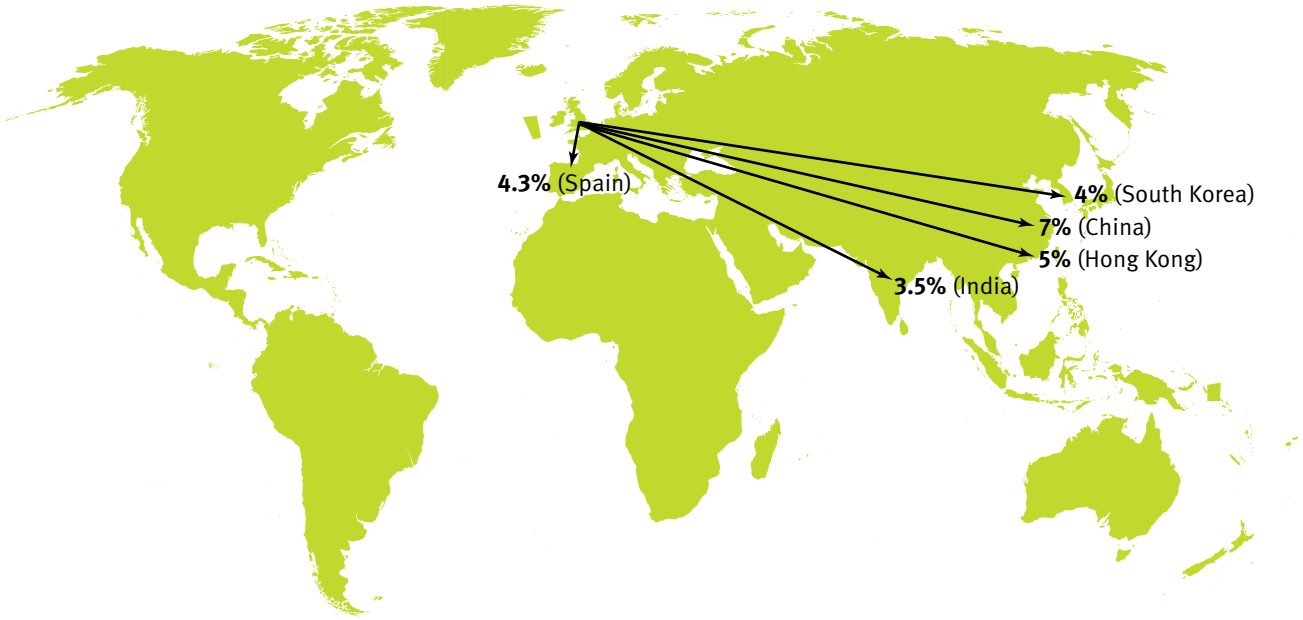
Case study 4
Sentec – innovative mid-sized business exploiting global markets

Cambridge-based Sentec is the world's leading supplier of smart grid and metering technology, providing product development services and intellectual property to companies across the world in the energy and water markets. Since setting up in business in 1997, Sentec has steadily increased its focus in smart grid developments, which now account for the vast majority of its business. Initially, this concentrated on smart meter design for gas, water and electricity, working with some of the largest names in the industry over the past decade. Clients in this sector have now sold over 11m electricity and water meters based on Sentec technology in markets across the world, logging over 250 billion service hours.

The market for smart metering products is more mature in territories such as North America and this, along with the excellent reputation of British engineering overseas, has been reflected in its exporting track record. The growth of the smart meter market has allowed Sentec to double its turnover and headcount in the past five years. Building on its reputation in smart metering, Sentec is now leading the development of outstanding products for smart grid applications in the distribution network and for consumers, in areas such as grid monitoring, demand response, micro-generation, energy storage and electric vehicles. These products are destined for markets all over the world. Sentec recently won a third Queen's Award for Enterprise, this time in Innovation, and is aggressively recruiting high class engineers and scientists to join its team. The company plans to double in size again over the next five years, repeating its North American success in Europe.

"the transition to a low-carbon economy should ensure the UK's long-term security and affordability of energy supply"

Exhibit 6 **Leading export destinations for UK green goods and services**



Source: BIS LCEGS data

And our economy will become more secure and sustainable over the longer-term

Importantly, the transition to a low-carbon economy should ensure the UK's long-term security and affordability of energy supply. Within the next ten years, around a fifth of the UK's electricity generating capacity will have come offline, and while making best use of existing assets and building new gas generation will be important for bridging this supply gap, a balanced energy mix will be needed to provide a sustainable path for the future.

Despite the higher up-front cost of low-carbon generating technologies, the longer-term gains are significant. With global oil and gas prices having been on an upward trend for the past decade, and becoming increasingly volatile, an increase in low-carbon technologies will help to reduce our dependence on, and therefore our exposure to, global energy prices. Indeed, research done by Oxford Economics last year suggested that the negative impact of this on the UK could be cut by over half in 2050 as a result of the low-carbon transition[8]. This will be crucial for underpinning the UK's future economic health.

2 There is a risk that this potential will not be realised

While the UK is already seeing growth benefits from the low-carbon transition and this is expected to continue into the future, the full potential will not necessarily be realised. With competition in the global low-carbon race fierce – and the high-growth economies gaining ground – we must keep our foot firmly on the pedal.

Business wants to keep up the pace but has concerns over the government's current approach to the low-carbon transition, which it believes to be missing the mark. As a result, there is a risk not just of missed opportunities, but of undermining existing economic activity. With so much at stake, a smarter and more strategic approach is needed.

We cannot afford to lose momentum

While the UK has for a long time been seen as a global frontrunner in energy and climate change, other countries have been catching up with great speed. Many of our competitors are also forging ahead with strong targets and regulatory frameworks combined with explicit low-carbon industrial strategies (see **Exhibit 7**), often backed by significant levels of public spending that the UK is unable to match. Germany, for example, has developed a strategic industrial policy around renewable energy generation in order to match its economic and environmental objectives.

High-growth markets are also moving fast, with countries such as South Korea committing to spend 2% of GDP on green investments. HSBC last year predicted that the green market share of the three largest industrialised low-carbon markets (EU, USA and Japan) will fall from 60% in 2009 to 53% in 2020, while the share of the three leading major emerging markets (China, India and Brazil) will grow from 25% to 34%[9]. While this is perhaps unsurprising given that these are high-growth markets, concerted action is needed to ensure that the UK keeps pace with its global competitors.

"concerted action is needed to ensure that the UK keeps pace with its global competitors"

Exhibit 7 **Country profiles – action to drive green growth**

China: The Green Development theme within China's 12th Five Year Plan sets out six strategic pillars to green its economy, which include several new binding targets, including carbon intensity to be reduced by 17%. There are also a number of policy instruments which support the low-carbon transition such as feed-in tariffs, a renewable energy surcharge and subsidy scheme and the intention to start a pilot carbon trading scheme. In 2011 $45.5 billion was invested in low-carbon energy in China, 20.2% of the G-20 total.

Germany: Germany has a clear strategy to strengthen its industrial base through its low-carbon initiatives. By 2020 Germany wants 23% of its final energy consumption and 10% of its transport to be powered by renewables. The German development bank, KfW, says it made more than €25 billion in environmental-related investments in 2010.

India: In India renewable energy is taxed at 15%, half the rate of conventional energy, and the government has implemented the 'National solar mission' with the aim of deploying 20GW of solar energy by 2020. In 2011 India's low-carbon energy sector was the second fastest growing in the G-20 with investments increasing 54% to $10.2 billion.

USA: The USA is the number one investor in low-carbon energy and uses tax credits for renewables to stimulate investment. It also has a biofuel target of 36 billion gallons by 2020. Low-carbon energy investment grew by 42% in 2011 to $48.1 billion and for the first time the USA installed 1GW of solar capacity in a year.

Sources:
Ernst & Young, Renewable Energy Country Attractiveness Indices, Issue 32, February 2012

The Pew Charitable Trust, Who's Winning the Clean Energy Race, 2011

But the government's current approach is missing the mark

While business does not want to lose momentum on the low-carbon transition, it has concerns with the government's current approach. Although the coalition has set out a robust set of policies to meet our emissions reduction targets through the Carbon Plan, and has outlined proposals to drive private sector investment in its Plan for Growth, there is still work to do to ensure that the two are aligned in a meaningful way. To date, its approach has been somewhat incoherent and disjointed, with businesses and consumers paying the price. In particular, there are serious concerns that:

Policy uncertainty is damaging business and consumer confidence
As highlighted in our 2011 report, *Risky Business*[10], the reliance of most low-carbon technologies on government policy presents a unique challenge to investors, who often see policy as uncertain and susceptible to change – either through ad hoc tinkering or a major change in political objectives.

For example, with the slippage of the review of support for renewable energy generation under the existing Renewables Obligation mechanism, and the uncertainty over the level of subsidy for wind projects, businesses lack the long-term clarity of the market framework within which they will be investing, creating a challenge for planning and financing projects.

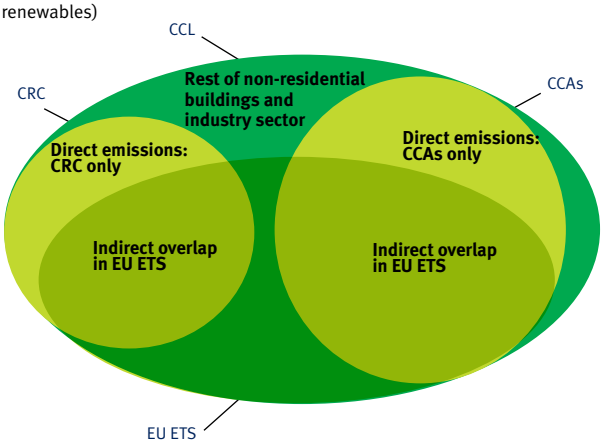
Of equal concern is the string of sudden and unexpected policy changes that have taken place over the past two years, including the increase in the North Sea oil and gas tax, the removal of revenue recycling from the Carbon Reduction Commitment (CRC) and the cut to the solar photovoltaic feed-in tariff. These have been damaging to business confidence, with implications not just for immediate investment decisions but for longer-term trust in government policy.

Inconsistency in government messaging can also be damaging, not just for business investments, but for consumer confidence. As the drivers of new markets, consumers will be a key part of the low-carbon economy, therefore clear and consistent information from both government and business will be needed to ensure they are bought in. Mixed messages on low-carbon policies, as seen recently with the debate about proposed changes to building regulations to support household energy efficiency, risks undermining business' and consumers' faith in the UK's commitment to green growth.

The policy landscape is overly complex and bureaucratic
As well as concerns about instability, businesses believe that the policy and regulatory landscape is currently too ad hoc and burdensome, which is deterring investments and threatening our competitiveness, both within and outside the EU. The uncoordinated approach towards introducing new policies has left us tying ourselves in costly green policy knots, with the overlap of various schemes meaning that some businesses are captured by multiple environmental taxes and regulations (see **Exhibit 8**), leading to significant extra administrative and cost burden. CBI analysis suggests that the cumulative impact of policies could add £50/MWh to wholesale energy prices by 2020[11].

Exhibit 8 **Illustration of policy overlap for non-domestic buildings and industry sectors**

(excludes feed through costs from the Carbon Price Floor and support for renewables)



Source: The Committee on Climate Change

Businesses also have concerns about the complexity and bureaucracy of individual policies. A particularly poorly regarded policy is the CRC. As set out in the CBI's response to DECC's latest consultation on the scheme, since it was altered by surprise to remove the revenue-recycling incentive the evidence shows that it does not drive investment in energy efficiency. It is simply a revenue-raising instrument, but, as outlined in **Case study 5**, an administratively burdensome one.

Poorly designed policies risk damaging key sectors of the economy

There is a concern that the government lacks a holistic approach to the low-carbon transition, and that it doesn't always design or implement policies so as to reflect the value of all sectors' contributions to the green economy. The current approach means that while some policies work well in driving positive investment decisions in some sectors, the costs of these can fall heavily on other sectors. This creates a system of 'winners' and 'losers' in which the 'losers' are often those for which energy makes up a large proportion of their operating costs.

For example, the government's Carbon Price Floor (CPF) is intended to provide certainty for companies investing in low-carbon energy generation. While energy-intensive industries (EIIs) have coped to date with the cumulative cost impact of UK and EU policies, the CBI's 2011 report, *Protecting the UK's foundations*[12], indicated that the unilateral introduction of the CPF from next year is likely to tip the balance, meaning that some will be unable to remain competitive as UK-based businesses as their operating costs rise more than those of their competitors, both within and outside the EU. Despite the government's efforts to compensate for this, there remains a risk that these firms will choose to relocate to countries with less costly policy frameworks, a process referred to as 'carbon leakage'.

Not only do these industries make a major direct contribution to economic growth – EIIs account for 1% of UK GDP and directly employ around 225,000 people[13] – but they are a crucial piece of a low-carbon future. The low-carbon transition will depend on products made using energy-intensive processes (see **Exhibit 9**), and if we do not secure the future of these industries, we will be forced to import what we should be exporting.

Case study 5
Kelda Group – facing the complexity of the Carbon Reduction Commitment (CRC)

Kelda Group, parent company of Yorkshire Water, is a large participant in the CRC. It consumes more than 600 GWh per year of electricity in its provision of water and wastewater services across the UK. Kelda Group therefore recognises the priority to develop a secure supply of low-carbon energy for the UK and for their business.

Kelda Group is experienced at greenhouse gas reporting, having reported annually since 2004. However, it has found the CRC excessively burdensome due to the complicated and changing nature of the scheme that does not align with international and Defra accounting methodologies. Whilst Kelda Group welcomes effective Government incentives to support the transition to the low-carbon economy, the CRC has diverted significant human resource away from its focus on genuine carbon reduction activities. Kelda Group estimates that administering the CRC has cost approximately £50,000 between April 2010 and August 2011.

Exhibit 9 **The role of energy-intensive industries in the green economy**

- A wide variety of chemicals are needed in products like insulation, double glazing, and materials for wind turbines, lightweight materials in planes and cars and low-temperature detergents. It is estimated that use of these materials saves over twice the amount of CO_2 produced during their manufacture.
- The International Energy Agency estimates that 9-150 tonnes of cement and 25-150 tonnes of steel are needed for each megawatt's capacity of gas power, nuclear or offshore wind.
- Increasing amounts of strong, but lightweight, steel, aluminium and plastic materials are needed to help increase the fuel efficiency of new vehicles.
- Robust ceramic refractory materials are needed to improve the efficiency of producing various metals and glass.
- Low rolling resistance tyres can save significant carbon emissions when used, far exceeding the emissions associated with their manufacture.
- Among the materials needed for retrofitting buildings (to make them more energy efficient), 0.5-3kg of glass and 10-100kg of bricks and tiles are needed for every square metre of retrofitted housing space.

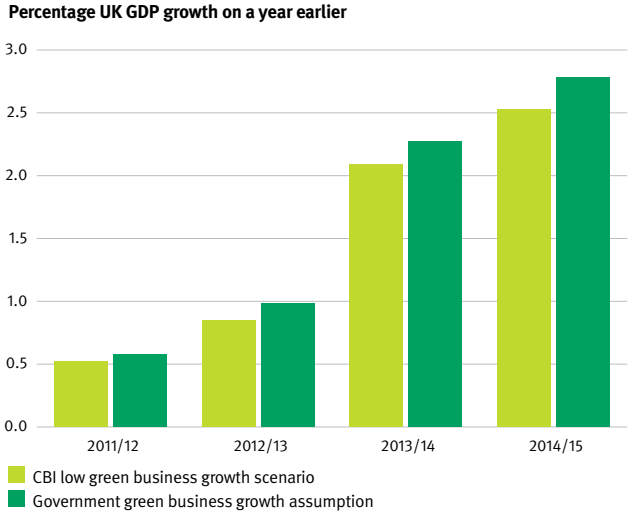
"a green business slowdown could mean the UK losing almost £400m in net exports in 2014/15"

'Business as usual' will not sustain and maximise the UK's green growth potential

It is clear that the UK must continue at pace towards a low-carbon economy if it is to keep up with its competitors, but action in the absence of a coherent and holistic strategy can be counter-productive. If the government continues with its current approach, there is a real risk that UK green business growth will not reach the government's expectations as outlined in the previous section. **Exhibit 10** illustrates this scenario, showing the impact on the UK economy of green business growing more slowly[A] than the government's projections as a result of poor green investment conditions in the UK. **Exhibit 11** shows that this slowdown could mean the UK losing almost £400m in net exports in 2014/15 – the equivalent of around 7% of the total projected trade balance. This does not even take into account the potential damage caused by badly designed and implemented policies (such as to EIIs), meaning that the total negative impact on the economy could be even greater.

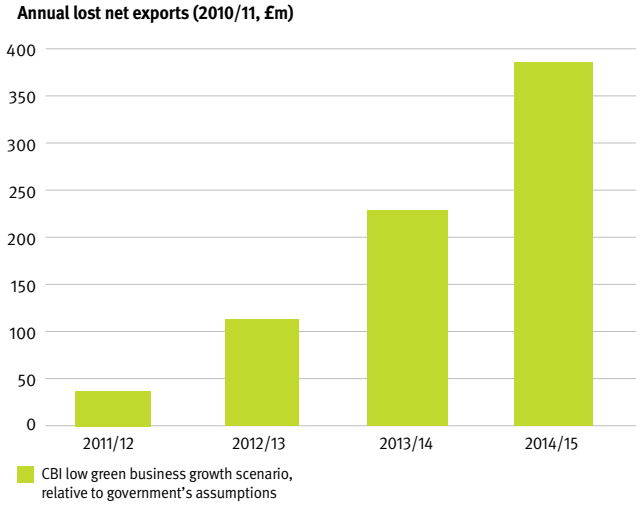
Business believes that these situations are avoidable, but concerted action is needed as part of a wider green growth strategy. Firstly, government must act to set the right policy conditions in order to drive green markets in a way that works for *all* parts of the economy. Beyond this, it should think more strategically about how it maximises growth opportunities over the longer-term to capture all the benefits to the UK economy and fulfil our potential as a frontrunner in the global green race.

Exhibit 10 **Possible reduction in UK GDP growth if green business grows more slowly than government expects, compared to OBR projections**



Source: CBI analysis based on OBR and BIS data

Exhibit 11 **Potential loss of net exports if UK green business grows more slowly than government expects**



Source: CBI analysis based on OBR and BIS data

[A] The low green growth scenario was calculated by reducing the BIS LCEGS nominal growth rate, by three percentage points by 2014/15. For further information about the methodology for these calculations, see Annex A

3 Improved conditions are needed to drive low-carbon markets and stimulate investment

The government needs a smarter approach if the UK is to fulfil its green growth potential. Setting the right underlying market conditions will be key to attracting and stimulating business investment in sustainable solutions, and enthusing consumers.

The government should firstly reaffirm its ambition and high-level vision for the UK to be a global market leader in this area. With the UK's strategic direction clear, businesses will look to a robust policy and regulatory framework to create the right signals to drive and transform markets in which they can invest with confidence – sensible design, stability and longevity will be crucial factors. Get this wrong, and we risk losing out on investments and damaging industries, as outlined in the previous section. But get it right, and we could see a real boost to private sector trade and investment.

A smart approach requires the government to ensure business and consumer confidence in green technologies and markets, reduce complexity in the policy landscape and maintain the viability and competitiveness of our low-carbon industrial base. To do this, it should take the following actions:

The UK must maintain its ambition

As the first country with legally binding carbon targets out to 2050, the UK has to date taken a market leading position in the low-carbon transition, providing investors with confidence in the long-term political durability of our ambition. The CBI welcomed the government's decision on the 4th Carbon Budget, which will take us half-way to the 2050 target by 2025, and wants to see this clear goal maintained in the future, if underpinned by a smart UK policy framework which follows all of the recommendations of this report and prevents negative impacts for businesses and consumers. We must ensure that the transition works for all parts of the economy.

However, while the Carbon Plan published last year provides a roadmap for action, this ambition has yet to be matched with an overarching vision for the UK's place or 'brand' in the global green economy, and some businesses are worried that it has been called into question as a result of inconsistent messaging from the government. Clarity breeds confidence, and the right 'mood music' is critical to this. As such, strong, quantifiable targets must be accompanied by consistent messaging across all parts of government that tells the world that the UK is open for green business.

Recommendation 1

Ensure that the ambition of the 4th Carbon Budget is maintained, if underpinned by a smart UK policy framework which follows the recommendations of this report, and matched with consistent messaging from all parts of government.

And play a strong role in Europe and internationally

It is in our economic interest to bring the rest of the world with us in order to open up new markets, manage competitiveness risks and ultimately find a global solution to greenhouse gas emissions that transcend national boundaries.

An effective EU-wide market-based policy framework is urgently needed. The UK government should be at the forefront of delivering an enduring solution to secure the future of the EU Emissions Trading Scheme (EU ETS). Because the scheme only has credible goals to 2020, and the economic crisis has reduced short-term demand, it is not driving the low-carbon investments that are needed now to meet climate goals cost-effectively over the period to 2030 and beyond. The solution must start from a clearer picture of the framework beyond 2020 in order to provide long-term certainty, including agreement on the Low-carbon Roadmap and Phase IV of the EU ETS. Clarity beyond 2020 will then allow an analysis of any changes that may be needed before 2020 in order to ensure a smooth path to the longer-term.

Restoring a robust, cost-effective, and market-generated carbon price should enable the UK's CPF to become a redundant backstop, removing the carbon price gap between the UK and our EU competitors. However, the gap between the EU and the rest of the world will remain. For this reason, strengthening the EU ETS must also include developing a strategic Europe-wide approach to support those industries that the evidence shows are genuinely at risk of carbon leakage. This means ensuring that support for those companies already in the ETS—currently through free allowances—is evidence-based, fair, and apolitical. But it also means providing a harmonised pan-European system for supporting companies not in the ETS but facing its pass-through costs in their electricity bills. These companies currently have to seek compensation in each Member State, where success is unreliable (even with the recently released State Aid guidelines) and varying levels of support can distort market conditions between countries.

At a global level, the government must continue to build on progress made at the Durban conference to push for a binding global agreement in order to set a clear signal that will put all economies on a shared and managed low-carbon pathway. The government should look to collaborate with other nations to achieve shared objectives where feasible. The UK-India Business Leaders Climate Group[14] is a good example of countries working together towards both emissions reduction and growth goals.

Recommendation 2

Be at the forefront of shaping the future of the EU Emissions Trading Scheme and global climate negotiations.

Clear and stable market signals are needed

Creating strong market signals is crucial for driving investment in newer low-carbon technologies that are not yet commercially competitive. For policy risk to be minimised, potential investors need to see clear long-term trajectories, and to be able to trust that any future changes to policy mechanisms will be done in a pre-defined way, so as to avoid continual or sudden adjustments.

This is particularly pressing for the UK's electricity market, which is currently not conducive to delivering the £200 billion of investment needed to replace and decarbonise our generating infrastructure at an affordable cost.

While it is essential that we continue to work at an EU level to ensure the EU ETS provides a technology neutral, long-term market signal, the UK's domestic energy policies must couple with the EU framework. Investment on the scale necessary cannot come from generators' balance sheets alone, meaning the government's Electricity Market Reform must lower the cost of capital from the financial markets, at the same time as keeping electricity costs internationally competitive. To achieve this, the policy details must be designed carefully; but they must also be put in place quickly to avoid an investment hiatus. The CBI's evidence to the Energy and Climate Change Select Committee on the draft Energy Bill[15] recommended that a feed-in tariff with Contract for Difference is needed but must be designed carefully to lower the cost of capital, that the capacity mechanism should be implemented quickly to allow investment planning, and that it must be possible to exempt EIIs from the costs of Electricity Market Reform.

Recommendation 3

Ensure that market signals – for example within the reformed electricity market – have stability and longevity, with any adjustments made in a pre-defined way.

Stimulating and facilitating new consumer markets will be crucial

While a clear direction and robust policy framework will be sufficient to allow some markets to develop, in other areas strategic intervention may still be necessary to unlock and grow new consumer markets which are unlikely to mature at pace organically.

The forthcoming Green Deal scheme (see **Exhibit 12**) is a key example of this, where certainty of consumer demand is crucial to justify business investment, as highlighted in **Case study 6**. However this has historically been a challenge for business, with research from the CBI's 2011 report, *Buying Into It*[16], showing that currently only 23% people consider the energy performance of a property when looking to buy or rent. While the Green Deal finance mechanism will help to overcome the up-front cost hurdle, this is not the only, and one might argue not even the most significant, barrier to the uptake of energy efficiency improvements. Other issues such as lack of awareness and consumer apathy towards energy efficiency may prove more of a challenge – one which business must work closely with government to resolve.

The key is in understanding what drives consumers' behaviour, and seeking to influence it by appealing to their motivations. For example, the CBI's research suggested that, while the public is concerned about the environment, cost savings are considered much greater drivers of low-carbon choices, while better flows of information in consumer-friendly language can help raise awareness. Where information and awareness-raising is coupled with the right mix of incentives and regulation, this can successfully generate demand.

To this end, all levers should be considered in order to transform consumers' attitudes towards energy efficiency. In the immediate term, the £200m made available by the government for the start of the Green Deal will be helpful to incentivise early adopters as part of a managed roll-out, while over the longer-term, regulation is likely to play an increasingly important role. For example, the CBI supports the government's intention, as outlined in the Energy Act 2011, to introduce minimum energy standards in the private-rented sector and believes that there is potential to extend building regulations, such as consequential improvements, in the domestic sector, if done sensibly. There may also be scope to explore fiscally neutral drivers such as varying a property's Stamp Duty banding according to its energy efficiency performance. This could go some way towards fully embedding the value of energy efficiency into the housing market, meaning a triple win for environmental targets, business investment and consumers' wallets.

Exhibit 12 **Explaining the Green Deal and Energy Company Obligation (ECO)**

The Green Deal: The Green Deal scheme will enable private companies to offer consumers energy efficiency improvements to their homes and businesses at no upfront cost, and recoup payments through a charge in instalments on the energy bill. The fact that repayments will be attached to the energy meter means that if the bill payer moves out of the property, the financial obligation doesn't move with them, but moves to the next bill payer. The expected financial savings must be equal to or greater than the costs attached to the energy bill, known as the 'Golden Rule' of the Green Deal.

The ECO: The ECO will replace the existing supplier obligations, the Carbon Emissions Reduction Target and Community Energy Saving Programme as well as the government-funded Warm Front scheme. It is proposed that a quarter of the ECO target will be allocated to an 'affordable warmth' obligation which will subsidise all measures for low-income and vulnerable households, and the other 75% will be used, in combination with the Green Deal, to support measures, or packages of measures, which cannot alone comply with the Golden Rule, such as solid wall insulation. A portion of the 75% will also be used to specifically target insulation measures, particularly hard to treat cavity wall insulation, at low-income communities. The scheme is set to run to March 2015.

Recommendation 4

Work collaboratively with business to ensure the right mix of incentives and regulation, together with clear and consistent information, is in place to drive demand in emerging markets, such as the Green Deal.

Case Study 6
Carillion Energy Services – gearing up for the Green Deal

Carillion believes that the Green Deal and the new Energy Company Obligation (ECO) could mark a significant step change for energy policy in the UK, and that it can open considerable market potential with its ambition of retrofitting 14m homes by 2020 and cutting CO_2 emissions in housing by 29%. With its track record and experience of delivering a range of energy efficiency initiatives, Carillion Energy Services will be ideally placed to meet this pent up demand across the different sectors that can take advantage of the Green Deal and ECO opportunities. However, Carillion is also very aware of the need for more certainty and an understanding of volumes.

In preparation Carillion is refining internal mobilisation programmes to deliver as the opportunities unfold. This includes embedding specific Green Deal training, accreditations and process into the business so that it is 'business ready' for full status as a Green Deal provider. Carillion is also proud to be one of the Government's 'Green Deal Pioneers' which means that it has been chosen to work alongside the Department of Energy and Climate Change to test the processes over the next few months to ensure they are robust and fit for purpose.

Greater progress is needed on cutting 'green tape'

While the right policy and regulatory framework can unlock investment, complex and burdensome policies can have the opposite effect, deterring business activity and acting as a drag on growth. This is a major area of concern for business which needs to be addressed as a priority. The CBI's recently published report, *Solving a Taxing Puzzle*[17], for which in depth interviews were carried out with senior business people across a range of sectors, proposed that the government commissions an independent review of the existing environmental tax landscape and addresses poorly performing policies. For example, immediate action should be taken on the CRC (see **Exhibit 13**).

Beyond this, business needs a more strategic framework which minimises policy overlap and duplication and therefore unnecessary costs to business. To this end, the report sets out a number of key principles which should underpin the design and implementation of environmental taxes (see **Exhibit 14**). If adhered to, these should help ensure that the right framework exists to successfully encourage business investment and drive environmental behaviour change.

Recommendation 5

Reduce complexity in the existing low-carbon policy landscape, including immediate action on the CRC, and take a more strategic approach when developing future policies.

Exhibit 13 **CBI proposal for the Carbon Reduction Commitment (CRC)**

As set out in our most recent consultation response[18], the CBI believes that without effective policy, the full potential of business energy efficiency will not be realised. But the CRC has become a revenue-focused instrument which is not improving energy efficiency. Its reporting element, originally designed to enable revenue recycling, is over-complex and unfair, and is attracting very little media or NGO attention. Its financial element has been rendered ineffective by the removal of revenue recycling. For these reasons, the CRC should be scrapped as soon as possible.

Unfortunately, the revenue collected through the CRC is needed to repair the public finances – otherwise it would have to be found from other businesses through other means. So, for purely fiscal reasons, some method to continue collecting this revenue is unavoidable. The CBI believes that this should be in the form of the simplest possible method to collect the same revenue from the same companies, and that it should be statutorily time-limited and receive a high priority for removal once the public finances allow.

To replace the CRC, a strategic assessment is needed of the barriers to business energy efficiency and the policy proposals that could unlock them. As a first step towards this framework, the CBI welcomes the introduction of mandatory carbon reporting under the Climate Change Act. It has been thoroughly consulted on, and will be more effective than the CRC provided that the recommendations in the CBI's response to Defra's consultation in May 2011 are followed[19].

Exhibit 14 **CBI principles for environmental taxes**

Environmental taxes should:

Have a clear purpose and definition: The government must be clear and precise about the environmental objective of a tax and how this relates to its role in raising revenue.

Take strategic fit into account: The tax must be carefully designed to complement existing policy instruments. Policy overlap should be avoided.

Be designed with simplicity at their core: Environmental taxes must be sufficiently simple to understand and implement. Visibility is required but not at the expense of burdensome compliance.

Offer comprehensive communication and advice: The government should consult thoroughly on all environmental tax changes.

Provide certainty to businesses: New taxes, and changes to existing taxes, must be introduced with sufficient lead-in times. Rates should be set as far in advance as possible, or an end outcome should be specified.

Ensure a strong on-going justification: Monitoring taxes post-introduction is important to confirm that a tax is still having the originally intended effect.

The value of *all* industries in the low-carbon transition should be better reflected

As we have demonstrated in earlier sections, the transition to a low-carbon economy will be reliant on business investment in a range of different industries, all operating within different commercial environments. A smart approach therefore needs to reflect this complexity if it is to enable low-carbon growth.

While the government has acknowledged that the cost of some of its policies may fall disproportionately on certain sectors, its response so far has been to treat the symptom rather than the cause which is neither fiscally prudent nor a sustainable solution. In the case of managing the impact of the forthcoming CPF, the government set out in its 2011 Autumn Statement plans to provide a £250m support package for those energy-intensive industries at risk from 'carbon leakage'. While this does go some way to mitigate against policy costs, it is only part of the answer. The £250m package may not provide sufficient support, and exemptions must be considered from future risks such as the costs of Electricity Market Reform. These industries also need more than just protection. They are viable, innovative companies with the potential to provide the foundations for our low-carbon transition, thus a more strategic approach is needed to enable them to fulfil this role.

To this end, the government should work in conjunction with industry to develop a long-term strategy for energy-intensive industries, with the further rollout of realistic sector-specific decarbonisation roadmaps. An important part of this will be to support the deployment of lower-carbon technologies within industry, such as Combined Heat and Power (CHP) and Carbon Capture and Storage (CCS), which will help these industries to grow in a sustainable way. Only by strategically tailoring the approach to suit different business' needs in this way, will we be able to move away from a system of 'winners' and 'losers'.

Recommendation 6

Develop a long-term strategy for energy-intensive industries, including the further rollout of realistic sector-specific decarbonisation roadmaps, which will enable them to fulfil their role in the low-carbon transition.

4 This should be underpinned by a strategic approach to maximise economic value

The previous section set out business' preferred approach to achieving the optimal policy and regulatory framework to develop low-carbon markets and encourage investment. But if we are to capture the full value of the low-carbon transition in the UK, we need to think about what a smarter approach looks like in its broadest sense over the longer-term.

We should look to build up and promote UK strengths, identify strategic opportunities and ensure that we have the right institutions and intellectual infrastructure to underpin these activities. This means government and business working together in proactive and pragmatic ways to join the dots between policies, industries and commercial realities in order to successfully translate business investment into sustained growth and competitive advantage.

The CBI believes that, beyond the specific policies to drive the low-carbon transition, a new approach and attitude is needed from government which is more strategic about identifying our strengths and realising our potential in order to ensure sustainable growth over the longer-term. To this end, we should focus on:

Exhibit 15 **Examples of existing UK strengths**

- **Manufacturing and industrial capabilities** – The UK has a strong presence in aerospace, automotive, electronics and ICT, offshore structures and operations and engineering and construction (see **Case study 7**).
- **Research and intellectual property expertise** – Britain has world-leading research with businesses, public and university laboratories producing groundbreaking work in sectors ranging from aerospace to pharmaceuticals to energy.
- **Financial and professional services** – London is the global centre of carbon trading, being the location of over 75% of all carbon market trading desks and housing 80% of all carbon market brokering firms. The City's expertise is currently in demand in emerging carbon markets such as Australia.

Building the UK's comparative advantage

With all countries looking to increase their share of the global low-carbon market, we must acknowledge that the UK cannot compete in every low-carbon solution. As highlighted in the CBI's 2009 report, *Pulling Ahead*[20], to ensure that we increase the UK's competitiveness, we should align public policy levers and investment with sectors and technologies with the greatest potential to create wealth for the UK. To this end, the low-carbon 'vision' discussed in section 3 should reflect the country's existing capabilities (see **Exhibit 15**) and consider focused, although not prescriptive, support to capitalise on them. We should also look to use our expertise to better leverage our significant natural assets. For example, Britain's island status gives it an advantage in sectors such as offshore wind and marine technologies, as well as making us well placed to develop carbon capture and storage (CCS) technology (see **Exhibit 16**).

"we should align public policy levers and investment with sectors and technologies with the greatest potential to create wealth for the UK"

Case Study 7
Atkins – exporting low-carbon expertise abroad

Atkins is well known in the UK for providing multi-disciplined engineering services and has, over the past decade, been successful in exporting low-carbon expertise abroad. One example is the 2012 London Olympic games which has the aspiration to be the greenest games ever. The high environmental targets set for the games have created local and export opportunities for the firms that have stepped up to the challenge. A sustainability learning legacy was created by UK Trade & Investment and this delegation has been providing Rio, which hosted the UN Conference on Sustainable Development, with lessons learned from the 2012 games.

Atkins is also operating in a range of emerging markets. In China, low-carbon design has helped Atkins establish a 500 person workforce, with sustainability and low-carbon often part of the project brief. One success is the work the firm is doing on Beijing Central Business District's new master plan.

In Indonesia, Atkins has seen demand for sustainable low-carbon designs on a range of mixed use projects, while in Saudi Arabia, Atkins has developed the detailed design for Jeddah airport which contains one of the largest low-carbon district cooling schemes ever designed in the world. In Qatar, Atkins has been integral in helping to set up the Central Planning Office and sustainability was high on this client's agenda. This builds on work the firm has done over the past twenty years which includes the creation of the iconic Bahrain World Trade Center, containing an integrated wind turbine which was a world first.

"government should consider a more proactive role in promoting the UK's strengths to the rest of the world"

Exhibit 16 **Developing a UK leadership position in Carbon Capture and Storage**

Developing CCS early in the UK will help establish early mover advantage and allow us to export the technology and expertise abroad. The UK is particularly well placed to grasp this opportunity given the abundance of depleted saline aquifers and oil and gas reserves in the North Sea presenting a ready site for CO_2 storage and our experience gained through oil and gas development. Indeed, the UK has sufficient offshore capacity to store more than 100 years of CO_2 emissions. Building on this comparative advantage could create 100,000 jobs by 2030 and contribute £6.5 billion to the UK economy. Furthermore, the export opportunities for UK companies have been estimated to be between £3 and £6.5 billion by late 2020[21].

The government has provided a strong signal of intent to lead the world in developing CCS at commercial scale through its commitment to investing up to £1 billion to fund pilot projects in the UK, while its CCS roadmap is helpful for considering the key interventions needed to get the technology off the ground. It must now continue to work at pace with industry to ensure that the new CCS competition comes to a successful conclusion – veering off course would mean we risk losing our advantage.

We should also look to build up regional capabilities. The North East region is an excellent example of this, where the Local Enterprise Partnership is committed to developing the region's historical expertise in automotive manufacturing and offshore structures into present day low-carbon strengths. In doing so, it is successfully attracting and securing 'sticky' investments, creating a low-carbon industrial cluster in offshore wind and electric vehicles.

As well as putting the right policies in place, the government should consider a more proactive role in promoting the UK's strengths to the rest of the world – this will be invaluable for attracting Foreign Direct Investment as well as for building our green 'brand leadership' abroad and boosting our export performance. The Foreign and Commonwealth Office (FCO) has made good progress on this front, for example through having energy and climate change experts located in embassies, and this good practice should be encouraged and embedded across the FCO and UK Trade and Investment (UKTI) in order to ensure these activities generate opportunities for British companies. The government could also look at the different approaches taken by some of our competitors. Singapore is an excellent example of a government with a can-do attitude towards courting investment from international businesses, ensuring that its interventions are geared towards bringing supply chain partners to the country too in order to build a sustainable presence. UKTI should look to learn some of these lessons and provide more 'hands on' and practical support to green businesses both in terms of investment and trade.

Recommendation 7

Play a more proactive role in aligning policy and investment with existing UK strengths, and promoting these abroad.

Capturing greater value from green investments

Equally important to maximising the UK's existing strengths is to consider the strategic opportunities to develop further capabilities at home. Particularly where we have sectoral strengths, we should look to build up the associated value and supply chains where feasible, which could help us to capture more of the value from UK investments, rather than seeing those economic benefits go to our competitors. This also fits the growing trend of 'localising' supply chains in order to better manage risks, which was identified in the CBI's 2009 report, *The Shape of Business*[22].

A good example of this is investment in offshore wind technology, where it is estimated that less than a third of the value of the goods and services needed to construct an offshore wind farm originates from the UK. A 2009 study showed that while research and development content and elements of installation capability within the UK are very good, we have lagged behind in our ability to manufacture key components such as blades, transmission systems, large castings and forgings (see **Exhibit 17**).

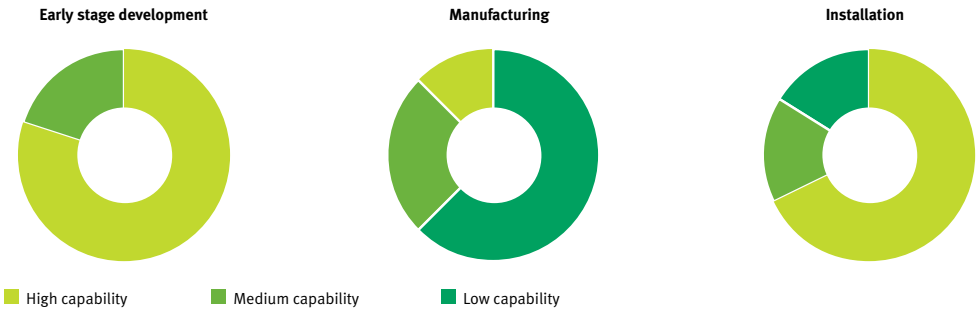
While, of course, the UK cannot excel in all areas, identifying where it is feasible to develop more of these capabilities at home could be very valuable for the UK, and could also help reduce the overall cost of investment in these technologies – recent research found that the capital expenditure costs for offshore wind projects could fall 33% by 2022 if a greater proportion of parts were made in the UK[23].

We should also be looking further into the future to nascent technologies such as marine power, where the UK has the potential to take a lead and capture a larger slice of the value chain. Again, the government could look to learn lessons from abroad – for example, the French approach has been to carry out forensic analysis of supply chains with the intention of addressing deficits with strategic investments. Similarly, the UK should look to map our current and future capability needs in order to build up robust and sustainable domestic supply chains. The Automotive Council technology roadmap is often held up as an exemplar of this type of activity, and it is an approach that should be replicated across other sectors.

Recommendation 8

Identify strategic opportunities to develop domestic capabilities with the use of targeted interventions and longer-term technology road-mapping.

Exhibit 17 **Illustration of UK strengths and areas for strategic development in the offshore wind value chain (%)**



Source: Technopolis Report, 2009

Facilitating the flow of finance

Another area where the government should take a more active role is in facilitating and accelerating the flow of finance towards green infrastructure. Establishing the right strategic institutions such as the UK's Green Investment Bank (GIB) – the world's first – will play a key role in this, if designed and implemented correctly. The CBI therefore welcomes the recently announced legislation for the GIB – making it an enduring and independent institution will help to ensure confidence in its effectiveness.

If the GIB is to have a truly transformational effect, it needs to operate at scale. The CBI's 2011 report, *Risky Business*[24], indicated that existing funding channels are insufficient to meet the pace and scale of green investment needed. Around £7.5-£10 billion annual investment is required in our energy infrastructure alone which cannot be accommodated on the balance sheets of the 'big six' utilities, and will be challenging even when supplemented by finance from banks or infrastructure funds. This is compounded by the shift in finance and capital conditions following the financial crisis which has created an even more challenging backdrop for investments. To this end, the GIB should have the power to raise funds from the capital markets in order to channel the wider pool of capital held by institutional investors towards green infrastructure. While the CBI accepts the government's decision to postpone the GIB's borrowing powers to avoid any adverse impact on its debt reduction targets, if investors are to have confidence in this important institution, it should look to issue debt as soon as is fiscally possible. Until this time, the GIB should use its limited balance sheet innovatively, implementing a range of financial interventions in order to leverage the maximum amount of private sector investment.

However, the existence of the GIB shouldn't mean that green infrastructure should be seen as completely separate to wider infrastructure efforts – rather, it should be an integral part of them. To this end, the inclusion of energy infrastructure projects in the national infrastructure pipeline is welcome, meaning that, in addition to intervention from the GIB, priority projects should be eligible for the range of direct government interventions, such as credit enhancement, as set out in our recently published report, *An Offer They Shouldn't Refuse*[25].

Recommendation 9

Give the Green Investment Bank the power to raise funds from the capital markets as soon as is fiscally possible, while ensuring that priority projects are also eligible for direct government intervention in the short-term.

"If the GIB is to have a truly transformational effect, it needs to operate at scale"

Developing our 'intellectual infrastructure'

The existence of a robust underlying 'intellectual infrastructure' ie the innovation and skills base, will provide an essential foundation for maximising UK advantage in the low-carbon economy. Support for innovation will be crucial for the development of disruptive new low-carbon technologies and for driving down the costs of existing ones, and while the UK has one of the most well developed innovation ecosystems in the world, with an internationally respected higher education system and world class R&D capabilities[26], efforts are needed to maintain this leading position.

The government has an important role to play in creating a supportive environment for low-carbon innovation, using a range of levers to complement the significant amount of spending by industry. It is also important that the UK has a strong intellectual property framework in place, as an efficient and robust patent system is crucial to ensuring that business is confident to invest in the innovative ideas that underpin the UK's low-carbon technologies. *Pulling Ahead*[27] highlighted that supporting green technologies through the research, development, demonstration and deployment process presents a real challenge given the long timeframes for commercial return, therefore the government's efforts to strengthen its strategic focus and bring greater clarity to the landscape, particularly with the re-launch of the Low-Carbon Innovation Coordination Group (incorporating both the Energy Technologies Institute and the Technology Strategy Board), are welcome. The government should also continue to use its huge spending power to help commercialise low-carbon products. To be effective in promoting the shift to the green economy, intelligent public procurement processes are essential and should be open, well-coordinated across government and take into account the whole life costing of products.

Developing and maintaining economic value from low-carbon innovation will not be possible without developing the right skills. The low-carbon transition will require a combination of skills across different sectors and it is vital that these are available – for example, with 80% of employees in the energy sector due to retire within the next 10-15 years a pipeline of sufficiently skilled workers will be necessary. In many cases, it will be a case of reskilling and tailoring existing skills for low-carbon work although there will be some need for new and specific low-carbon skills. The government should therefore consider a mix of short, medium and long-term changes in order to meet these requirements. It should continue to improve the education system at all levels to ensure the future workforce is adequately trained, working with organisations such as the Sector Skills Councils to share innovative training practices. Government, business and the education sector also need to establish a closer line of communication to allow a better understanding of the skills needed. Excellent examples of this already exist, such as the collaboration between the automotive industry and the University of Sunderland to develop an MSc in Low-Carbon Vehicle Technology, and should continue to be encouraged.

Recommendation 10

Continue to support the UK's strong innovation ecosystem, and address strategic skills shortages.

Conclusion
This smarter approach could come with an economic prize

Implementing the recommendations set out in sections three and four of this report as a package could enable green business to outperform government expectations, significantly boosting UK growth. Creating the right conditions to drive low-carbon markets and stimulate investment, and adopting a more strategic approach to maximise the economic value of the low-carbon transition, could enable UK green business to grow more quickly than the government's figures project.

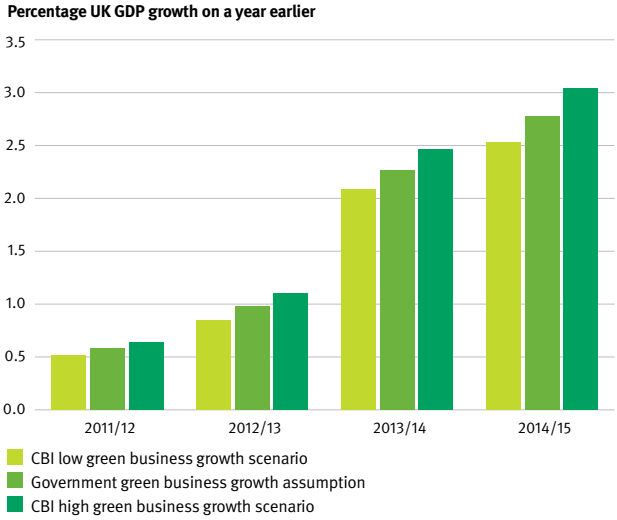
To illustrate this possibility, **Exhibit 18** shows the possible impact on UK GDP growth if green business growth accelerates[B]. Compared with the CBI's low green business growth scenario, taking a smarter green policy approach could boost the UK's economy by almost £20 billion by 2014/15. **Exhibit 19** shows that, assuming the export performance of green business is maintained, this growth could lead to an improvement in the UK's trade balance of almost £0.8 billion compared to the CBI's low green business growth scenario – and this does not include any improvement in net export intensity which might result from successful industrial policy.

These scenarios present the government with a stark choice. Carry on with 'business as usual' and we risk losing ground in the green economy race and missing out on a significant growth opportunity for the UK. Even worse, poorly designed and implemented policies could deter investment and damage existing business growth. But make the right policy choices within the context of a coherent industrial strategy and we could see a real boost to private sector trade and investment, which will drive future growth and underpin our long-term economic health.

[B] The high green growth scenario was calculated by increasing the BIS LCEGS nominal growth rate, by three percentage points by 2014/15. For further information about the methodology for these calculations, see Annex A

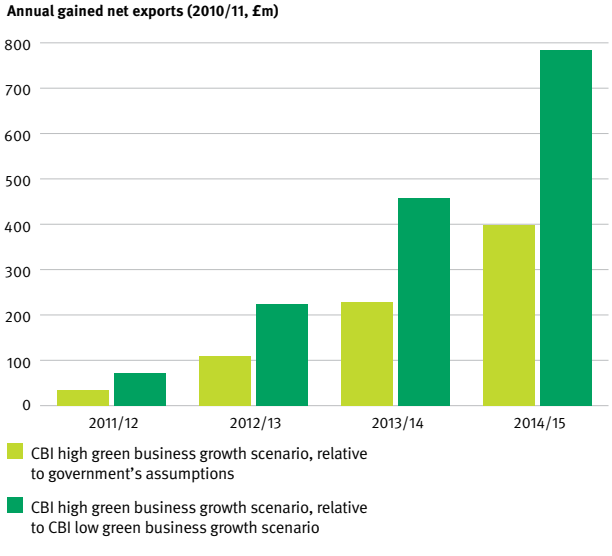
"taking a smarter green policy approach could boost the UK's economy by almost £20 billion by 2014/15"

Exhibit 18 **UK GDP growth under CBI high green business growth and low green business growth scenarios, compared to OBR projections**



Source: CBI analysis based on OBR and BIS data

Exhibit 19 **Potential boost to UK net exports of the CBI's high green business growth scenario, relative to OBR projections and to the CBI's low green business growth scenario**



Source: CBI analysis based on OBR and BIS data

"this growth could lead to an improvement in the UK's trade balance of almost £0.8 billion compared to the CBI's low green business growth scenario"

Annex A
Methodology for CBI analysis

The government publishes annual figures on 'Low-carbon and Environmental Goods and Services' (LCEGS), prepared by the consultancy KMatrix. These cover 24 different types of business activity that reduces environmental impacts including low-carbon energy, energy management, and environmental work (not limited to carbon). The figures include all businesses with significant green sales, not just dedicated green companies. They do not, however, include the benefits of 'mainstreamed' resource and energy efficiency on businesses' bottom lines, nor do they include business activity on adaptation and resilience to environmental change.

To investigate the contribution of this green business activity to the economy as a whole, the CBI has made comparisons between the latest set of LCEGS figures[28] and the latest economy-wide OBR/ONS data[29].

We have assumed that the data sets are approximately consistent, so that the LCEGS figures roughly describe the contribution of green business activity to the OBR figures. This is approximate, because the LCEGS method for estimating value added through sales contains different approximations from the Office of National Statistics method for estimating GVA, and consequently GDP. However, the two methods should converge with perfect information and are typically close to one another, so illustrative comparisons can be made.

The LCEGS figures are given in nominal (cash) terms, and an LCEGS-specific inflation rate is not readily available. To produce the figures in this report, which are in real terms unless otherwise stated, the approximation has been made of applying OBR/ONS economy-wide inflation rates to the LCEGS figures.

To investigate the potential effects of slower or faster green business growth, the CBI constructed low- and high-growth scenarios by increasing or reducing the LCEGS *nominal* growth rate forecast for 2014/15 by 3%, then linearly interpolating annual *nominal* growth rate forecasts to reach the new 2014/15 figure. The impact on net exports was assessed by keeping the future ratio of net exports to total sales at the average for 2007/8-2010/11, ie by assuming no change in net export intensity. The low-growth scenario only accounts for slower LCEGS growth, not for any potential damage to other business activity (eg energy-intensive manufacturing) if a smarter policy approach is not taken.

These scenarios are illustrative rather than predictive: they investigate 'what if' LCEGS growth was to slow or accelerate by modest amounts.

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