

A "MUST" WIN

CAPITALISING ON NEW GLOBAL
LOW CARBON MARKETS TO
BOOST UK EXPORT GROWTH



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Foreword from Rt Hon Edward Davey MP

SECRETARY OF STATE FOR ENERGY & CLIMATE CHANGE

Growth has returned to the UK. The tough economic decisions taken by the Coalition Government have laid the foundations for a broad based recovery. For the first time in a decade all three main sectors of the economy - manufacturing, services and construction - have grown by at least 3% in the last year. The impact of the recession is still being felt, but businesses are creating jobs, with more people benefiting from a regular pay cheque.

The new economy we are building cannot just replicate the old model that failed. Growth must be sustainable, not just in an economic sense but environmentally sustainable too. The science is unequivocal. Climate change is a real and growing threat. If unchecked, the long-term costs to our economy and our people would make the last few years look like a walk in the park in comparison.

Britain has pledged to reduce its carbon emissions by 80% to meet this challenge and we are seeking ambitious commitments by other countries too. But we cannot wait for a global agreement to act. Our competitors are already waking up to the opportunity that green growth offers. The global low carbon goods and services sector is forecast to be worth £4trillion by 2015. This Government is determined that the UK is among the leading pack when it comes to low carbon technology and growth and well positioned to grab a larger share of this boom market.

Small and Medium sized businesses are the engine room of this low-carbon revolution. As this report from the Carbon Trust and Shell Springboard underlines, SMEs make up the vast majority of the businesses operating in the UK's growing low-carbon sector. Confidence and outlook is buoyant. Most SMEs in the sector are taking on new staff, creating jobs, developing new products and increasing revenues. Low carbon SMEs are twice as likely to export compared to other sectors. We rank fifth in the world for low carbon exports, and the potential for growth is evident.

Much of the drive for growth has to come from the private sector. But no country has been successful at developing innovative low carbon technologies by leaving it to the market alone. Small businesses often struggle to access private sector funding and identify partners. So this Government is working with the private sector to open up opportunities.

The Business Finance Partnership has helped create £5 of lending for every £1 of taxpayers money provided. The Green Investment Bank, capitalised to the tune of £3.8bn, is tasked with accelerating green infrastructure projects that can reach right down to small business through the supply chain. The direct lending programme of UK Export Finance has been doubled.

The Low Carbon Innovation Coordination Group brings together the major public sector organisations that invest in low carbon technology to co-ordinate support. Public money remains tight, but the core members of the LCICG expect to invest over £1bn in low carbon technologies such as offshore wind, Carbon Capture and Storage, and nuclear technologies in the four years to March 2015. My Department also directly supports small business technology innovation through the Energy Entrepreneurs Fund and the low carbon funding navigator (<http://www.lowcarbonfunding.org.uk/>) provides clear guidance on key public and private funding bodies and support mechanisms for UK low carbon energy projects.

On the energy side we have tripled the support to low carbon generation with the £7.6bn Levy Control Framework. And the 2013 Energy Act puts in place the world's first low carbon electricity market, further boosting support available for renewables and other low-carbon technologies. This is helping to create a true energy sector boom that will support 200,000 new jobs in renewables alone by 2020.

Of course there is always more that can be done. This report from the Carbon Trust and Shell sets out the prize to be gained and challenges all stakeholders to up their game so that the UK can make the most of the opportunities provided by the low carbon revolution.

Foreword from Matthew Tipper

SHELL VICE PRESIDENT FOR ALTERNATIVE ENERGIES

How to meet the rising energy demand of a rapidly growing population, while reducing carbon dioxide (CO₂) emissions, is one of the greatest global innovation challenges of our time. At Shell International Limited ("Shell") we apply our expertise and knowledge from our long history in the oil and gas sector to develop innovations and advanced technologies. These include cleaner energy solutions that can be deployed now – such as natural gas and low-carbon biofuel – as well as emerging opportunities, such as advanced biofuels and liquefied natural gas for transport. We invest in developing cleaner energy solutions in areas such as carbon capture and storage (CCS), smarter mobility and alternative energies. But no single company has all the answers. Solving this challenge will require strong collaboration between businesses, governments and civil society. It will also require changes to individual behaviour.

Small, dynamic businesses in the UK are a hotbed of big ideas, and have a vital role to play in pioneering cutting-edge solutions to the energy challenge. That's why we established the Shell Springboard programme in 2005, offering small companies at the forefront of the low-carbon economy the chance to win up to £40,000 to help make their commercially viable ideas a reality. Over the last nine years we've awarded approximately £3 million to help some of the most innovative small businesses around scale up their operations.

This report identifies the £1 trillion global business opportunity that the energy challenge offers to small UK enterprises, and by extension the UK economy, in terms of creating local jobs and driving growth through exports. Small UK enterprises exporting low-carbon solutions are an untold success story. According to this research, they are twice as likely as peers in other sectors to be exporting almost twice as likely to have hired in the past 12 months. More than three-quarters have increased revenues as a direct result of exporting. We're particularly grateful to the Shell LiveWIRE and Springboard community who participated in the preparation of this work.

The UK has a powerful opportunity to extend its success in the low-carbon goods and services sector by further ramping up export capacity. This research identifies opportunities for the UK to double its share of low-carbon exports, and pinpoints the markets in which our significant economic potential could be realised. The research supports the view that a joint and concerted effort from entrepreneurs, government and industry alike will be necessary if the UK is to seize this opportunity.

It's about inspiring small businesses to break into emerging markets by leveraging existing support structures. The services of UKTI (UK Trade & Investment) in particular met with praise among our interviewees.

But large companies also have a major part to play. They can contribute by sourcing expertise from beyond traditional organisational walls, and supporting innovation beyond company borders. With initiatives such as Shell GameChanger and Shell Technology Ventures, we're proud of our existing contribution to open innovation.

We're excited about the potential for collaboration between large businesses and innovative enterprises. We hope that this report will help organisations, policymakers and academic institutions provide the support needed to enable the UK's low-carbon sector to continue to thrive into the future.

Matthew Tipper
Shell Vice President for Alternative Energies

Executive Summary

The UK government has put exports at the heart of its *Plan for Growth* (2011), and in 2012 set an ambitious target to double overall foreign sales to £1 trillion by 2020. This ongoing commitment was reiterated in the 2014 budget, as the Chancellor doubled investment in UK Export Finance (UKEF)'s direct lending scheme to £3 billion. Yet despite these measures, the Office for Budget Responsibility projects net trade will make little contribution to growth up to 2018.

This new research by the Carbon Trust and Shell Springboard reveals that the low carbon sector is uniquely poised to unlock growth and create jobs by driving exports, particularly in fast-growing emerging markets.

It forecasts that global low carbon exports will cumulatively be worth more than £1 trillion up to 2020 – and that in the same timeframe, the UK has a credible opportunity to triple its exports from £12 billion to around £30 billion and double its share of the global low carbon export market from around 5% to around 10% (similar to the UK's share of the global pharmaceuticals industry).

UK small and medium enterprises (SMEs) in the low carbon sector are driving job creation, revenue growth and innovation by exporting

SMEs already account for 91.5% of the companies in the UK's £128 billion domestic low carbon market, and are outperforming their peers – SMEs in the low carbon sector are more than twice as likely to export (45%) than SMEs across all sectors (21%). These low carbon enterprises will therefore play a vital role in fulfilling this export potential – and this new research demonstrates that exporting is materially linked with job and revenue growth for small businesses. For exporting low carbon SMEs:

- 64% have hired in the last year (compared to 33% of SMEs across all sectors) with almost half of them hiring as a direct consequence of foreign sales – and more than three quarters are planning to hire staff in the next 12 months (compared to 23% of SMEs across all sectors);
- 65% have introduced at least one new product (compared to a cross-sector benchmark of 47%);
- 76% have increased revenues in the last two years – and 35% generate at least 50% of their revenues from foreign sales (compared to 21% of SMEs across all sectors).

Emerging markets represent a major growth opportunity for SMEs – particularly the MUSTs

67% of exporting low carbon SMEs are already selling their goods and services to emerging economies. They've spotted an annual £15 billion export opportunity to the MUST countries – Mexico, the UAE, South Africa and Turkey – and this research identifies these markets as the next group to watch in the low carbon sector. The MUSTs all:

- Boast strong domestic demand for low carbon goods and services;
- Have favourable regulatory environments;
- And outstrip recent powerhouses Brazil, Russia, India and China in ease of doing business.

Yet despite their success, low carbon SMEs face disproportionate challenges

Although these enterprises are spearheading an untold export success story and are poised to dramatically increase the UK's slice of the global export pie, our research has revealed that they face challenging barriers:

- 24% of low carbon SMEs cited a shortage of working capital to finance exports as the primary barrier to selling overseas;
- Early stage funding for such ventures has decreased by almost 50% since 2012;
- Identifying the right local partner is another major challenge, although more than 25% of exporting SMEs benefitted from UK Trade and Investment (UKTI) support and more than 60% were able to partner with larger companies to help crack export markets.

SEVEN STEPS FOR SUCCESS

We have developed seven recommendations that will help low carbon SMEs seize the export opportunity, particularly in high-growth markets such as the MUSTs. Given the size of prize, this will require a concerted effort from government, industry, and entrepreneurs themselves.

For government, the business community, and UK plc as a whole, acting on the following recommendations would help equip small enterprises to seize the export opportunity:

■ **Re-direct existing funding to provide risk capital for low carbon SMEs**

Our research confirms that low carbon SMEs face disproportionate challenges in securing funding – and the situation is getting worse. According to Green Alliance, redirecting just 10 per cent of the money used every year for Research and Development (R&D) tax credits (around 70% of which goes to large companies) would be enough for a £100 million fund to provide risk capital to SMEs. An alternative source of funding would be to provide loans to low carbon SMEs in their growth phase by re-directing a small portion of the £3.9 billion of government resources managed by The Department of Business, Innovation and Skills (BIS) Business Bank.

■ **Harmonise and promote existing export support for the low carbon sector and focus on unlocking high-growth emerging markets**

More than 25% of our respondents have received support from government trade bodies such as UKTI. Our research demonstrates how invaluable this engagement can be. To build on this track record, we are calling on UKTI, UKEF and the Foreign and Commonwealth Office (FCO) to develop a joint roadmap for the low carbon sector to harmonise and promote their low carbon export support and to focus on unlocking export growth to high priority emerging countries (such as the BRICs and the MUSTs) by developing new low carbon export support (e.g. a series of MUST country trade missions).

■ **Seek competitive advantage from partnering with small UK enterprises to drive shared growth in overseas markets**

60% of exporting low carbon SMEs partnered with larger organisations to enable them to export. This kind of collaboration and open innovation provides mutual opportunities and benefits for both parties. Multinational corporations with local subsidiaries have a particularly important role to play in developing meaningful relationships with exporting low carbon SMEs. We call on corporates to actively seek competitive advantage from partnering with low carbon SMEs and for the development of innovative new models to help low carbon SMEs join forces with larger companies to enable export success (e.g. through establishing low carbon industry consortia).

For entrepreneurs, we recommend taking the following steps to increase the likelihood of export success:

■ **Mission Possible**

Agencies such as UKTI, UKEF, and the FCO provide extensive assistance to small businesses looking to export. In addition, there will invariably be a local body in the target market facilitating trade with the UK. These agencies can open up contact networks, advise on market intelligence, and provide tailored marketing support. UKTI trade missions are a particularly great place to start, so be sure to leverage the existing range of support that is on offer.

■ **Confident in your offer, sensitive to local culture**

Business practises can vary enormously in emerging economies – exporters must be prepared for these nuances, and should consult local experts to ensure negotiating style, communications, and professional decorum meet local expectations. Be sure to research the local market thoroughly in advance of any trip and seek the advice of expert bodies.

■ **Protect your Intellectual Property (IP)**

Intellectual Property is of fundamental importance, particularly for companies offering sophisticated technologies and services in the low carbon sector. Be sure to protect your IP before entering into foreign sales or overseas partnerships – trade bodies and UKTI offer practical support on this vital topic.

■ **Focused but flexible, prepared for pitfalls**

As with every venture, planning and preparation are crucial for success – but it's important to build in flexibility when dealing with emerging economies, as negotiation, bureaucracy and decision-making can proceed at a slower pace and building relationships in these markets takes time. Planning for these eventualities will avoid costly mistakes.



Low carbon SMEs – an export success story

1. Exporting for growth
2. Low carbon – an untold success story
3. SMEs – driving jobs, revenue and innovation with exports

1 Exporting for growth

In this section, we explore the following points:

- Exports are strategically vital for the UK to achieve its growth targets – yet despite concerted support, foreign sales are still struggling;
- The low carbon sector is an overlooked opportunity for the UK to address its trade deficit;
- Low carbon is also a compelling opportunity for SMEs – who are outperforming their peers in other sectors, and driving jobs and growth by exporting.

Imports and exports are crucial to the success and competitiveness of the UK economy. International trade allows companies to capitalise on economies of scale by having access to larger markets. It increases competition by forcing businesses to focus on areas where they have a competitive advantage. This spurs innovation, boosts productivity and ensures that skills and resources are available where they are the most needed, spreading knowledge, skills and innovation around the globe.

The UK is the sixth largest economy in the world with a gross domestic product (GDP) of almost \$2.5 trillion (World Bank, 2012). Over 65% of its GDP is linked to trade, which is a greater proportion than in many other large advanced economies including France, Italy and Japan. The UK imported around £527 billion of goods and services and exported around £493 billion in 2012 (CBI, 2013).

The UK Government has recognised the central role that international trade has to play in putting the UK at the forefront of global competition and has set some ambitious goals to achieve this:

- Doubling UK exports to £1 trillion a year by 2020 (HM Treasury, 2012);
- Doubling the number of SMEs receiving UKTI support each year to 50,000 by 2014-2015 (HM Treasury, 2012).

The UK Prime Minister, Rt Hon David Cameron, MP, has often highlighted the importance of exports in stimulating the UK economy. For example, in a recent speech at the World Economic Forum in Davos, he stated:

...globalisation offers our businesses the chance to win new contracts to export into markets that were previously closed and create jobs fulfilling the demands of new consumers thousands of miles away.

UK Prime Minister Rt Hon David Cameron MP, 2014

Yet UK exports are struggling to meet targets

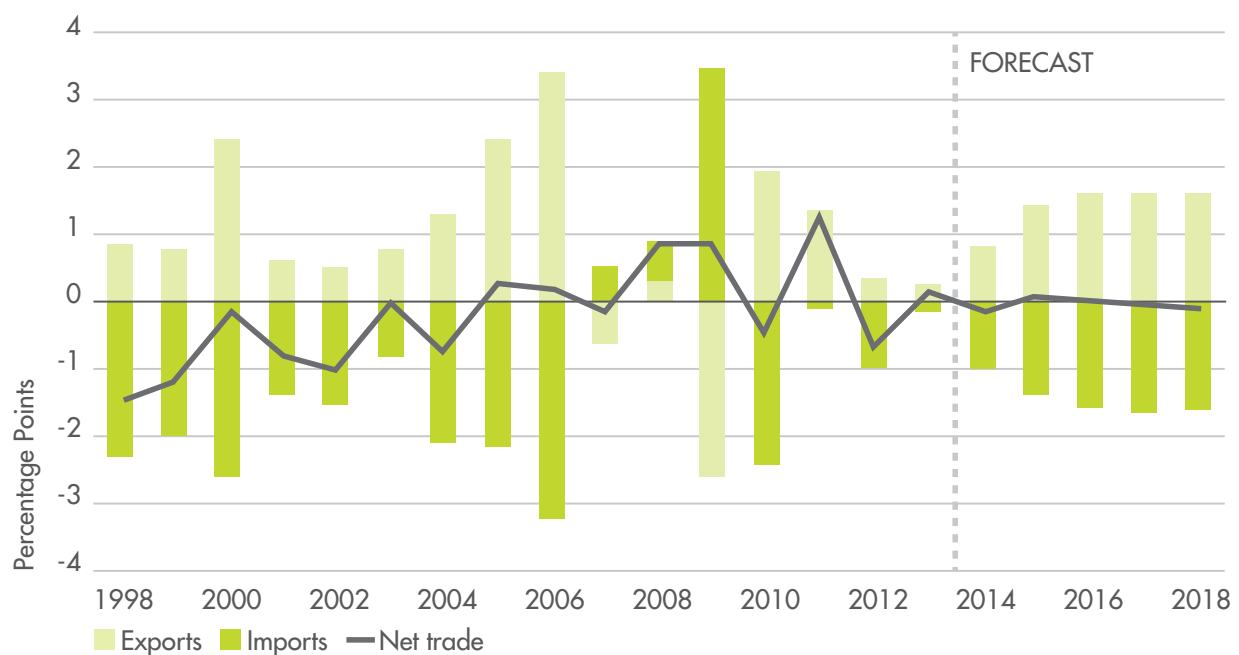
Figure 1: UK exports market share



Source: Office for Budget Responsibility, Economic and Financial Outlook 2014, Page 77 (OBR, 2014)

Reflecting the weakness of export growth and the gradual decline in export market share, **the UK has had a trade deficit since 1998 (except between 2005 and 2009 and in 2011)**. Despite relatively strong demand, supply performance has been weak across all trade sectors. Net trade is expected to make a small negative contribution (-0.2 per cent points) to growth in 2014 and net trade is expected to make little contribution to growth up to 2018 (Figure 2).

Figure 2: UK net trade contribution to GDP



Source: Office for Budget Responsibility, Economic and Financial Outlook 2014, Page 78 (OBR, 2014)

Existing support structures

The UK Government has introduced a raft of measures and established multiple agencies to support foreign trade:

UKEF

The UK Government has contributed to this objective over the last two years by increasing the regional presence of the UK Export Finance (UKEF) organisation and expanding its overseas role to offer more financial support packages to UK exporters wishing to access UKTI High Value Opportunities programme, as well as by securing temporary office space for companies expanding into high growth countries (e.g. China).

UKTI

UKTI has helped almost 66,000 businesses export since 2010 and UKEF has delivered around £11.8 billion of support to British businesses since 2009-10. This support has helped UK businesses to increase exports to countries outside the EU by 23% (since 2010) and in the EU by 8%, but export performance needs to improve further. 2014 exports are forecast to increase by around 2.6% (HM Treasury, 2014) which is good progress, but the UK's £1 trillion export goal by 2020 will require export growth of around 10% per year and will be a challenging target to achieve (OBR, 2014) (Figure 1).

2014 Budget

During its most recent March 2014 Budget (HM Treasury, 2014), the UK Government announced a number of measures to address this gap and ensure that British businesses will be able to take advantage of fast-growing emerging economies and opportunities overseas. These measures include:

1. Doubling the UKEF direct lending programme to £3 billion, cutting interest rates on the programme by a third (the lowest permitted levels allowed by international agreements), removing the scheme's end date and relaxing conditions on loan sizes;
2. Consulting on changes to the legislation governing UKEF to allow it to support not just single export contracts, but companies engaged in exporting, their supply chains and intangible exports such as intellectual property rights and insurance;
3. Undertaking a communication and marketing campaign to increase business awareness of UKEF's products and services;
4. Starting UKEF's export refinancing facility (ERF) by the end of April 2014;
5. Doubling the funding and ambition of UKTI's Global Entrepreneur Programme (to £1.2 million annually in 2014-2015 and 2015-2016 and with the aim of doubling the numbers of overseas entrepreneurs it targets);
6. Reducing the cost of long-distance flights for exporters and visitors to the UK by abolishing bands C and D of the air passenger duty (APD) from April 1 2015 and extending the scope of the existing Regional Air Connectivity Fund to include start-up aid for new routes from regional airports.

Although these measures are expected to have a positive impact, they are unlikely to be enough to double exports to £1 trillion a year by 2020.

2 Low carbon – an untold success story

Against this, our research quantifies the export growth potential of the low carbon sector – and the steps that can be taken to fulfil this potential and contribute to the government’s ambitious 2020 export target.

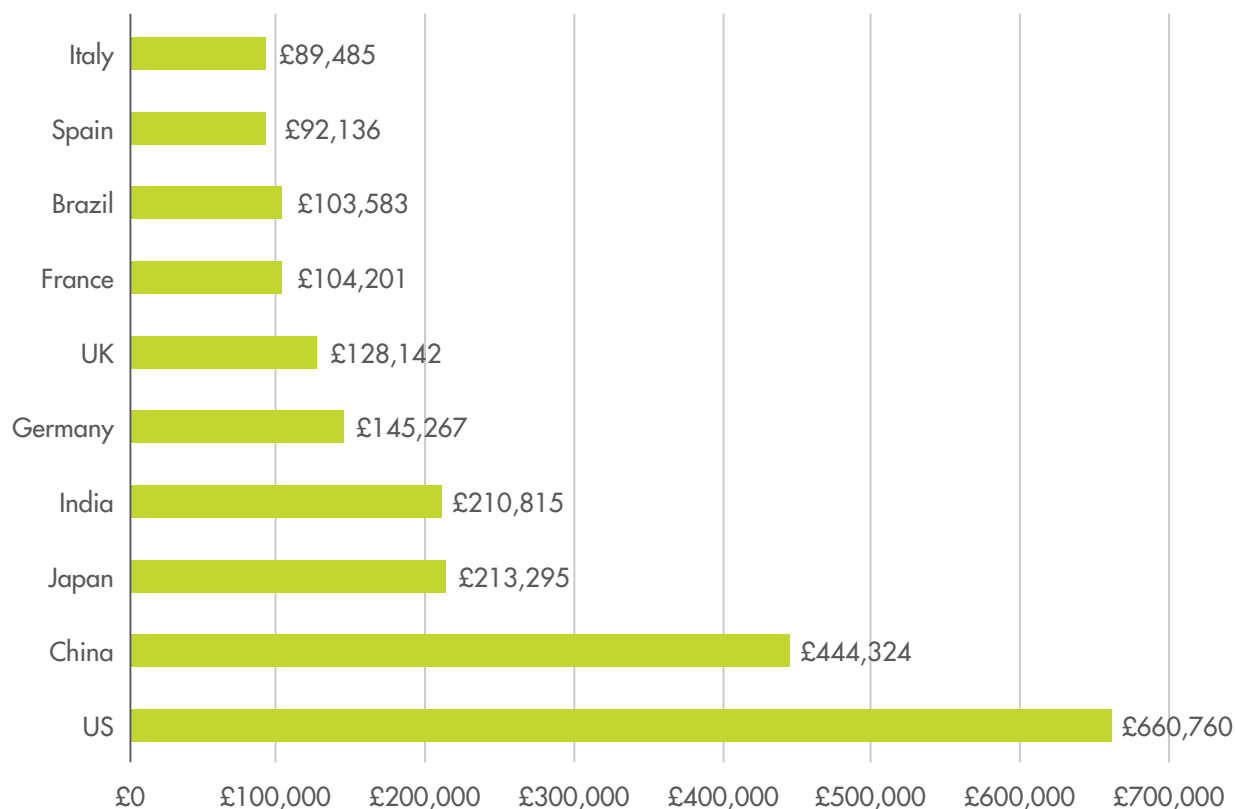
Specifically, this report looks at the central role that SMEs in the low carbon sector are playing in driving technology innovation, increasing revenues and creating jobs for the UK economy. They will be vital in increasing the UK’s share of the global low carbon sector which was valued at £3.4 trillion in 2011-2012 and is forecast to be worth £4 trillion by 2015 (BIS, 2013).

The low carbon environmental goods and services sector as a whole is worth £128 billion in the UK

Previous research from the UK Government, the CBI and Green Alliance has highlighted the growth, size and employment currently provided by the low carbon environmental goods and services sector in the UK. The sector was estimated to be worth £3.4 trillion globally and £128 billion in the UK and to employ 940,000 people in the UK in 2011-2012 (BIS, 2013). It has been growing despite the recession (Green Alliance, 2012) and “over a third of the UK’s economic growth in 2011/12 was likely to have come from green business” (CBI, 2012).

The UK ranked sixth (Figure 3) globally in terms of total sales of low carbon environmental goods and services (for companies of all sizes) – with 3.7% share of the market – behind the USA (with 20% market share), China (with 13% market share), Japan, India and Germany.

Figure 3: Top 10 countries – Low carbon environmental goods and services sales (£M)



Source: Carbon Trust analysis of kMatrix LCEGS data

Low carbon exports are a key growth area for the UK economy

In 2011, the low carbon economy and trade and investment were both highlighted as cross-cutting priority themes in the UK government's *Plan for Growth* (HM Treasury and BIS, 2011). Its March 2013 update (HM Government and BIS, 2013) highlighted progress towards low carbon commitments and trade and investment in a number of areas. For example, the UK has tripled its support (providing up to £7.6 billion by 2020) to low carbon generation, has supported 32,000 SMEs to export in 2012-2013 and has committed £140 million in April 2013 over 2014-2015 to support more SMEs exports and attract overseas investment.

The UK Prime Minister, Rt Hon David Cameron, MP has emphasised on several occasions both the size and growth opportunities presented by a global low carbon market. For example, in a speech on economic growth in Manchester he stated:



The global green energy market – everything from wind turbines to home insulation to solar panels – it's going to be worth trillions of pounds in the years to come and I'm determined that the UK should have a big piece of that pie

UK Prime Minister Rt Hon David Cameron MP, 2011

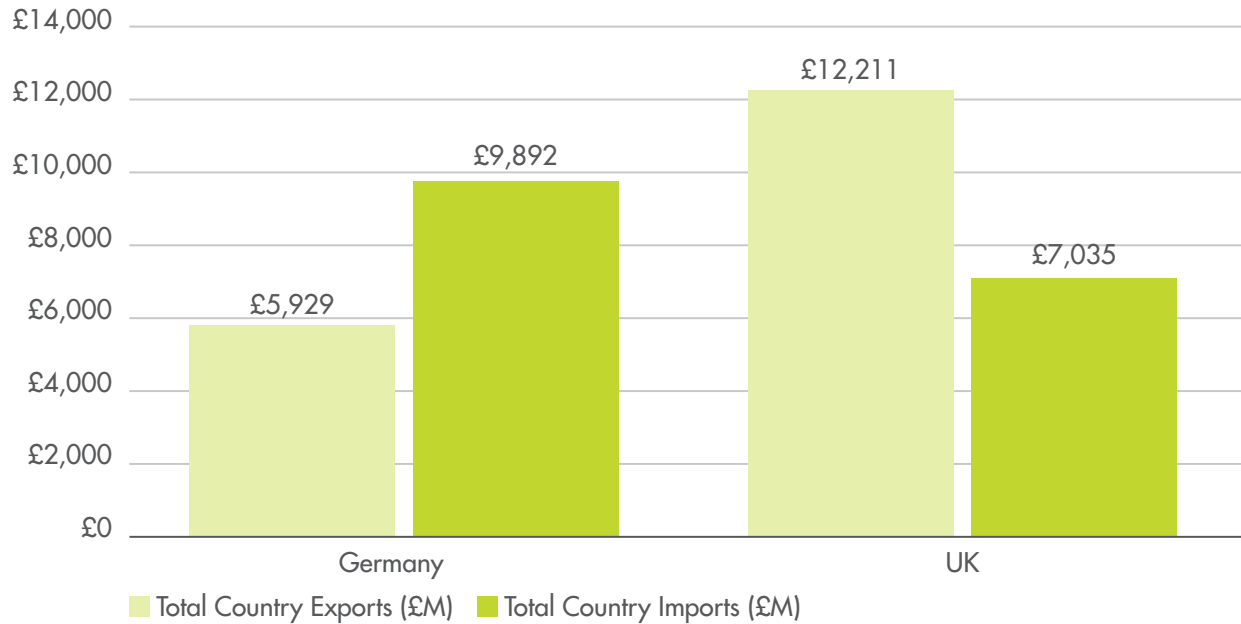


UK companies export £12 billion worth of low carbon environmental goods and services

The UK is the world's fifth largest exporter of low carbon environmental goods and the seventh largest importer, with £12 billion of these low carbon goods and services exported and £7 billion imported in 2011-2012 with a £5 billion trade surplus. Putting these results into the wider context of the UK economy, exports of low carbon environmental goods and services accounted for around 2.5% of the total UK export volume across all sectors (£493 billion (CBI, 2013)).

When comparing the UK's low carbon export performance with Germany, the leading European export country overall, UK exports of low carbon environmental goods and services are more than double those of Germany (Figure 4).

Figure 4: Germany and UK comparison, total import and export volumes of low carbon environmental goods and services, 2011-2012 (£M)



Source: Carbon Trust analysis of kMatrix LCEGS data

However, the German low carbon environmental goods and services market is bigger in terms of total sales and market size¹ (Figure 5) than the UK due to both higher domestic sales and import levels.

Figure 5: Germany and UK comparison, total sales and market size of low carbon environmental goods and services, 2011-2012 (£M)

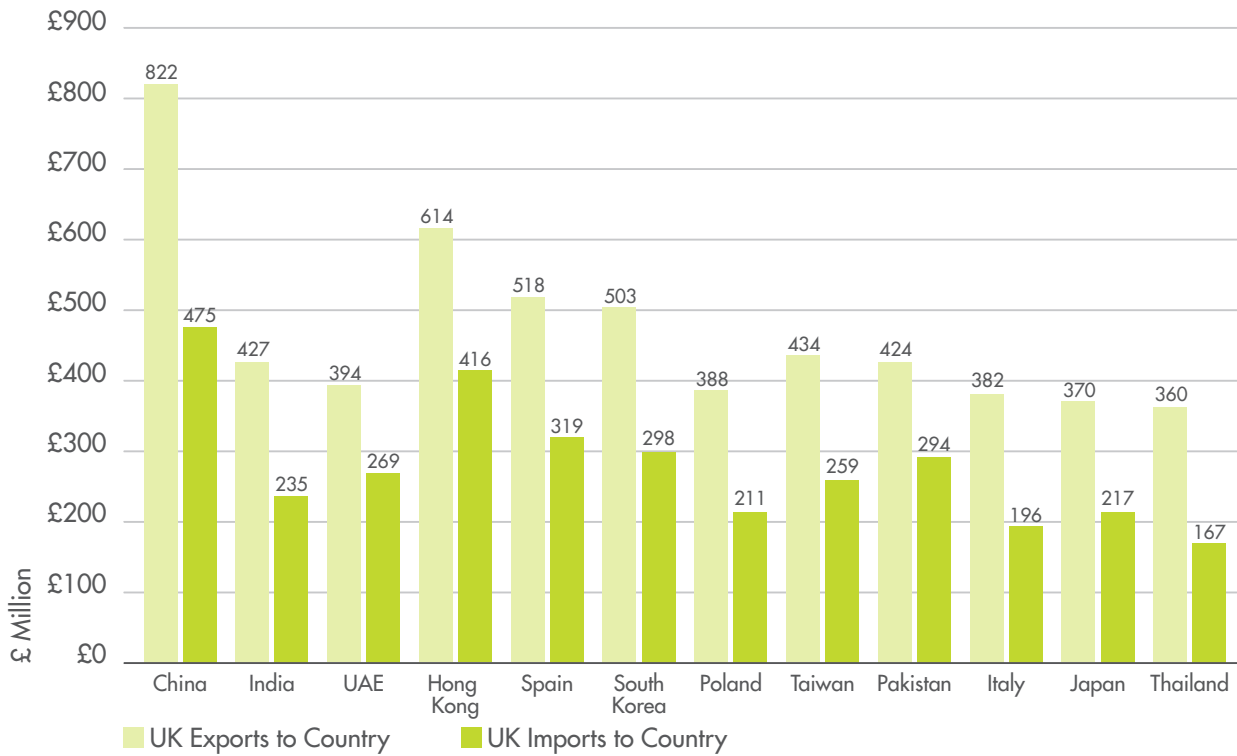


Source: Carbon Trust analysis of kMatrix LCEGS data

¹ The overall size of the low carbon environmental goods and services sector is calculated using three measures: Domestic Market = Domestic Sales – Exports + Imports. The “market” is used to estimate the overall potential and opportunity for international sales growth according to kMatrix methodology (BIS, 2013)

In addition, the UK exports more of these low carbon goods and services than it imports with a positive trade balance of more than £5 billion (whereas Germany imports more low carbon goods and services than it exports). When comparing the low carbon trade flows for the UK's top 12 low carbon trading partners, the UK has a positive trade balance with all of these partners (Figure 6).

Figure 6: Low carbon trade flows for the UK's top 12 low carbon trading partners (£M)



Source: Carbon Trust analysis of kMatrix LCEGS data

3 SMEs – driving jobs, revenues and innovation with exports

SMEs are critical to the success of the low carbon economy

SMEs drive economic growth through innovation, competition and job creation. Small businesses make up 91.5% of the UK's low carbon sector (HM Government, 2011). SMEs represented 99% of all private sector businesses in the UK, accounted for 60% of all UK private sector jobs and half of the UK's private turnover at the beginning of 2013 (BIS, 2013). Despite economic challenges, the SME population has grown by 14% since the beginning of 2008 (BIS, 2013) and nine out of 10 unemployed people who found work in the private sector since the economic downturn either started or joined an SME (Business in the Community, 2013). SMEs are therefore critical to the present success and future potential of the low carbon economy.

Low carbon entrepreneurs: the new engines of growth (2013 report)

Our 2013 analysis of low carbon entrepreneurs in the UK found that SMEs are driving the low carbon economy. It revealed a bullish breed of business which is intent on pursuing a global low carbon sector forecast to be worth £4 trillion by 2015. Our research found that:

- Low carbon SMEs were almost twice as likely to have export customers as small businesses in other industries;
- Almost two in five low carbon SMEs were already exporting to a diverse set of countries and three quarters planned to enter or expand exports to a new market in the next two years;
- This ambition was matched by plans for growth
 - Three quarters of low carbon SMEs planned to raise funding in the next year;
 - Two thirds planned to recruit in the next year (more than half have created new jobs in the last year and 12% hired more than four new team members);

However, the sector is not without its challenges. Chief among these are securing funding, gaining access to technology demonstration opportunities and getting people with the right skills. The UK also remains a tough commercial nut to crack which is a contributing factor for low carbon SMEs seeking sales in overseas markets.

2014 report methodology

This new research analysed data from two main sources from January to April 2014. The first key source was a survey of 182 low carbon SMEs who had applied to Shell Springboard or the Carbon Trust. The aims of this survey included analysing the materiality of UK low carbon SME exports, their geographic focus and challenges they face when exporting. The second key source was qualitative interviews (ranging from 30-60 minutes) with 32 contacts (12 of whom were low carbon entrepreneurs and 20 of whom were UKTI, Foreign Commonwealth Office and trade body representatives who have advised multiple low carbon SMEs on their businesses export strategies). The aim of these interviews was to provide new insights to complement our entrepreneurs' survey and greater detail on individual ventures and countries.

Low Carbon SMEs profile

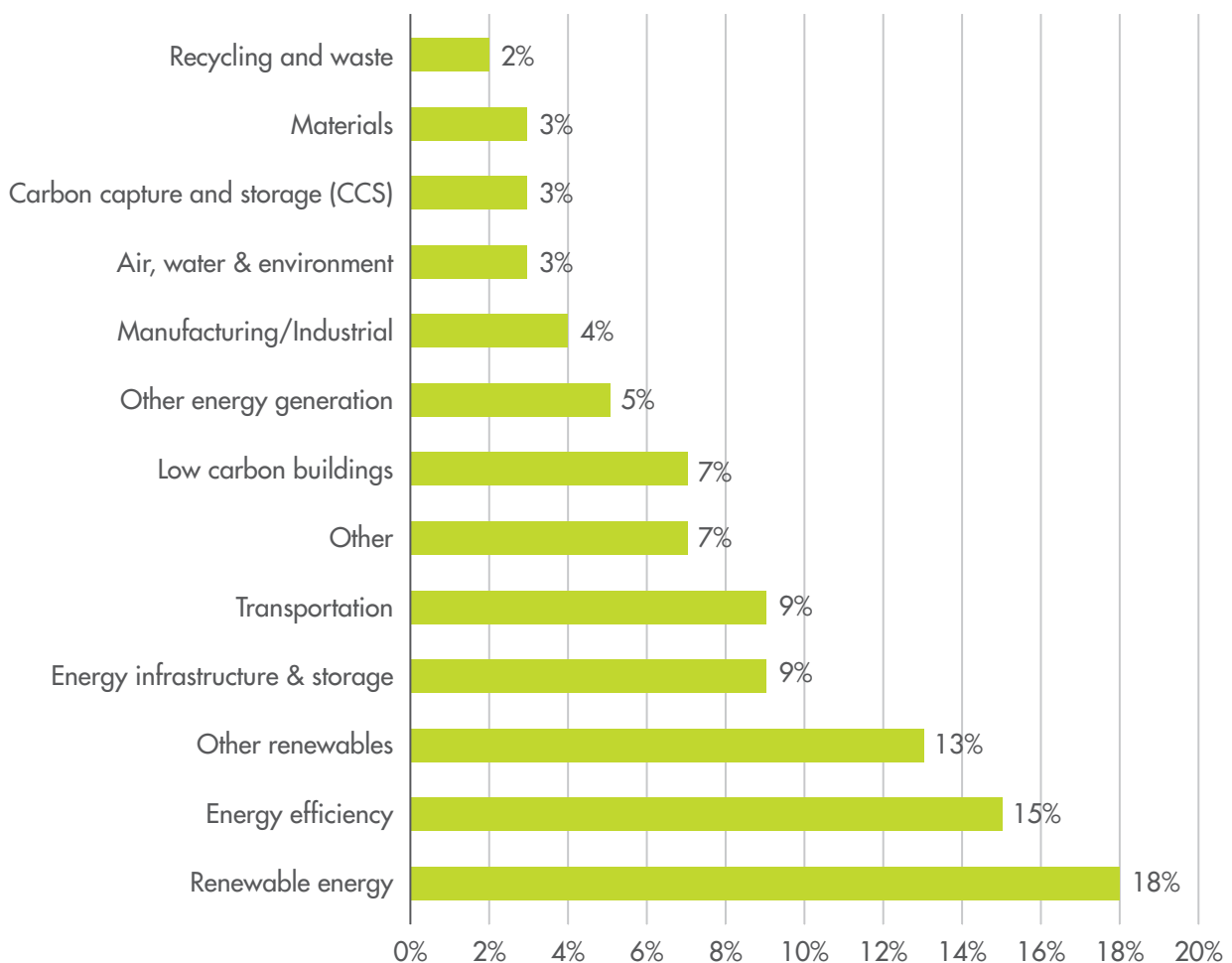
We surveyed 182 low carbon SMEs in the UK, with 79% of the responses coming from people in executive-level positions. The findings give a picture of the typical profile of low carbon entrepreneurs and their businesses, which were consistent with our 2013 survey results (Carbon Trust and Shell, 2013):

- More than nine in ten (91%) of respondents were males;
- 87% of respondents were over 40 years of age;
- Almost half (49%) had been operating for five years or less;
- 66% had five employees or less; and
- 73% of the businesses we surveyed were either pre-revenue or had revenues of less than £500,000.

Market and technology focus

The most common focus of the low carbon SMEs we surveyed is the renewable energy sector (18% of businesses). Energy efficiency (15%), other renewables (13%), transportation (9%) and energy infrastructure and storage (9%) are the next most common focus areas. This breakdown by technology type is broadly similar to previous Carbon Trust surveys of low carbon businesses (e.g. in 2011 and 2013).

Figure 7: Main sector focus of low carbon SMEs in the UK (% of respondents)



Main findings

Low carbon SMEs are outperforming their peers in other sectors

A key finding from our 2013 research (Carbon Trust, 2013) was that almost two in five (37%) of the SMEs surveyed were already exporting and almost 76% were planning to enter or expand into new markets. Our 2014 analysis confirmed this trend, with 45% of SMEs already actively trading overseas, and 75% planning to export in the next two years.

Even more interesting is how these results compare with SMEs in other sectors. Small businesses offering low carbon environmental goods and services significantly outperform their peers in export markets:

- Low carbon SMEs are more than twice as likely to export as SMEs across all sectors, with 45% of low carbon SMEs exporting compared to a benchmark of 19% (BIS, 2012) and 21% (BIS, 2013);
- Low carbon SMEs are more than four times as likely to export products and services as SMEs in non-financial sectors, compared to a benchmark of 10.5% (ONS, 2013);
- The low carbon sector is second only to the IT/Communications sector where 48% of SMEs export (BIS, 2012).

This report also highlighted that exporting is materially significant for UK businesses and strategically for the UK economy, driving revenue growth, job creation and innovation.

Exports are driving revenues

Exporting low carbon SMEs are twice as likely to have revenues of more than £500k compared to non-exporting low carbon SMEs:

- 41% of exporting respondents declared having £500k or more in revenues, compared to 20% of non-exporting low carbon SMEs.

Figure 8: Turnover of exporting low carbon SMEs (%)

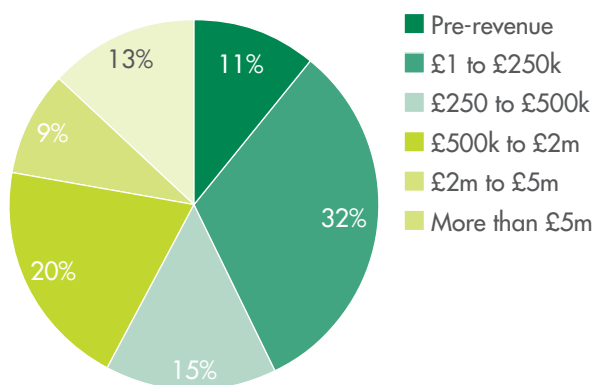
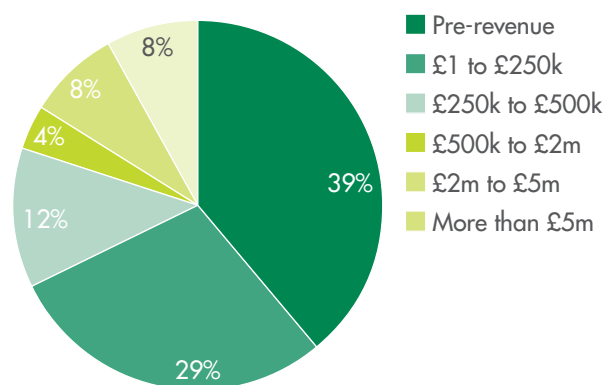


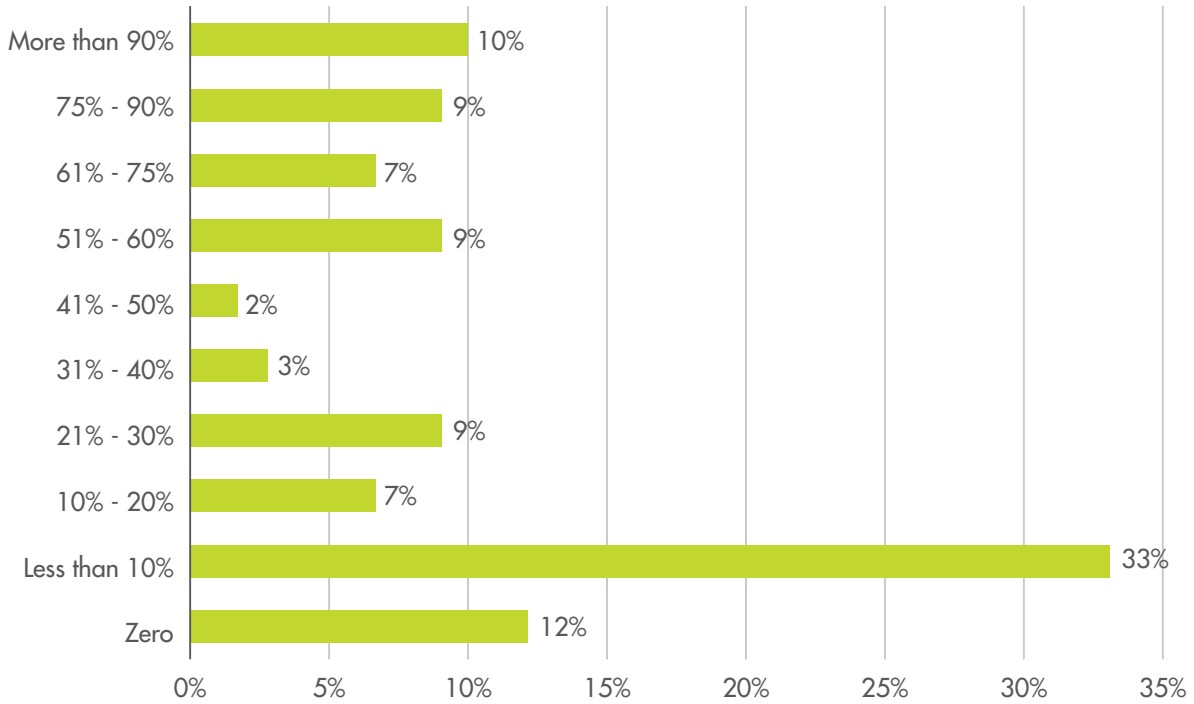
Figure 9: Turnover of non-exporting low carbon SMEs



Perhaps even more interestingly when drawing a comparison with SMEs across all sectors, exporting low carbon SMEs are more than twice as likely to have increased their revenues and to be generating half of their revenues from trading overseas:

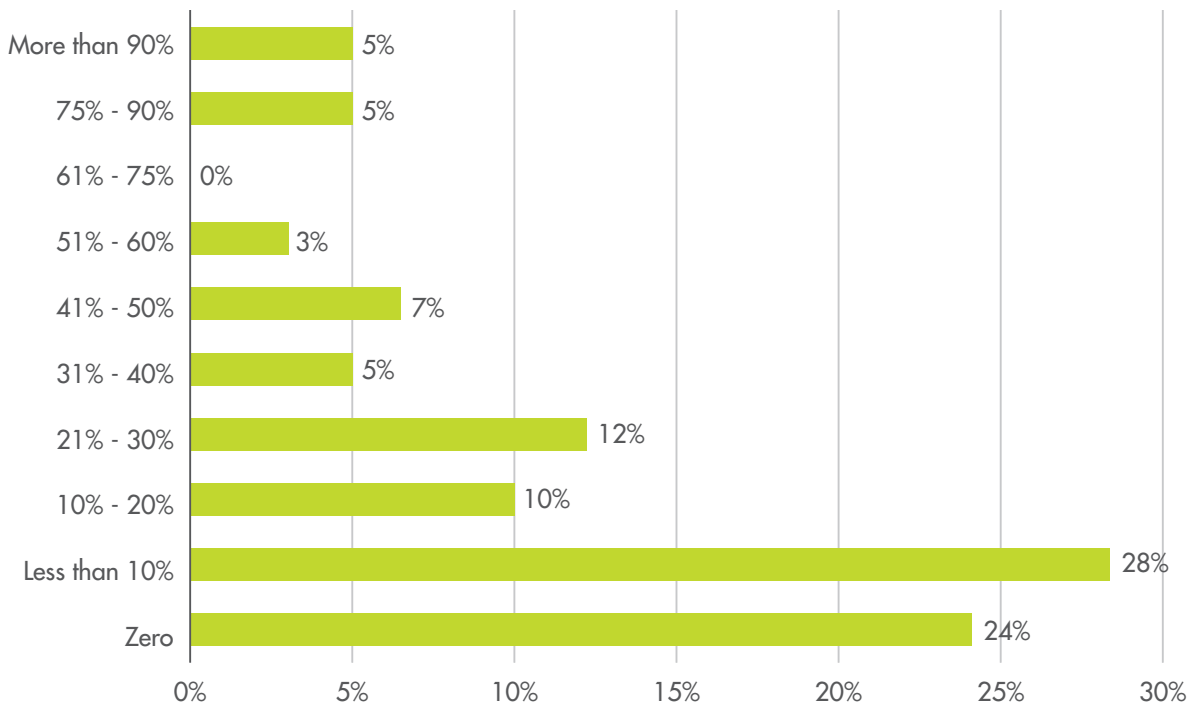
- 76% of exporting low carbon SMEs have increased their revenues because of exporting in the last two years, compared to 29% of SMEs across all sectors that have increase their revenues in 2012 and 28% in 2011 (BIS, 2012) and another cross-sector SME benchmark of 24% in 2013 and 33% in 2012 (BIS, 2013).
- 35% of exporting SMEs respondents have generated at least 50% of their revenues from overseas sales, compared to 21% across all sectors using a UKTI cross-sector SME benchmark (UKTI, 2012).

Figure 10: Share of turnover from exporting for exporting low carbon SMEs (%)



Our results also clearly show how exports and revenue growth are closely correlated, with more than three quarters (76%) of exporting respondents having increased their revenues in the last two years as consequence of exporting, and 10% having boosted their turnover by more than 75%.

Figure 11: Exporting low carbon SMEs' turnover increase in the last two years (%)



Exports are creating jobs

Our research also looked at the hiring plans of UK low carbon SMEs. The optimistic findings for exports highlighted above are matched by ambitious plans for business growth. Key findings that emerged from our analysis included:

- Low carbon businesses are out-hiring their peers, with two thirds (64%) of exporting SMEs having hired in the last 12 months, compared to 41% of non-exporting low carbon SMEs (Figure 12 and 13) and a general SME benchmark of 33% (BIS 2013);
- Almost half of exporting low carbon respondents (43%) have hired between one and three employees over the last year and 21% have hired four or more employees over this period, which is positive given current economic challenges:

Figure 12: Number of new employees hired in the last 12 months by exporting low carbon SMEs

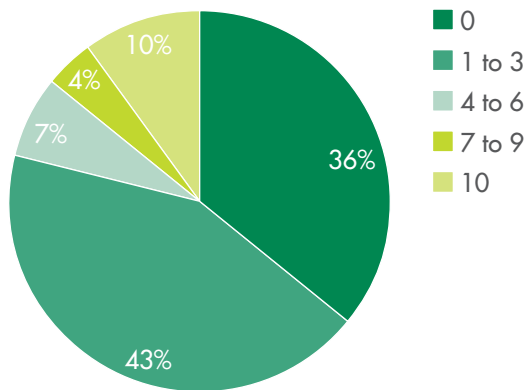
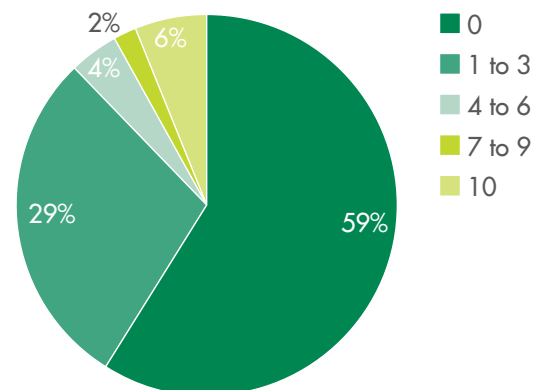
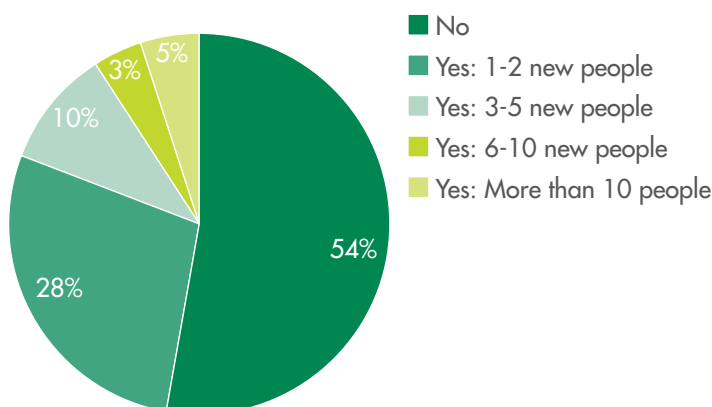


Figure 13: Number of new employees hired in the last 12 months by non-exporting low carbon SMEs



- Almost half of exporting low carbon respondents (46%) said they have hired new employees as a consequence of exporting and 18% have added at least three people to their growing teams:

Figure 14: Number of new employees hired by low carbon SMEs as a consequence of exporting



- Low carbon SMEs have more ambitious growth plans than their peers, with more than three quarters (77%) of exporting low carbon businesses planning to hire new employees in the next year, compared to 57% of non-exporting low carbon SMEs (Figure 18-19) and cross sector benchmarks of 20% (BIS, 2012) and 23% (BIS, 2013):

Figure 15: Number of exporting low carbon SMEs looking to recruit in the next 12 months

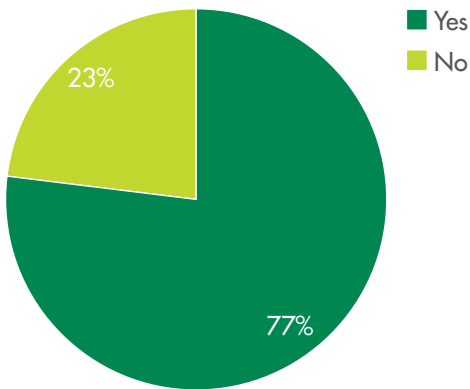
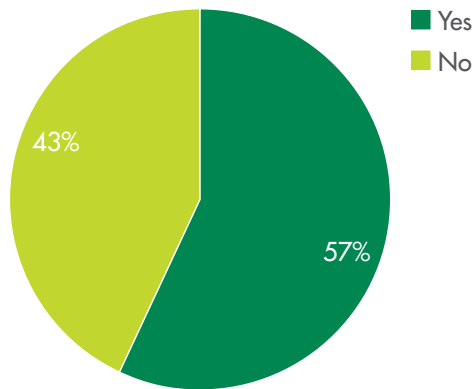


Figure 16: Number of non-exporting low carbon SMEs looking to recruit in the next 12 months

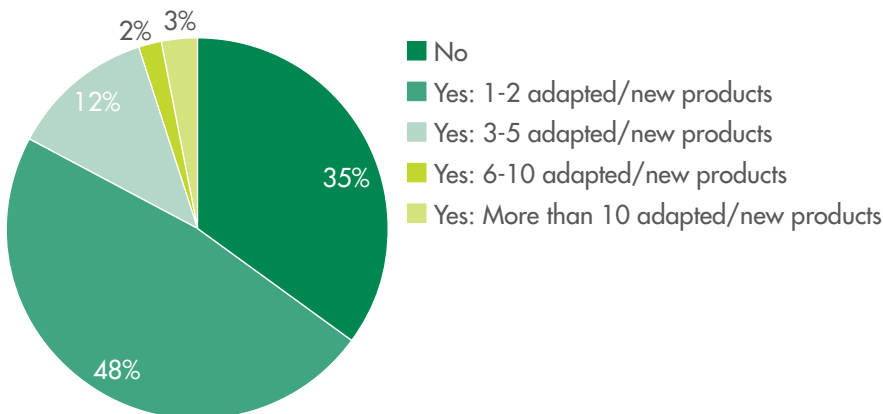


Exports are driving innovation

The research also looked at the links between exporting and innovation. It found that companies entering new markets tend to have developed new products and services:

- 65% of exporting low carbon respondents have introduced or adapted at least one new product in the last 12 months, compared to a cross-sector benchmark of 43% (BIS, 2012) and 47% (BIS, 2013).

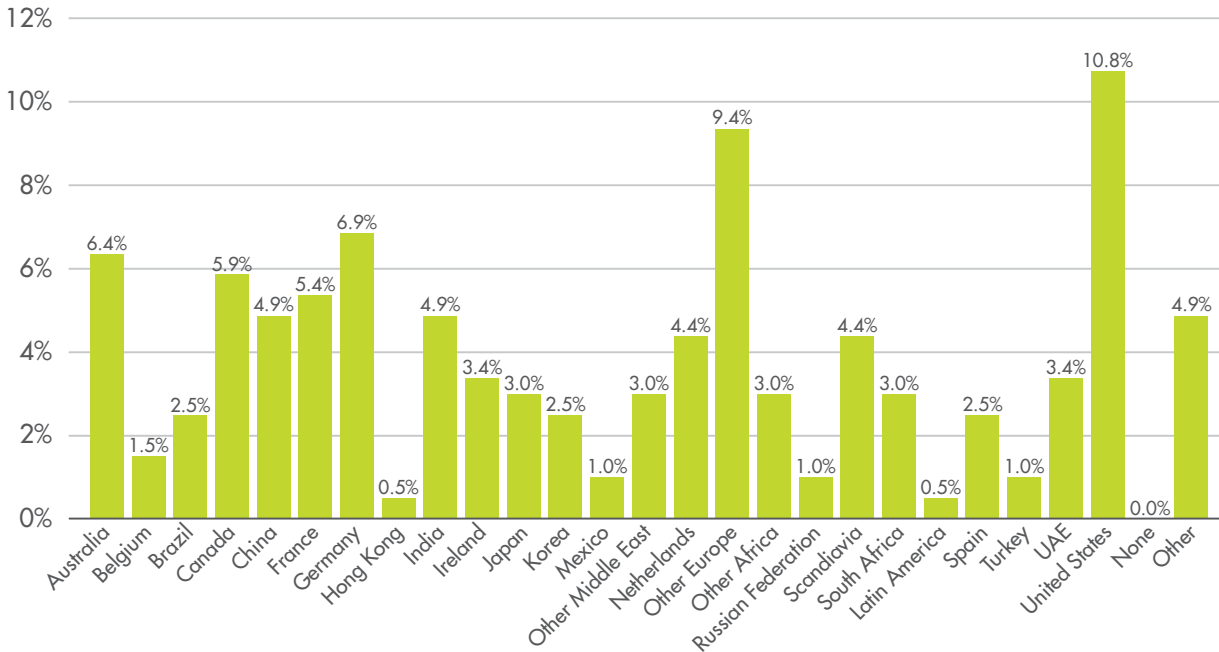
Figure 17: Exporting low carbon SMEs, number of new/adapted products/services to serve international markets



Current export market profile

Exporting SMEs are currently primarily active in OECD countries. Key developed export markets presently include the USA, Europe, Germany, Australia, Canada, and France.

Figure 18: Exporting low carbon SMEs – Current export destinations

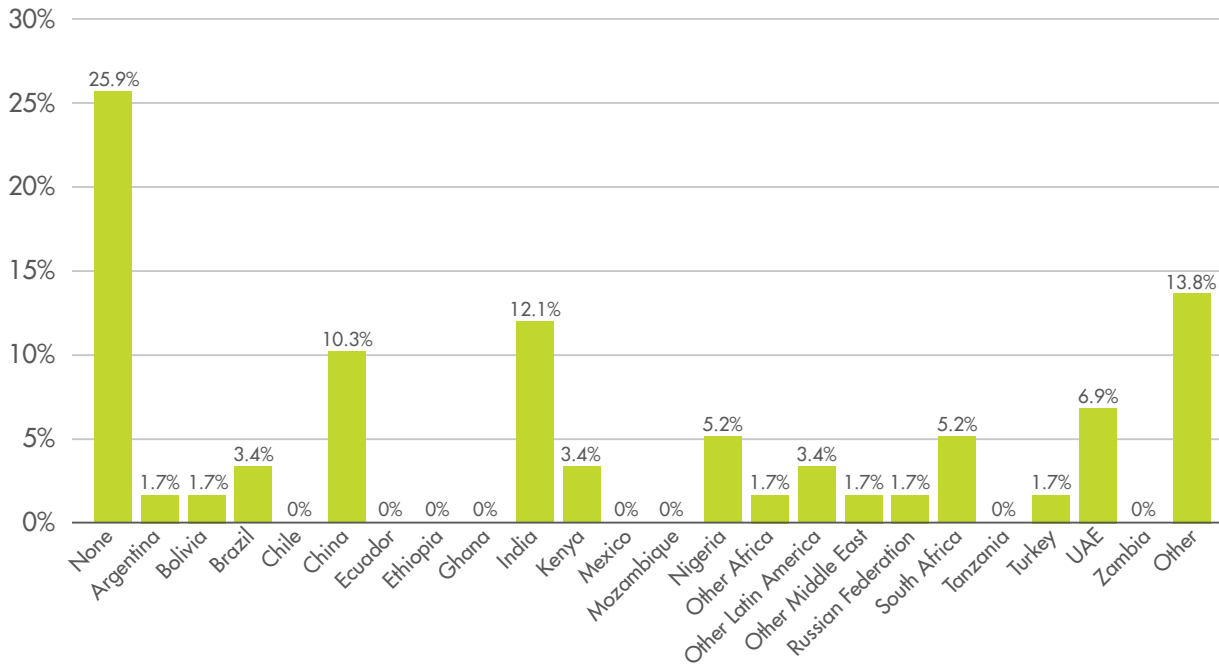


Future export market profile

Although exporting low carbon SMEs currently focus on OECD markets, these low carbon companies have **already spotted new and growing opportunities in developing countries**, with 67% of low carbon exporting SMEs already active in emerging economies, as they seek to build on their success in the OECD.

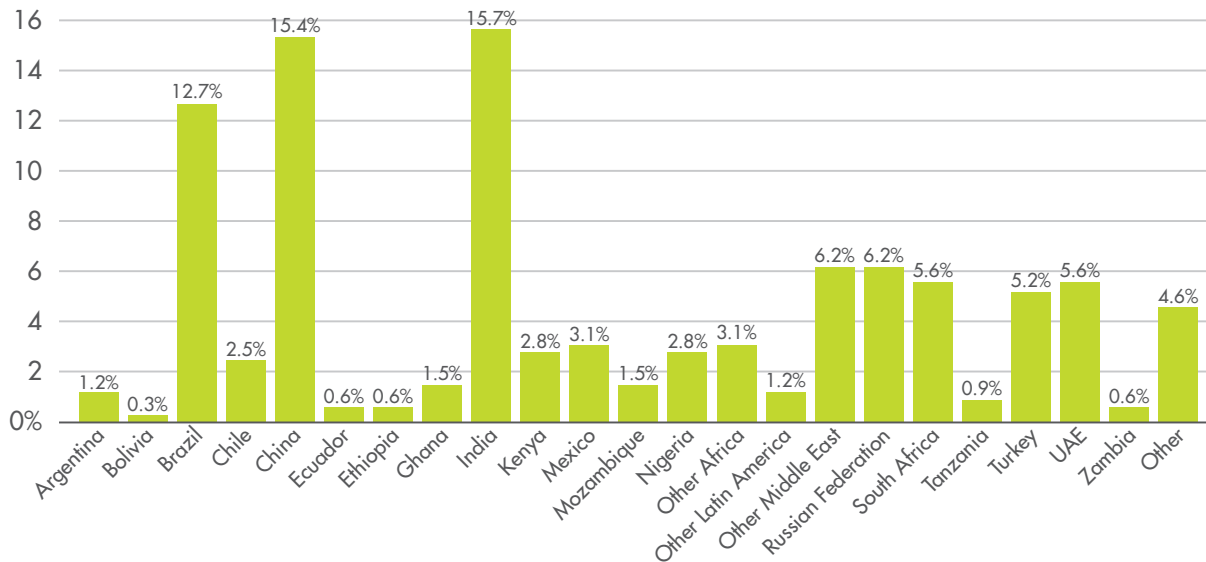
Low carbon SMEs are targeting emerging markets such as India and China, where they are already exporting in similar volumes as they are to the Netherlands and Scandinavia.

Figure 19: Exporting low carbon SMEs – Biggest export markets in emerging economies



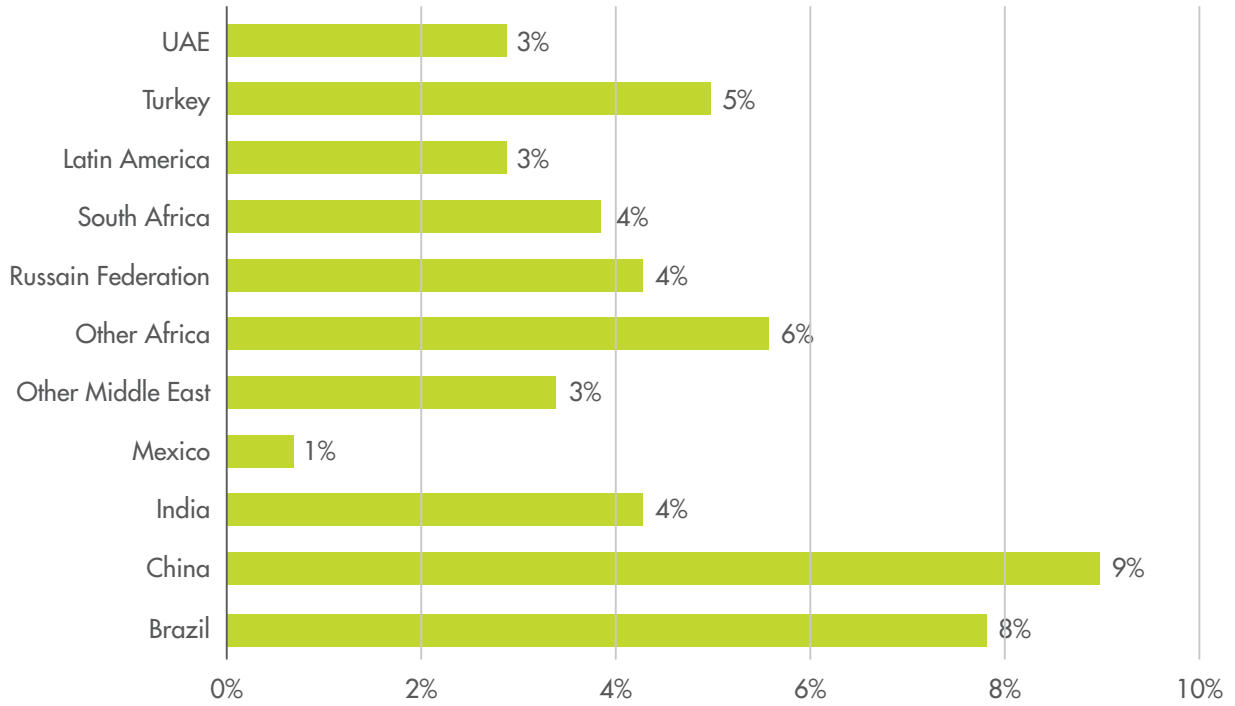
The BRIC countries (Brazil, Russia, India and China) are generally seen as attractive market opportunities for low carbon SMEs. Turkey, the UAE and South Africa also rank highly for exporting respondents.

Figure 20: Exporting low carbon SMEs – top four export market opportunities



Low carbon SMEs also stated their intention to target Brazil, Turkey and Africa for future exports in the next two years.

Figure 21: Exporting low carbon SMEs – Future export destinations in emerging economies in the next two years



Opportunity markets – The MUSTs

In the next section, we build on the above market research findings to identify a series of nations that offer particularly good opportunities for future growth for low carbon exports – Mexico, the UAE, South Africa and Turkey.

Exporting low carbon SMEs have already spotted the UAE, South Africa and Turkey as target markets for the next 24 months. Mexico is currently lower down their list of priorities but we anticipate that this will change as:

- Annual low carbon exports to Mexico already total more than any of the other MUST countries and more than Brazil, Russia or India;
- Mexico is the UK’s second largest trading partner in Latin America; and
- Recent trade and investment missions to Mexico, for example in February 2014 led by UK Deputy Prime Minister Nick Clegg, have raised the profile of export opportunities in Mexico.

As we will outline in greater detail below, these four markets are united by a range of factors including:

- High growth potential;
- Ease of doing business;
- Strong historic trade relationships with the UK;
- Significant low carbon imports; and
- A legislative environment that is committed to tackling climate change.

CASE STUDY 1

Whitefox Technologies

How to double revenues, create jobs and unlock Latin America

Whitefox Technologies Limited ("Whitefox") is a UK SME that specialises in delivering innovative membrane solutions to biofuels and chemicals producers. The company has over 10 years' industrial experience, focused on providing the most energy and water-efficient separation systems worldwide. Projects range from integrating chemical reactors and recycling waste ethanol in pharmaceutical plants to producing high-quality potable and fuel ethanol.

Whitefox generates more than 90% of its revenues from exporting and is currently active in Europe, the USA, Canada and South America. Whitefox's turnover more than doubled from 2012 to 2013 and is in line to double again this year thanks to recently confirmed projects in their pipeline.

Whitefox currently employs 15 people and is planning to expand its team over the next 12 months as its export driven business grows.

Whitefox is currently working on an exciting new project in Guyana with its Brazilian partner Green Social Bioethanol ("Green Social Bio"). The project is the first ever biofuel ethanol plant in Guyana and was commissioned in August 2013 by the President of Guyana and the Inter-American Development Bank. The plant is a demonstration unit that will produce 1,000 litres per day using black strap molasses as a feedstock (which is a waste stream coming from GuySuCo, the main Guyana sugar corporation) and the fuel will be used to power GuySuCo and the Ministry of Agriculture's vehicles. The demonstration plant was designed to be manual and simple to operate and will be used to train local engineers and operators in how to operate an ethanol plant, manage quality control and determine key steps for future scale up.

The dehydration part of the plant was designed, built and installed by Whitefox and uses membrane technology to concentrate the ethanol to ensure maximum efficiency and ease of use. The fermentation and distillation technology for the production of hydrous ethanol was provided by Whitefox's Brazilian partner, Green Social Bio.

"We first met Green Social Bio in 2008 in Brazil at a conference and we stayed in touch as we were really interested in their concept of small scale ethanol, looking "beyond fuel" at the social impacts that such projects could have" – says Gillian Harrison, Whitefox's CEO.

Green Social Bio is a Brazilian company that aims to help the world's poorest rural communities to escape energy poverty by providing them with an innovative bioethanol micro-distillery with which they can produce their own fuel to power electric generators, clean cook stoves, farming machinery and even flex cars.



Whitefox and Green Social Bio explored a number of projects since 2008 before starting the current project in Guyana. The key to their success is that, according to Gillian: "Whitefox has something that Green Social doesn't have (dehydration expertise) and with our technology we can help them grow their business. The same is true for us, as we need their fermentation/distillation expertise and their presence on the ground and marketing exposure in South America. It is a win-win situation".

Whitefox used UKTI's services when first going to Brazil by commissioning a market study to understand the local ethanol industry and they have also attended several mixed-trade industry missions over the years. "UKTI has been very helpful, their Brazilian team is very knowledgeable and we highly recommend their services to businesses going to Brazil. We were invited to be an advisor on the recent Clean and Cool mission organised by the Technology Strategy Board which was particularly useful, as it was solely focused on the low carbon sector in Brazil" says Gillian.

Gillian stressed how essential it is to find a local partner to crack the Brazilian market as partners immediately provide a foreign company with the local knowledge they need to do business. Establishing a successful relationship can take a long time, especially in a country like Brazil where personal relationships drive a lot of the business: "Going to Brazil as early as possible is crucial as it can take time to find the right partners and build a commercial relationship with them; without the help of the UK government, through UKTI and its trade missions, many low carbon companies would not enter Brazil early. Their help is crucial".

Doing business in Brazil also comes at a cost because of high import duties and local costs of setting up a local presence. "Be prepared to adapt your business model in Brazil where you might have to reduce your margins but achieve higher volumes in return" says Ms. Harrison. This is an area where SMEs have limited powers of influence but where the UK government could help its low carbon SMEs by trying to negotiate reductions with the Brazilian government on what are in effect trade barriers.



We first met Green Social Bio in 2008 in Brazil at a conference and we stayed in touch as we were really interested in their concept of small scale ethanol, looking "beyond fuel" at the social impacts that such projects could have.

Gillian Harrison, Whitefox's CEO

CASE STUDY 2

Oxsensis Ltd

Increased revenues by more than 100 per cent in 2013

Oxsensis Ltd ("Oxsensis") was formed in 2003 as a spin-out from Rutherford Appleton Laboratory in Oxfordshire. The company is a UK SME pioneering a new breed of optical instrumentation for precision control in harsh environments such as power generation, aero engines and airframes, oil and gas production and exploration, industrial processing and heavy transport. Its sensor technology is based on a combination of super resistant materials and innovative fibre optic technology.



Oxsensis sensors are resistant to extremely high temperatures and offer power generators a dramatic increase in the quality and quantity of the combustion data they can extract, allowing them to continually optimise combustion to reduce fuel burn and NOx emissions and also extend equipment lifetime.

In the last three years, Oxsensis has finalised product development and collaborative research agreements with Blue Chip OEMs including GE Aerospace, Parker Aerospace and various others. The rapid development of applications for Oxsensis's technology will be accelerated by more similar partnerships according to David Hemsley, Oxsensis Business Development Manager.

More than 80% of Oxsensis's revenues come from exporting and the company's biggest market is currently the US. Oxsensis's revenues more than doubled in 2013 as a consequence of exporting. "Exporting is truly vital for our business, our market is international and hence we have been a majority exporter from the start" says David Hemsley.

Oxsensis is a small rapidly growing company with great ambition: "We have just hired three new people as a consequence of exporting and we are now looking for more opportunities in Russia, China and Japan building on the success of our European and North American footprint" explained David.

Oxsensis is currently in advanced negotiation with a Russian partner that has recently commissioned a custom sensor project. "We have hired an external consultant to enter the Russian market and we have been working together with UKTI by participating in in-bound and out-bound missions which have been a great help. Our current Russian partner enquiry came out of word of mouth on the back of what our consultant and UKTI have been doing to raise our profile". Thanks to this relationship, Oxsensis has also signed a non-exclusive agreement with EL-SCADA, a Russian agent.

As part of Oxsensis's strategy to establish itself in Asia, the company has concluded an agreement in China with Triamond Technology Partners, appointing the firm as its exclusive partner to raise strategic and financial investment from Chinese companies as well as potential joint venture opportunities to develop its business in China.

Following the same model it has used in China, Oxsensis has appointed HIJ-Corporation as its representative in Japan as a pilot phase in the Japanese market.

"Having visibility on the breadth of opportunity and raising our profile is difficult ...this is where UKTI has a role to play" says Dr Hemsley, who also added how UKTI has helped them recently to re-design their website for better "internationalisation".

B

Opportunity markets

1. Major growth potential – tripling low carbon exports
2. Mexico, UAE, South Africa and Turkey – the “MUST”s for future growth
3. Four steps to seize the “MUST” opportunity

1 Major growth potential – tripling low carbon exports

The global low carbon export opportunity is forecast to be worth more than £1 trillion up to 2020

This new research forecasts the size of the global low carbon export opportunity and analyses the geographic breakdown.

It estimates the size of the market by looking at the combined annual import value of the top 52 global importers of low carbon environmental goods and services excluding the UK (Figure 22), using data and analysis from kMatrix and HMG Department for Business Innovation and Skills (BIS, 2013).² This translated into a total annual low carbon export opportunity of £213 billion in 2011-2012 for the UK. Even if there was no growth in this total annual export opportunity, there would be a cumulative export opportunity between now and 2020 of more than £1 trillion for UK low carbon SMEs to tap into.

39% of the annual global low carbon export opportunity (or £83 billion) currently comes from developing countries and emerging economies³ and 61% (or £130 billion) currently comes from advanced economies⁴ in 2011-2012.



39% of the annual global low carbon export opportunity (or £83 billion) currently comes from developing countries and emerging economies

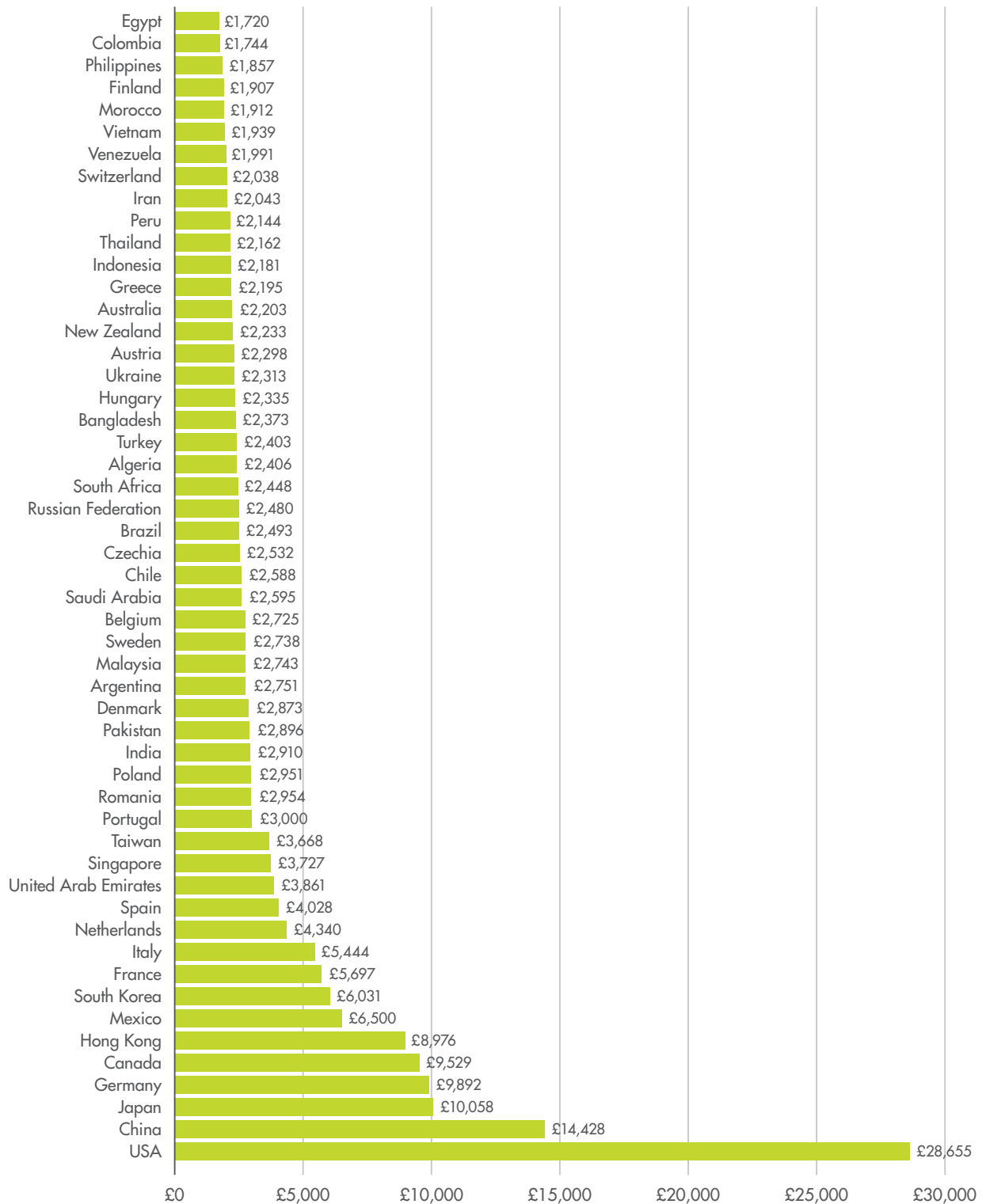


² Export data for other countries was not available from this dataset. We assume that the top 50 countries account for the vast majority of the total low carbon export value.

³ IMF definition of emerging and developing economies <http://www.imf.org/external/pubs/ft/weo/2013/02/weodata/weoselgr.aspx>

⁴ IMF definition of advanced economies <http://www.imf.org/external/pubs/ft/weo/2013/02/weodata/weoselgr.aspx>

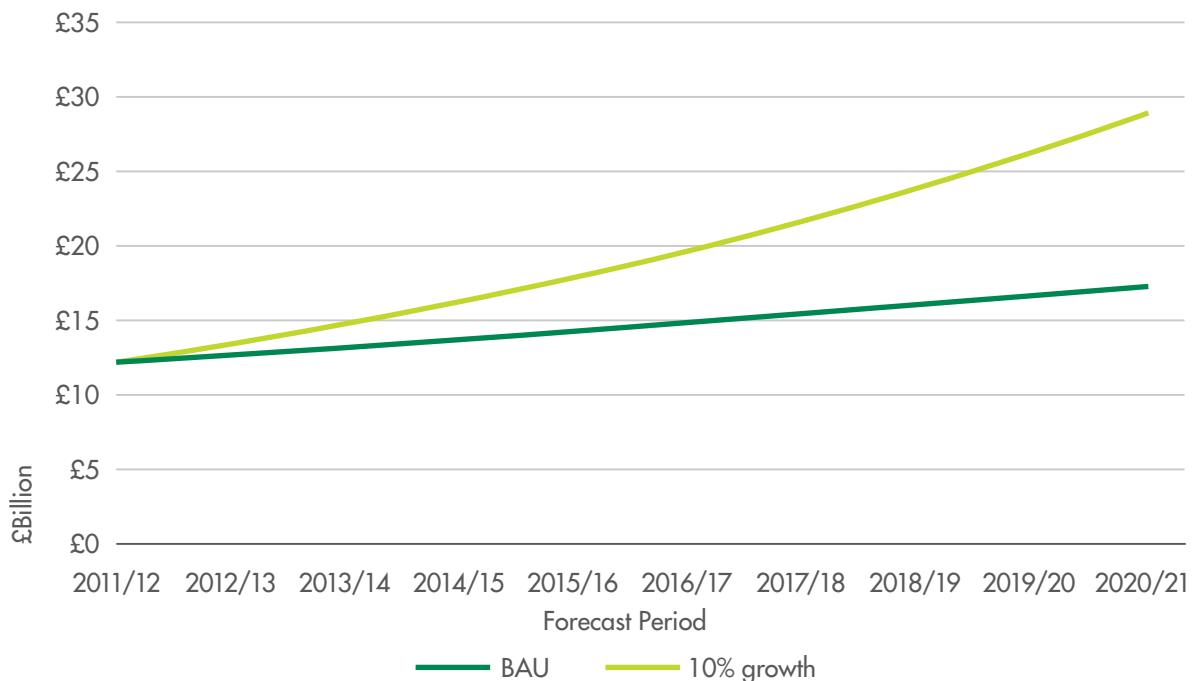
Figure 22: Top 52 countries – Low carbon environmental goods and services imports, 2011-2012 (£M)



Source: Carbon Trust analysis of kMatrix LCEGS data

The UK currently exports around £12 billion of low carbon environmental goods and services annually (BIS, 2013). The global low carbon market is currently growing at around 4%. A business-as-usual case for low carbon export growth between now and 2020 may therefore see UK low carbon exports rise from around £12 billion currently to around £17 billion in 2020. However, if a more ambitious export growth rate of 10% could be achieved – in line with what the rate that UK exports as a whole need to increase by to reach the UK's £1 trillion export target by 2020 – **then the UK could almost triple its low carbon exports to around £30 billion in 2020 (Figure 26) and double its share of the global low carbon export market from around 5% to around 10%.**

Figure 23: Business-as-usual low carbon export growth compared to an accelerated growth scenario to 2020 (£Bn)



Source: Carbon Trust analysis of kMatrix LCEGS data

This analysis suggests that the UK's low carbon sector has great potential to bring growth and jobs to the UK economy through increased exports and increased revenues for UK SMEs but also that more needs to be done to improve the UK low carbon sector export and total sales potential.

2 Mexico, UAE, South Africa and Turkey – the “MUSTs” for future growth

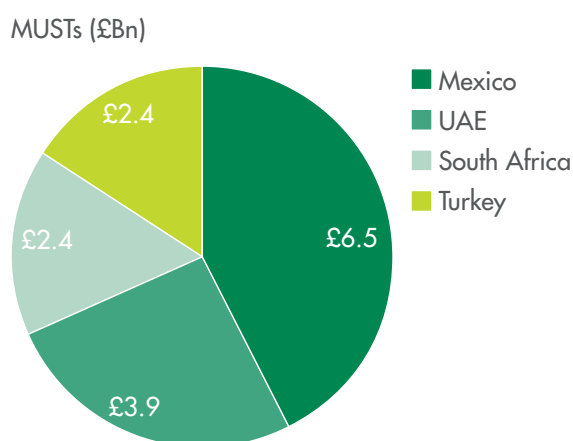
Why the MUSTs?

The “MUST” countries – Mexico, the United Arab Emirates (UAE), South Africa and Turkey – have been identified by low carbon SMEs, expert interviewees and the Carbon Trust as the four countries “to watch” for low carbon environmental goods and services exports, and represent significant opportunities beyond the BRICs (Brazil, Russia, India and China).

The MUSTs share several characteristics that make them attractive for UK low carbon SMEs:

- They represent a multi-billion pound annual export market opportunity, estimated at £15 billion⁵ in 2011-2012, with significant potential for growth (Figure 24);
- They are all markets where low carbon SMEs have spotted an opportunity and are planning to export in the next 1-2 years;
- They all rank above the BRICs for ease of doing business;
- They have historical trade relationships with the UK;
- They have significant low carbon imports where the UK is a net exporter (Figure 25); and
- They have a strong commitment and legislation in place to tackle climate change and promote investment in renewable energy and energy efficiency.

Figure 24: MUSTs market opportunity for low carbon environmental goods and services (£Bn)



Source: Carbon Trust analysis of kMatrix LCEGS data

⁵ The MUSTs represent a £15 billion market opportunity in terms of total combined import demand for low carbon environmental good and services in Mexico, the UAE, South Africa and Turkey.

Figure 25: Trade flows of low carbon environmental goods and services between the UK and the MUSTs (£M)

Source: Carbon Trust analysis of kMatrix and BIS ICEGS Report (2011)

Mexico

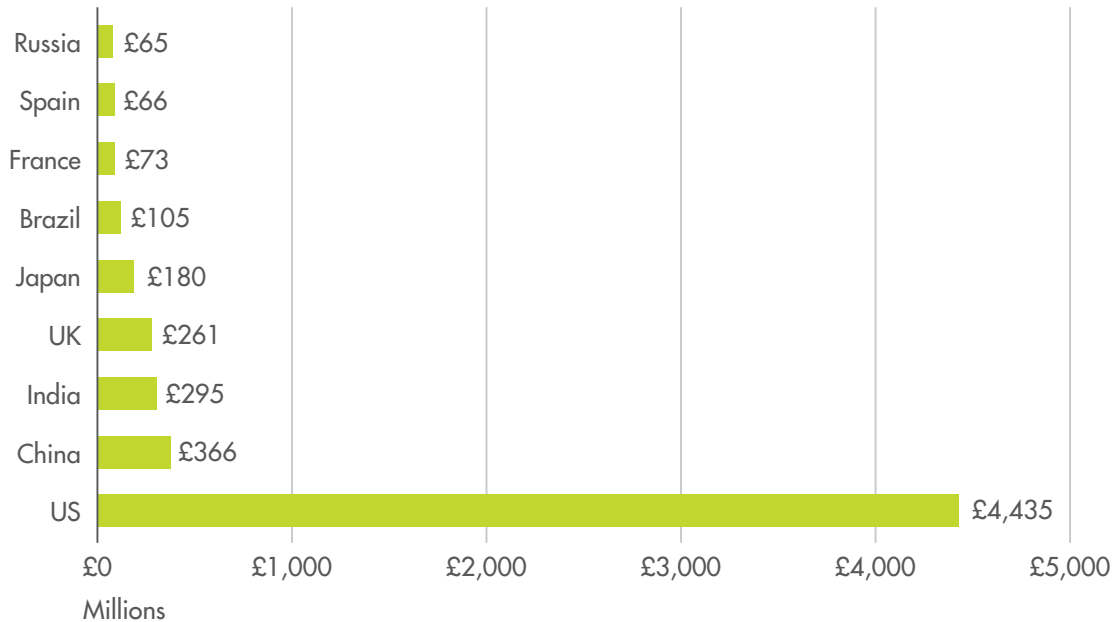


Why Mexico?

Mexico is the 14th largest economy in the world, according to the World Bank GDP global ranking (World Bank, 2012). It is the UK's second largest trading partner in Latin America and regularly ranks in the top three emerging markets in which to do business (UKTI Mexico, 2014).

The UK is Mexico's fourth most important low carbon environmental goods and services trade partner, though the UK's share is almost ten times smaller than the USA's.

Figure 26: Mexico Imports – Top 10 trade partners of low carbon environmental goods and services (£M)



Source: Carbon Trust analysis of kMatrix LCEGS data

Mexico stands at 48th out of 189 economies in the ease of starting a business, positioning itself in front of all four BRIC countries: starting a new business in Mexico only requires six procedures, no paid-in minimum capital and takes six days (World Bank, 2014).

Over the past decade, the country has seen economic growth and stable inflation. With 44 Free Trade Agreements (including with North America and the EU), 28 Investment Promotion and Protection Agreements (IPPAs) and 40 Double Taxation Treaties (DTTs), there has never been a better time to consider Mexico as a place to do business, according to UKTI (UKTI Mexico, 2014). The region is also strategically located between the US and South America and provides the potential to act as a pivot into other Latin American economies.

With oil and gas reserves rapidly depleting and a high exposure to the effects of climate change, Mexico has made strong commitments towards the reduction of carbon emissions and the promotion of energy efficiency measures and renewables. Mexico has passed one of the world's most ambitious climate change laws, which includes a mandate to reduce emissions by 30% by 2020 (and 50% by 2050) and to derive 35% of its electricity from renewable energy by 2024. The legislation also established a commission to oversee the implementation of these plans and rebranded the National Institute of Ecology (INE) as the National Institute of Ecology and Climate Change (INECC) to serve as the lead agency on the issue. Furthermore the legislation introduced mandatory emissions reporting for the largest polluters and encourages the development of a carbon trading scheme (UKTI Mexico, 2014).

The recent energy reform (SENER, 2013) opened up the electricity sector (currently a monopoly held by the state-owned Federal Electricity Commission (CFE)) to more investment from the private sector while maintaining state control over CFE. This includes increasing the importance of Independent Power Producers, which at the moment are mostly large industrial sites producing their own power. The reform also incorporates sustainability as a key principle of the energy sector and this will include:

- A mandate for the Federal Government to update the National Programme for the Development of Sustainable Energy (produced by the previous administration) with the relevant steps to realize the objectives of the energy reform on sustainable energy;
- Establishing obligations on the use of clean energy and emission reductions in the electricity sector;
- Creating a Sovereign Wealth Fund with oil and gas revenues modelled after Norway's Sovereign Wealth Fund to be used to finance the development of Mexico in a sustainable way.

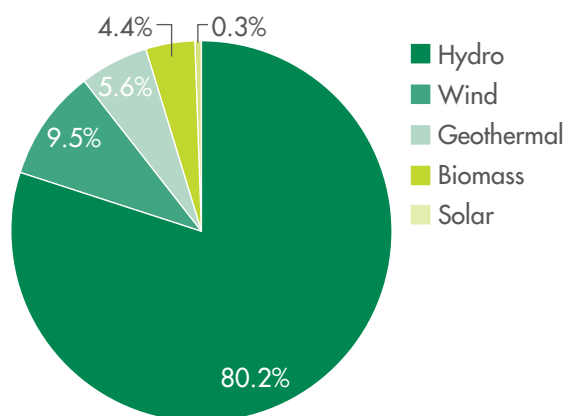
Mexico key opportunities

The low carbon environmental goods and services market in Mexico is estimated at £6.5 billion and renewable energy (in particular wind, solar and geothermal), biofuels, energy efficiency and low carbon buildings and infrastructure sectors represent significant and growing opportunities for UK companies wishing to establish their presence in Mexico.

Renewable energy

Mexico had 14.5 GW of renewable energy capacity installed at the end of 2012, satisfying approximately 20% of its total electricity production. This figure is dominated by hydropower followed by wind, which has a 10 times smaller share (Promexico Trade and Investment, 2013).

Figure 27: Electricity generation installed capacity from renewable energy in Mexico (2012)



Source: Promexico Trade and Investment, Renewable Energy, Page 1, (Promexico Trade and Investment, 2013)

There are currently 258 plants (operating or under construction) that provide electricity from renewable sources of energy. The states with the highest number of projects are Oaxaca (for wind energy) and Veracruz (for bioenergy) (Promexico Trade and Investment, 2013).

Mexico has an ambitious target to increase the share of low carbon technologies contributing to its total electricity generation to 35% in the next 10 years. Renewable power capacity is expected to increase to 20.5 GW by 2026, coming mainly from wind (59%) and hydro power (27%). (Promexico Trade and Investment, 2013)

Figure 28: Growth in renewable energy generation installed capacity forecast, 2012-2026 (MW)

Type of energy	Public service	Self-supply	Distributed generation	Total	Share %
Wind	3,219	8,352	461	12,032	58.6
Geothermal	151	0	25	176	0.9
Hydro	4,771	701	139	5,611	27.3
Solar:					
Photovoltaic	6	752	1,170	1,928	9.4
Thermosolar	14	0	16	30	0.1
Biomass	0	422	345	767	3.7
Total	8,161	10,227	2,156	20,544	100

Source: Promexico Trade and Investment, Renewable Energy (2013), Page 1 (Promexico Trade and Investment, 2013)

Several schemes (Promexico Trade and Investment, 2013) have been established by the Energy Regulatory Commission (CRE) to encourage private participation in renewable energy power generation, such as:

- Self-supply scheme aimed at companies or individuals who generate their own power;
- Independent power producer schemes aimed at plants larger than 30 MW that are selling the energy exclusively to CFE;
- Other schemes for power generation such as cogeneration, small production, export and import.

Some of the incentives (Promexico Trade and Investment, 2013) available for private power generation of renewable energy include:

- The energy bank, which allows the accumulation of surplus energy for producers under the self-supply scheme, to be used in the future or to be sold to the CFE;
- A preferential tariff for power transmission;
- A transmission service charge for renewable energy and cogeneration efficiency of \$0.011 dollar/kWh, instead of \$0.023-0.030 dollar/ kWh for traditional source.

Wind power

Mexico has abundant wind resources with a total estimated wind power potential of 71GW according to CFE estimates. In particular, the region around Oaxaca has extensive wind resources of up to 33 GW in total with wind average plant factors at 50%, while and the State of Baja California, which has up to 10 GW of potential wind resources, is an ideal location for wind farms supplying energy to the neighbouring USA (UKTI Mexico, 2014).

Leading wind companies in the world, such as Gamesa and Acciona, and corporations like Walmart and Grupo Bimbo, have been investing heavily in wind projects in Mexico. For example, Grupo Bimbo alone has invested \$200 million to provide 90 MW of wind electricity to 65 of its facilities and Acciona has invested \$1.2 billion to install four wind farms in the state of Oaxaca with a total capacity of 556 MW (Promexico Trade and Investment, 2013).

Solar energy

Mexico is on the "sunbelt" and has one of the highest solar power generation potentials worldwide. According to the Mexico National Association for Solar Energy (ANES, 2010), Mexico had 29 MW of cumulative installed solar capacity (up to 2010) and has the potential to reach 6.5 GW capacity thanks to the country's abundant solar resources. Solar Photovoltaic (PV) is expected to contribute up to 5% of the energy mix by 2030 and to double to 10% by 2050.

Leading solar companies have been investing in opportunities in Mexico. For example, Iberdrola was recently awarded a contract for a 300 MW combined-cycle solar plant in Baja California. The company has committed \$270 million to build the plant (which is expected to come online in August 2016) and has signed a 25-year power purchase agreement (PPA) with the CFE (Iberdrola, 2014).



Mexico is on the "sunbelt" and has one of the highest solar power generation potentials worldwide.



Geothermal

Mexico is one of the leading producers of energy from geothermal sources (Promexico Trade and Investment, 2013), ranking 4th with a global share of 8.7% in 2012, just behind the USA (28.7%), Philippines (17.3%) and Indonesia (10.9%).

Biofuels

Mexico has set a goal to include 1% of biofuels in the fuel mix used by aeroplanes in Mexico by 2015, which would require the production of 40 million litres per year and an investment of \$480-720 million in the next two years to satisfy the growing demand for biofuels, according to the Airports and Auxiliary Services Agency. In April 2011, a Mexican airline performed the first flight using 27% bio-turbosine on its Mexico City-Chiapas route (UKTI Mexico, 2014).

Energy efficiency, infrastructure and low carbon buildings

Electricity demand in Mexico has grown by more than 4% per year since 1995. Managing this growth through energy efficiency measures in the end-use sectors is critical to mitigating greenhouse gas emissions (UKTI Mexico, 2014).

Mexico implemented a sustainable lighting programme that has replaced more than 47 million incandescent light bulbs for fluorescent lamps. Commercialisation of 100, 75 and 40-60 watt light bulbs were prohibited from December 2011 to 2013 respectively. Management of used fluorescent light bulbs has triggered commercial opportunities for special waste management companies. Additionally, the Mexican government ran a federal government programme until November 2012 that provided citizens with an economic incentive to exchange inefficient electric appliances for energy efficient ones. The programme replaced more than 900 thousand units in the country (UKTI Mexico, 2014).

Mexico is also implementing ambitious plans to renew its infrastructure and strengthen its position as a regional logistics hub. The National Infrastructure plan of 2013-2018 is expected to result in £65 billion investment in roads, railways, ports and airports (UKTI Mexico, 2014).

Energy efficiency and resource-saving technologies represent large and growing market opportunities for UK SMEs with more than 80% of these technologies currently being imported into Mexico (UKTI Mexico, 2014).

Top tips to get into Mexico

1. Take advantage of subsidised communications support

Having Spanish-language marketing collateral and websites will make a real difference when engaging with Mexican contacts. UKTI offers an Export Communication review service that can help tailor a company communication strategy for the Mexican market. As part of the service, an accredited export communications consultant can discuss language and cultural issues and help to identify communication strengths and weaknesses as well as offer practical recommendations. Eligible SMEs can benefit from three subsidised reviews, a written report with recommendations and a tailored action plan. Areas covered include: written and spoken communications; websites; language skills for staff; translation and interpretation solutions; press releases, promotional materials, technical documents, manuals, catalogues or packaging for international audiences; preparation for overseas trade shows, exhibitions or presentations; and improving relationships with overseas agents and distributors.

2. Engage with UKTI early on and tap into their market insights

Extensive market research is required in order to maximise opportunities and avoid costly mistakes. Focused research can help businesses to quantify the demand their products or services in Mexico, identify the best routes to market and find the right partners or agents. Entrants to the market can seek assistance in these areas from the UKTI's Overseas Market Introduction Service (OMIS); subsidies are available for eligible SMEs. UKTI is the British Government organisation that helps UK businesses to export to international markets and to bring overseas investment to the UK. UKTI has a team of 30 people in Mexico dedicated to helping British business to export. They provide a range of services – including bespoke market research, press and media services, suggestions of business partners, introductions and organisation of events – to UK based companies wishing to grow their business in Mexico.

3. Don't underestimate the local competition and identify local partners

Mexico has a well-developed and sophisticated market for low carbon environmental goods and services. Competition across all sectors is fierce as companies vie to serve both the fast growing local market and the vast re-export opportunities in Latin America and the US. It is vital to perform extensive competitor analysis to understand the competitive landscape and adapt business models accordingly.

Finding a local partner or establishing a local presence to facilitate exports is highly beneficial. A customs broker and a local agent are essential to ensure that goods from the UK can be delivered through Mexican customs. If establishing a foreign subsidiary in Mexico, a stock corporation (S.A., S.A de C.V or S.A.P.I) is the most commonly used entity; it requires 50,000 pesos (around £2,300) as minimum share capital and to have at least two nominated shareholders. Sometimes a general partnership with unlimited liability (Sociedad en Nombre Colectivo), a limited partnership (Sociedad en Comandita) or a limited liability company (Sociedad de Responsabilidad Limitada) are also used for tax purposes.

Authorisation to use a specific corporate name is required from the Ministry of Foreign Affairs (Secretaria de Relaciones Exteriores) to set up any business entity in Mexico. After the Mexican Government authorisation is received the business can be registered in the Public Registry of Commerce (Registro Publico de la Propiedad y del Comercio).

4. Adjust to the culture and pace of business

The business atmosphere in Mexico is friendly and easy-going, with a slower pace than in Europe or in the US. It may take time to close important deals and a medium to long-term view is essential to succeed as it is very important to establish and cultivate personal relationships before doing business. A lot of weight is placed upon job titles so high-quality business cards with up-to-date titles and other information are necessary. Mexican nationals usually refer to people by their title and they expect foreign business visitors to do the same.

Companies planning to export to Mexico should plan to make a series of visits to the country to maintain relationships as keeping in touch is vital. Itineraries should allow time for lengthy meetings, working lunches and social events, and not attempt to cram many appointments into a single day. Dinners are usually occasions to talk less about business and devote time to cultivate personal relationships.

Useful contacts in Mexico

The British Embassy (Mexico City)

Tel: +52 (55) 1670 3200

Email: UKTImexico@fco.gov.uk

Web: <http://www.ukti.gov.uk/export/countries/americas/northamerica/mexico.html>

Sources: UKTI website, country and business guides, blog and interviews

CASE STUDY 3

Biogas Technology Ltd and ENER-G Natural Power Ltd

Mexico is expected to become their biggest market in the next two to five years

Introduction

Biogas Technology Ltd ("Biogas Technology") is a UK SME that provides products and services for capturing and processing methane rich gas from landfills, Anaerobic Digestion systems (AD), or gas emitted from operational and abandoned coal mines.

Since 1988, Biogas Technology has completed several hundred landfill gas capture projects – recovering and processing landfill gas and creating carbon credits – in Mexico, Chile, Peru, China, Poland, Brazil and the UAE – through strategic partnerships, joint ventures or working directly with municipal governments and private operators.

Building on its success with carbon credit projects, Biogas Technology is now working with its sister company ENER-G Natural Power Ltd ("ENER-G"), part of the ENER-G Group based in Manchester UK, to use the methane that is captured across its projects to produce electricity, providing a renewable source of energy and benefits to local communities.

ENER-G Group is a company offering energy management services, sustainable technologies and renewable energy solutions to customers around the globe including in Romania, Poland, Lithuania, Hungary, Spain, Mexico, South Africa, among others. Within the group, ENER-G offers landfill gas, mines gas, biogas CHP and AD products and services.

Getting into Mexico

Biogas Technology first entered the Mexican market in pursuit of carbon credit projects and because of the presence of their partner Ecosecurities. Biogas Technology also commissioned a UKTI overseas market introduction report (OMIS) that uncovered a high-growth market opportunity in Mexico, which has some of the world's largest landfill sites.

On the back of the encouraging findings from the report, Biogas Technology joined a trade mission to Mexico in 2006 organised by UKTI during which they were introduced to landfill site operators, municipal officials and some private companies operating in the waste management and mining sectors.

By late 2006, Biogas Technology started working on their first landfill gas capture project in Aguascalientes (which was followed by six more projects in the country). In partnership with ENER-G S.A. de C.V.(ENER-G Groups subsidiary in Mexico), the Aguascalientes site is now converting the methane produced by the landfill site into electricity that is then supplied to Nissan (who uses the energy for one of its manufacturing plants in the Aguascalientes).

"Nissan is our power off-taker under the Self-Supply scheme and was introduced to us by the Municipality of Aguascalientes as a large energy user in the area" explains Ian Cooper, Business Development Director at ENER-G and



Deputy Prime Minister Rt Hon Nick Clegg MP witnessing the signature of the contract of the Chiltepeque Landfill site, ENER-G S.A. de C.V.'s latest and largest landfill gas opportunity in Mexico

Country Manager for ENER-G S.A. de C.V.. Ian further explains: "Nissan is incentivised to use renewable sources of energy as they are purchasing it from the Self Supply company that we have set up together with the Municipality of Aguascalientes, at a discounted rate".

Ian Cooper is now in the process of opening ENER-G's first office in Mexico City where employees of ENER-G (Mexico) and Biogas Technology will join forces.

"Mexico could be our biggest export market in the next two to five years and it is a very exciting time for us opening our first office in the capital" says Ian Cooper. ENER-G has already hired six employees in the last two years in Mexico and has hiring plans to substantially increase their Mexican workforce in the next 24 months if the projects in the pipeline are approved for development by the CRE and CFE.

The main challenge in Mexico has been to adapt to a slower bureaucracy, according to Ian: "It can take several months for a project to get approval and get grid connection". The regulatory environment has also been challenging, but the new energy reforms expected before the summer could introduce new mechanisms that could grant operators of renewable energy sites more freedom to sell the electricity they produce, introducing, for example, power purchase schemes in the private sectors.



Mexico could be our biggest export market in the next two to five years and it is a very exciting time for us opening our first office in the capital.



United Arab Emirates (UAE)



Why the United Arab Emirates (UAE)?

The United Arab Emirates (UAE) is a federation of seven states formed in 1971 by the then Trucial States after independence from Britain: Dubai, Abu Dhabi, Ajman, Fujairah, Ras al-Khaimah, Sharjah and Umm al-Quwain are the seven states or emirates, that collectively form the UAE.

The UAE is the 32nd largest economy in the world (World Bank, 2012), the UK's largest civil export market in the Middle East and North Africa, and the 13th largest importer of UK goods, at a value of around £5.1 billion (UKTI UAE, 2014). In addition, the UK is the second largest low carbon and environmental goods and services trade partner of the UAE, after India (which has a market share five times larger than the UK).

Figure 29: United Arab Emirates Imports – Top 10 trade partners of low carbon environmental goods and services (£M)



Source: Carbon Trust analysis of kMatrix LCEGS data

The UAE ranks 23rd in the World Bank for ease in doing business – ahead of all the BRIC countries – as starting a business requires six procedures, no minimum paid-capital and takes eight days (World Bank, 2012).

The UAE has one of the world's largest per capita carbon footprints as its economy relies heavily on fossil fuels, with nearly 100% of its energy coming from natural gas and liquid hydrocarbons, and it has a predominance of energy intensive-industries. The UAE is a rapidly growing country that has experienced a huge population surge in the last 20 years – almost tripling from 2.4 million in 1995 to 7 million in 2011 (IRENA, 2012).

The UAE has made a strong commitment to decarbonisation and diversification of its energy sector and has been at the forefront of renewable energy development with several laws and initiatives in place to promote renewable energy investment and deployment. Some of the most important (IRENA/IEA, 2014) policies and initiatives include:

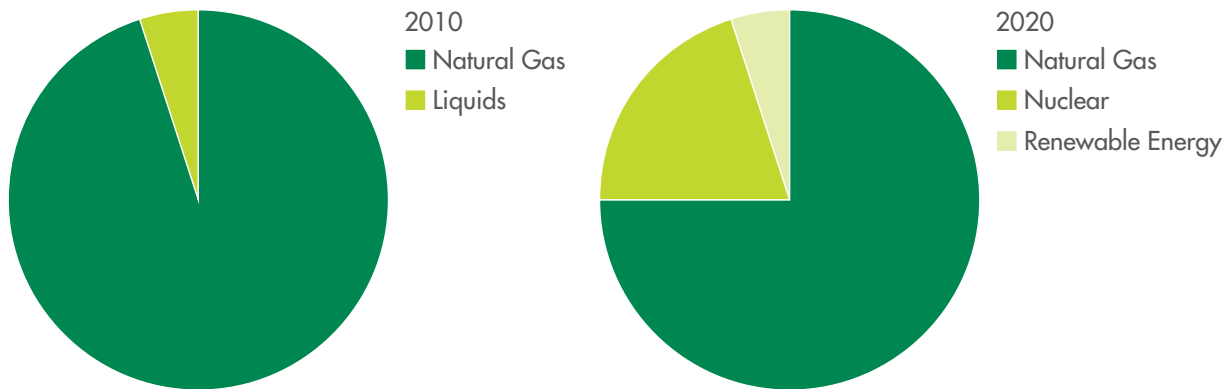
- The Solar Water Heating Regulation (2011) – the Emirate of Dubai requires that all government buildings install solar water heaters in all existing buildings and premises and that all new buildings meet at least 75% of their water heating requirements from solar power (and if a swimming pool is included in the building, 50% of its water heating must also come from solar);
- The National Renewable Energy Assessment and Mapping (Atlas) (2011) – The UAE solar Atlas was launched during the UN Rio+20 Conference in June 2012 to map wind and solar resources across the country and was made available in 2013 via the International Renewable Energy Agency (IRENA) online portal;
- The Overseas Renewable Energy Development Assistance Programme (2009 and 2012) – the UAE has put renewable energy as its key focus for its development assistance portfolio setting up: a \$350 million core fund with IRENA to provide soft loans for renewable energy projects in developing countries; a \$50 million fund to provide grants to renewable energy projects in Pacific islands countries; several supplement funds (estimated to be tens of millions of dollars in size) to develop renewable energy projects on a grant basis through its state-owned clean energy company, Masdar;
- The Renewable Energy Deployment Strategy (2009 and 2011) – Abu Dhabi and Dubai have set renewable energy generation targets of respectively 7% by 2020 (Abu Dhabi) and 5% by 2030 (Dubai);
- The Green Building Project – UAE efficiency programme started as an initiative in 2008 by the Supreme Council of Energy in collaboration with the Dubai Municipality and Dubai Electricity and Water Authority. In 2011, it became mandatory for all government buildings and it was extended in 2014 to all new buildings;
- The Overseas Renewable Energy Investment Strategy (2006) – The UAE has initiated several programme of investment in overseas renewable energy projects and R&D through Masdar (Masdar is the largest investor with a 20% stake) in the London Array offshore wind project, has a 40% stake in the joint venture Torresol with Spanish company Sener and set up two cleantech funds (totalling \$515 million) with Deutsche Bank, Credit Suisse, Siemens, and Consensus Business Group);
- The Renewable Energy Education and RD&D Strategy (2004, 2006 and 2009) – the UAE has established two graduate-level research universities dedicated to clean energy in partnership with leading international universities (such as MIT), with dedicated state-of-art RD&D facilities.

UAE key opportunities

The overall size of the annual UAE low carbon environmental goods and services market that UK companies could tap into is estimated at nearly £4 billion and renewable energy, water and wastewater management, energy efficiency represent big and growing market opportunities.

Renewable energy

The UAE has made an impressive commitment to renewable energy in terms of education, electricity generation targets and pledged investment. Every unit of oil and gas consumed domestically in the UAE represent lost revenues from exports, making a strong business case for renewable technologies.

Figure 30: UAE current and projected energy generation mix (%)

Source: IRENA, UAE Energy outlook, (IRENA, 2012)

Abu Dhabi's target to generate 7% of its electricity from renewable energy by 2020 (equivalent to 1500 MW) is expected to be met by a combination of solar (PV and CSP), wind, and waste-to-energy projects. The 100 MW concentrated solar plant, Shams 1, opened in March 2013 is the first major project.

Dubai's target to generate 5% renewable energy capacity by 2030 (equivalent to 1000 MW) is another major opportunity. The Mohammed bin Rashid Al Maktoum Solar Park was launched in 2012, with the first 13 MW commissioned in October 2013. Project-specific tariffs are established by the Regulation and Supervision Bureau of each emirate, following tendering. Foreign partners typically assume 40% of project equity, with government entities assuming 60%.

Water and wastewater

Due to the region's hot climate, water per-capita consumption is among the highest in the world. In addition, due to the region's scarcity of water, desalination and wastewater reclamation are the common ways to produce water in the UAE. There are a lot of opportunities for UK companies to provide products and services for the collection, distribution, treatment and monitoring/analysis of water and wastewater for residential, commercial, industrial and agricultural uses. Relevant sub-sectors include desalination, water treatment (filtration and purification), waste water treatment (black/grey water) and water efficiency (conservation and recycling).

Energy efficiency

The Dubai Government has announced several initiatives to adopt energy efficient and low carbon technologies with the aim of cutting its energy use by 20% by 2020, most recently with plans to phase out low efficiency incandescent light bulbs (by restricting import from July 2014) and the energy efficiency programme called the Green Building Project (which was extended from only government buildings to all new buildings in 2014). It is estimated that 70% of all energy that is consumed locally in the UAE is used in buildings and as much as 60% of future energy use in the UAE could be impacted by sustainable energy management systems (Trade Arabia, 2014). According to Dubai Municipality, the permitted area for low carbon buildings could reach 90 million square feet (sf) by 2016, from 54 million sf in 2013 (The National, 2014).

Expo 2020

The UAE will host Expo 2020 with an estimated cost for holding the event at \$43 billion (Deutsche Bank, 2013). This will open up low carbon opportunities in several sectors across construction, power and water, retail, hospitality and tourism and transport sectors.

Top tips to get into the UAE

1. Tap into UKTI and British Business Group (BBG) support

There is a lot to think about when starting a business in the UAE and many options to consider that have different implications on the business structure. These include creating a representative office, a UAE branch office, a UAE company or a Free Zone Entity – sole proprietorships, partnerships and JVs are less commonly used. Companies should be prepared to invest in start-up, legal and company formation costs. UKTI and the BBG can provide advice on which

type of entity is the most appropriate to enter the UAE market. UKTI can help UK-based SMEs exporting to the UAE by providing a range of services, including bespoke market research, press and media services, suggestions of business partners, introductions and the organisation of in and out bound trade missions. The BBG can also help UK SMEs by communicating with decision makers, sharing best business practice and arranging business and networking events.

2. Research and respect the local culture and traditions

Despite the western feel of the UAE, in particular Dubai, it is important to recognise that there are strong cultural factors that influence the nature of commerce and trade, including respect for Islamic traditions, beliefs and sensitivities. The Emirates consist of seven states with a set of distinctive characteristics: if doing business outside the Dubai and Abu Dhabi region extra research is needed.

The vast majority of the population are expatriates, who often take management positions in UAE companies, though government officials are almost exclusively local nationals.

Good personal relationships and contacts are crucial in doing business in the UAE, where faith and friendship are highly valued in decision-making. Business meetings usually start with an exchange of business cards, followed by polite introductory conversation over a coffee. The main motivation of the meeting might not be raised until it is time to leave. Emirati nationals are very hospitable; lunch/dinner invites are very common and several meetings are required before a decision is made. Business is always conducted face to face.

Smart business attire is also strongly suggested at meetings; pointing the left hand and/or the soles of shoes at Emirati nationals is considered offensive. Only the right hand should be used to pass documents and refreshments.

3. Seek introductions and respect the hierarchy

Family and social connections are very important in doing business with the Emiratis. Many companies are family-run and it is common to have meetings with several members of the same family in the same room. Companies are often hierarchical as this can reflect the family structure: understanding the hierarchy will help to identify the decision-makers. In a similar vein, age is worthy of respect in the UAE. Having at least one senior member in the delegation can help to open doors and progress discussions faster.

Referrals and word of mouth are therefore very important and UKTI and BBG can help UK SMEs to establish a UAE network of contacts and potential local partners.

4. Be flexible and prepared to negotiate on price

Allow for flexibility when planning travel itineraries in the UAE as rescheduling or delaying meetings is very common and culturally accepted.

In addition, an effective price negotiation strategy should be planned for in advance as it is very common to have extensive price negotiations and typically the first proposed price will not be the final one.

Useful contacts in the UAE

Abu Dhabi UKTI commercial team:

Tel: +971 2 610 1100

Email: ukti.abudhabi@fco.gov.uk

Dubai UKTI commercial team:

Tel: +971 4 309 4444

Email: UKTI.Dubai@fco.gov.uk

Web: <http://www.ukti.gov.uk/export/countries/asiapacific/middleeast/unitedarabemirates.html>

British Business Group (Dubai)

Tel: 00 971-4-3970303

Web: <http://bbg.olasoft.com/index.html>

Sources: UKTI website, country and business guides, blog and interviews

CASE STUDY 4

Symphony Environmental Ltd

Winning business in UAE and Mexico

Symphony Environmental Ltd ("Symphony") is a small UK public company which specialises in environmentally-friendly plastics and is listed on the Alternative Investment Market of the London Stock Exchange

Symphony's innovation is to convert plastic materials into naturally biodegradable residues that can easily be converted into energy, biomass and CO₂. "Our technology is simply sequestering the carbon value of plastics and putting it back into the ecosystem in a useful form" – says Michael Laurier, Symphony's Chief Executive.

Symphony is a global company serving 97 countries with a diverse and growing customer-base. Symphony has 35-50 employees and operates from the UK with a lean distributor business model having established a network of 76 distributors around the world. "This model allows us to quickly scale up and penetrate new markets with minimal travelling, as well as achieving all the benefits of localised marketing, communications, and supply chain management" explains Michael Laurier.

Symphony has not been exposed significantly to the economic recession in Europe thanks to its global reach. On the contrary, the company has increased its revenues by more than 90% in the last five years, shifting from a business model based on revenues generated mainly in the UK, to more than 90% of its turnover coming from developing countries.

Symphony is growing fast due to increasing demand from developing nations actively looking for the latest, safest and most effective solutions to tackle plastic pollution.

"We have hired five people over the last year and are looking to add an equivalent number of people to our team in the next 12 months to serve this growing market" Mr Laurier says.

"We see interest in our product (d2w) from all over the world, but our most committed customers actually come from countries like the United Arab Emirates (UAE), Mexico, and Pakistan".

The UAE was one of the first countries Symphony started exporting to thanks to established connections with the company's management. The UAE is now Symphony's biggest export market and contributes more than 20% of its revenues.

"As a major oil economy, the UAE is a leading producer of plastics with a high awareness of plastic pollution problems; the UAE government has embraced the advantages of our solution to the point that oxo-biodegradable plastic is now mandatory, by law, for a wide variety of plastic products" Symphony's CEO explains.

The UAE government has recently enforced this legislation, requiring 15 new product categories to use oxo-biodegradable plastics. It is not just the UAE that is passing this type of legislation – nine more countries around the world, including Pakistan and some African countries, have followed their example.

Symphony has also been active in Mexico since 2006 when its d2w technology was chosen by the world's largest bakery, Grupo Bimbo, for its plastic packaging. Symphony is working with its local distributor in Mexico, Plasticos Degradables, who are developing the business further.

"Working with a large corporation like Grupo Bimbo is helping to bring value to Symphony. We have been working



very closely with our Mexican partners to monitor the performance of our products and to effectively communicate and educate customers about the benefits of oxo-biodegradable plastics” explains Mr Laurier.

He also adds: “Grupo Bimbo is a global business with quoted revenues in excess of \$13 billion that is rapidly expanding around the world, for example with its recent acquisitions of the Canadian company Maple Leaf, representing potentially a global platform for us to expand.”

UKTI has been instrumental in helping Symphony to expand in Mexico, India and Russia, and to raise awareness throughout Latin America. “UKTI has helped us to get the word out that d2w and oxo-biodegradable plastics are British technology that provides the best solution. Brand and service is important in our industry, and partnering with UKTI, British Ambassadors and High Commissioners, and Grupo Bimbo and other major companies has made a very positive impression” says Michael.



We have hired five people over the last year and are looking to add an equivalent number of people to our team in the next 12 months to serve this growing market.



Michael Laurier, Chief Executive, Symphony Environmental Ltd

South Africa

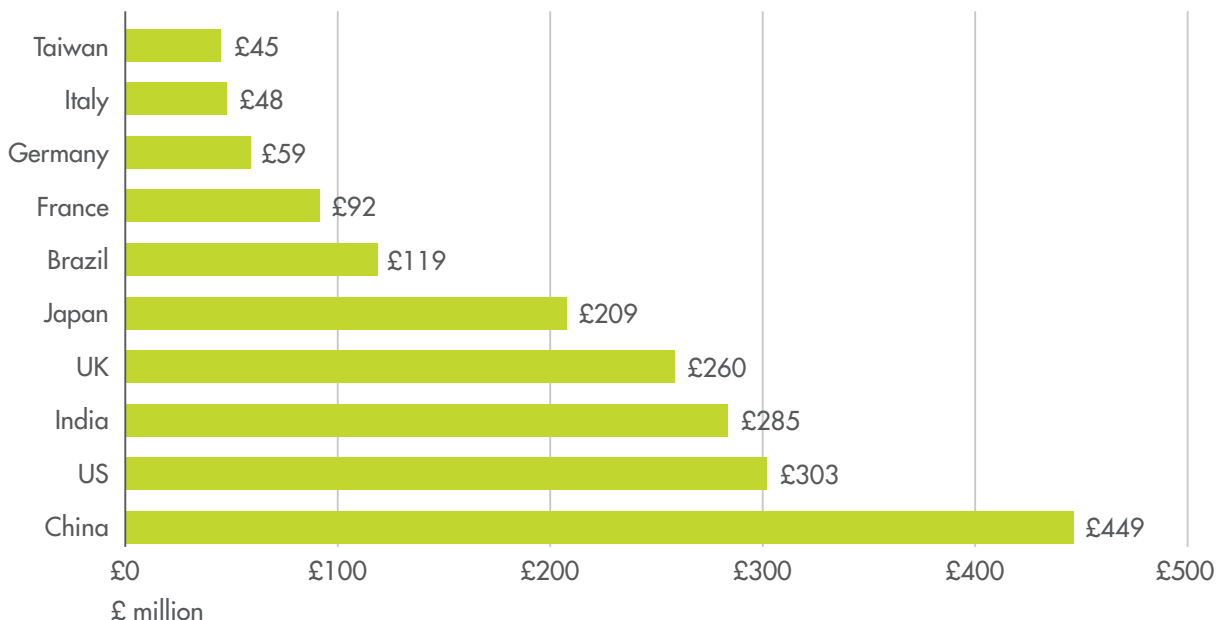


Why South Africa?

South Africa is the 28th largest economy globally (World Bank, 2012) and an important trade partner for the UK.

The UK ranks fourth as South Africa's low carbon environmental goods and services trade partner, after China (with a trade share almost double that of the UK), the US and India.

Figure 31: South Africa Imports – Top 10 trade partners of low carbon environmental goods and services (£M)



Source: Carbon Trust analysis of kMatrix LCEGS data

South Africa ranks 41st in terms of ease of doing business – before all of the four BRIC countries – and starting a business in South Africa requires five procedures, no minimum paid-in capital and takes 19 days (World Bank, 2014).

More than 90% of South Africa energy comes from coal, 90% of its waste is disposed of in landfill sites and 27% of its water is lost through poor infrastructure. This calls for enormous market opportunities to address these environmental

challenges that the South African government has started to recognise in 2008 with introduction of new regulations under the National Environmental Management Act. The Act sets the ambition of the South African government to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, taking into account environmental management requirements and interactions amongst economic sectors.

South Africa key opportunities

The overall size of the South African environmental goods and services market is estimated at nearly £3 billion and South Africa is a "market more open than ever to new technologies, management systems and innovation in environmental goods and services" (UKTI South Africa, 2014).

South Africa has introduced pioneering environmental and energy legislation over the last four years, with new policies being ratified to develop more energy efficient and sustainable practices that open up opportunities for UK low carbon SMEs wishing to export their products and services.

Big opportunities exist in the water supply and security, water and wastewater treatment, waste management and recycling, renewable energy, carbon capture and storage and biofuels sectors. Key pieces of legislation include:

Waste reduction: In 2008, a national target has been set to reduce the amount of 'Big 5' waste products (plastics, cans, paper, glass and tyres) going to landfill by 70% by 2022, and to minimise and treat the remaining 30% (UKTI South Africa, 2014);

Electricity generation: The Integrated Resource Electricity Plan (IRP) 2010-2030 sets the electricity mix for the next 20 years from different sources, such as nuclear, coal, gas and renewable energy; the IRP also establishes a target of 1 million solar water heaters to be installed by 2030 in South Africa (IRENA/IEA, 2014);

Renewable energy tariffs: The 2012 Renewable Energy Independent Power Producers Procurement Programme (REIPPPP), that replaces the previous feed-in tariff scheme (introduced in 2009), aims to support South Africa's target to produce 10% of its electricity from renewable energy sources. The legislation is applicable to onshore wind, solar PV, solar thermal, biomass solid, biogas, landfill gas and small hydro plants. A ceiling tariff level is established for each technology in auctions and the winning bidders sign a 20 year PPA with the South African government (IRENA/IEA, 2014);

Biofuels: Regulations have been introduced in 2012 to set the requirements and conditions for the mandatory blending of bio-ethanol and bio-diesel with petrol and diesel respectively to be complied by the end of 2015 (IRENA/IEA, 2014);

South Africa also has ambitious plans to renew its infrastructure with more than £90 billion of approved budget for the next four years (and an additional £270 billion under consideration for the next 10 years) for key projects such as healthcare and acid mine drainage, with the largest proportion going to energy and water sectors. South Africa is considering options in solar, wind and nuclear (with 9.6 GW proposed capacity under consideration) and has a considerable amount of technically recoverable shale gas estimated at 485 trillion cubic feet (TCF) in the South Africa Karoo Basin (UKTI South Africa, 2014).

Furthermore, South Africa is considering the introduction of a carbon tax, but the decision that was initially due in 2015 has been postponed to 2016 because of industry pressure. This could open up future opportunities for carbon consulting and energy management systems providers (UKTI South Africa, 2014).

UKTI representatives also stressed how energy prices have increased by 250% since 2004 and are currently rising 8% year on year, constituting a big driver for low carbon technologies promoting both energy and resource efficiency in South Africa (UKTI South Africa, 2014).

Top tips to get into South Africa

1. Tap into UKTI and SACCI support

UKTI can help UK based SMEs exporting to the South Africa by providing a range of services – including bespoke market research, press and media services, suggestions of business partners, introductions and organisation of events. Engaging with the South African Chamber of Commerce and Industry (SACCI) is also important as SACCI and its chambers play a key role in the decision-making process in South Africa. There are many different cultures within South Africa and tensions exist between different ethnic groups. It is very important to know in advance and research potential clients and partners before embarking on any projects.

2. Take advantage of similar legal and business practices

South Africa can be easier to break into than other emerging economies due to similar legislation and business practices to the UK. Cultural and historical links to the UK, regulatory standards mirroring European equivalents and the lack of a language barrier all make doing business in South Africa easier.

3. Make sure you understand the Broad Based Black Economic Empowerment (“BEE”)

Companies exporting to South Africa need to be aware of Broad Based Black Economic Empowerment (simply referred as “BEE”) as this is a key element for doing business in South Africa. The BEE is the cornerstone legislation of the South African Government in its efforts to train the population that was disadvantaged under apartheid. The legislation aims to accelerate the participation of black people in the economy. BEE compliance is not legally binding for private companies, but is a legal requirement for all government bodies and state-owned enterprises. Public institutions can only procure from companies that are BEE-compliant. Public bodies are the main buyers of low carbon products so it creates a cascade through the economy; to be able to maintain their BEE status, first-tier government suppliers require their own suppliers to be compliant.

UKTI can help UK SMEs entering South Africa and provide advice on BEE compliance.

4. Be patient and flexible

The sophistication, structure and management style of companies varies depending on the type of business and the sector they operate in. The pace of business in South Africa is slower than in Europe and US and decision-making processes can take significantly more time. Business is based on relationships and closing deals is much easier once a connection between the parties has been successfully established. South Africans value strong relationships and it is important to stress long-term commitments.

Useful contacts in South Africa

UKTI South Africa

Tel: +00 27 (0) 11 537 7000

Email: satrade@fco.gov.uk

Web: <http://www.ukti.gov.uk/export/countries/africa/southernafrica/southafrica.html>

South African Chamber of Commerce and Industry

Tel: +27 11 446 3800

Email: advisor@sacci.org.za

Web: www.sacci.org.za

Sources: UKTI website, country and business guides, blog and interviews

CASE STUDY 6

Torftech Group

Setting up a commercial vehicle to exploit South African opportunities

The Torftech Group of companies ("Torftech") has developed technology to provide novel and cost-effective means for processing a very wide variety of different materials to enable:

- Energy production from biomass, 'wastes' and solid fuels;
- Regeneration, recovery and manufacture of catalysts;
- Precision processing of solid food products; and
- Production of industrial minerals.



Typically Torftech's technology allows more rapid and accurate control of processes requiring gas-solid contact, often at higher temperatures than those experienced in conventional equipment. Torftech's process reactor technologies are used in a wide variety of industries and applications, including biomass, mineral, catalyst, food and waste sludge processing as well as gas scrubbing.

Torftech is a UK SME that started as a project developer and they have designed and commissioned more than 160 operating plants around the globe. They have test facilities in Canada and Poland where they undertake development and piloting of new processes, and do all manufacturing across Poland, Canada and Thailand where they build equipment with high temperature metal alloys or ceramics and with high wear resistant lining.

Chris Dodson, Chairman of Torftech, commented on how the process industry market has seen a shift towards more energy efficiency and energy production (e.g. from waste) in the last 10 years and how these shifting trends have been driving a lot of demand for Torftech's capability recently, with a growing interest from Asian countries.

"We don't have a concept of home country and export country, the world is our market" says Chris Dodson. Torftech has just concluded an agreement to build their first biomass plant in Vietnam that could result in 19 additional plants to be built over the next five years for a total cumulative value of US \$630 million.

The project in Vietnam came from a referral from a plant they had already built in Cambodia, where Torftech has another five possible projects in the pipeline.

The company is also exporting to South Africa where, thanks to growing interest in waste and biomass in the country, Torftech has recently completed a project with two South African partners (Fer-Min-Ore and Coalstar Process) to supply their technology to an Evraz steel plant to allow them to flash dry the ultra-fine coal from slimes (that otherwise would get disposed of). The project allows them to turn millions of tonnes of what was previously waste into a valuable resource for pulverised fuel (PF) combustion processes. This reduces CO₂ emissions from heavy industrial plant and removes the need for milling the coal feed with consequent further energy savings.

The plant was commissioned during early 2013 and is now in continuous operation. Torftech's South African partner, Coalstar, is now bidding for further plants with Evraz and other projects. "There is the potential to scale up the marketing and supply of this process throughout southern Africa and worldwide" says Mr. Dodson. A dedicated exploitation corporate vehicle has also been formed to undertake this roll out internationally, Torftech Capital Ltd, a joint venture with individuals from the City of London.

Torftech has also recently received interest from Indonesia, the Philippines and Malaysia, which could be interesting countries to expand into due to the presence of an established rice industry and the potential to replicate Torftech's success in Asia, according to Torftech's Chairman.

To be able to keep up with this growing international demand, Torftech, which currently employs 15 people, is now looking to double its headcount in the next two years, looking to add 10-15 engineers and scientists to its growing team.

Chris has stressed the importance of getting political endorsement from UKTI and how important their work has been for them to raise their profile in foreign countries. "Getting endorsement from the UK government really makes a difference, it is not a small thing" says Mr. Dodson.

Despite Torftech's success, Chris stresses how access to growth capital is still a struggle for UK SMEs and how "patient" capital is a real bottleneck for SMEs in the process industries in particular. "The average gestation period for the process industry is between three and ten years and competing with Japanese and Korean companies that have access to very cheap finance is a real challenge when bidding for overseas projects".



We don't have a concept of home country and export country, the world is our market.



Chris Dodson, Chairman, Torftech

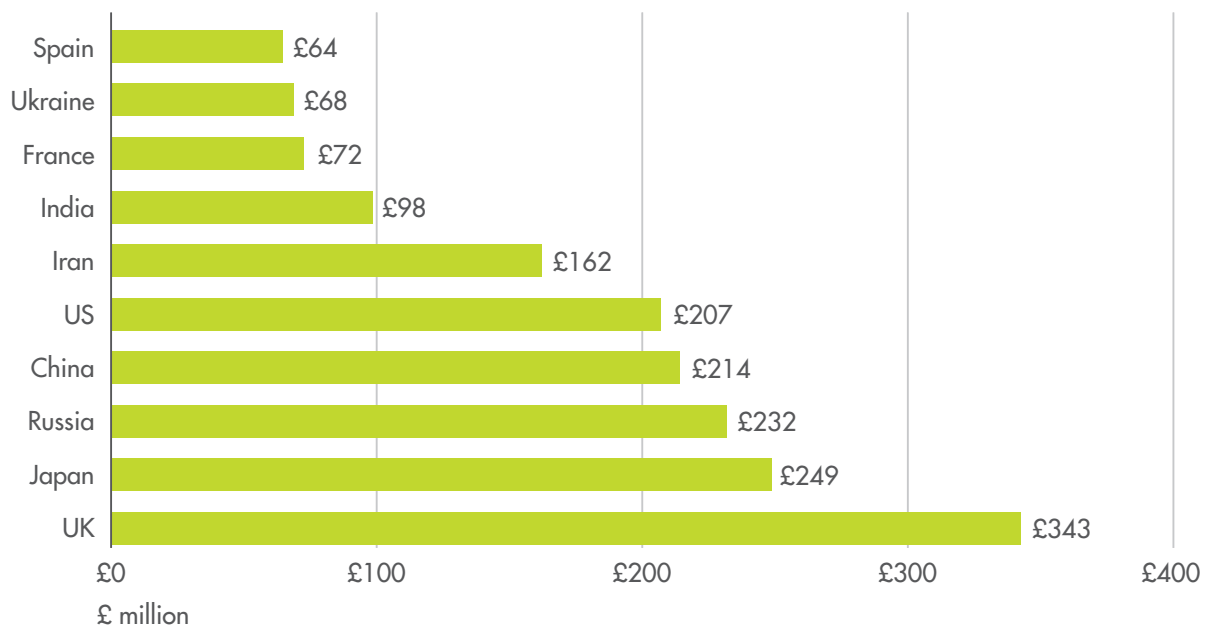
Turkey



Why Turkey?

Turkey is the 17th largest economy in the world, the 6th largest in Europe (World Bank, 2012) and is a major trading partner to the UK, with Britain ranking first as Turkey's low carbon and environmental goods and services main trade partner.

Figure 32: Turkey Imports – Top 10 trade partners of low carbon environmental goods and services (£M)



Source: Carbon Trust analysis of kMatrix LCEGS data

Turkey ranks 69th for ease of doing business – before all four BRIC countries – and starting a business in Turkey requires six procedures, 13.2% of income per capita (as paid-in capital) and takes six days (World Bank, 2014).

Turkey has made a strong commitment to climate change, renewable energy and energy efficiency driven by a precipitous increase in its energy demand and has both regulations and incentives in place for renewable energy and energy efficiency. Some of the main regulations (IRENA/IEA, 2014) include:

- For renewable energy – Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy 2005; Renewable Energy Law 2010;
- For energy efficiency – Regulating and Promoting Energy Efficiency 2007);
- For geothermal energy – Law on Geothermal Resources and Natural Mineral Waters); and
- For climate change – National Climate Change Strategy 2010-2020; National Climate Change Action Plan 2011-2020).

Turkey has also a generous 10 years feed-in tariff scheme in place and has set ambitious targets aiming to reduce its energy intensity by 20% (compared to 2011 levels) and to reach 30% of renewable energy installed capacity by 2023 (from its modest 5% share in 2012) (ISPAT, 2013).

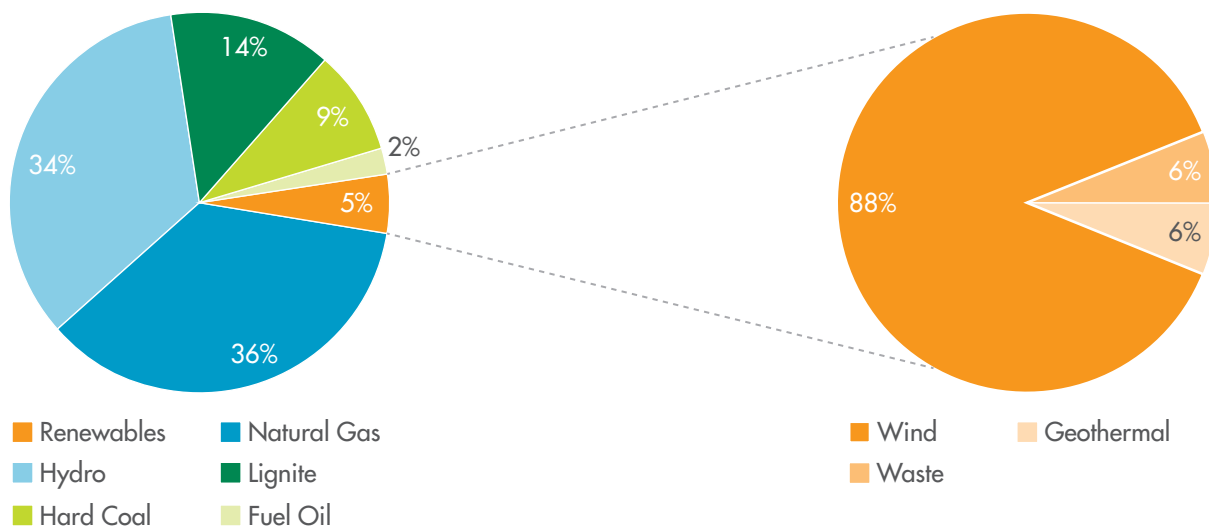
Turkey key opportunities

Turkey has numerous incentives and funds in place for renewable energy and environmental technologies, as well as ambitious policy targets, opening up an annual £2.5 billion opportunity for UK low carbon SMEs wishing to establish themselves in Turkey, across the renewable energy space (in particular wind, solar, geothermal, biomass and waste), energy efficiency, water and wastewater and waste management sectors.

Renewable Energy

Turkey's installed electricity capacity in December 2012 was 57,058 MW and renewables (including waste, geothermal and wind) accounted only for 5% of the overall installed capacity. More than half of Turkey's installed capacity came from coal and gas and more than a third from hydropower (ISPAT, 2013).

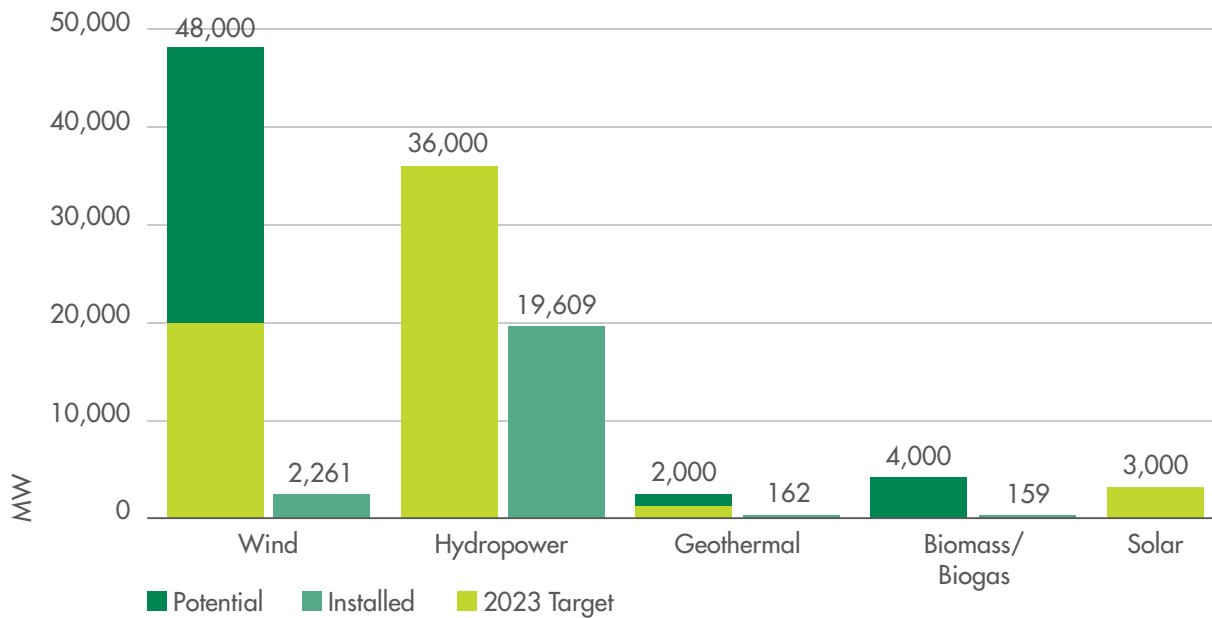
Figure 33: Turkey's installed electricity capacity including share of renewables (2012)



Source: ISPAT, Renewable energy and environmental technologies report, Page 21, (ISPAT, 2013)

UK low carbon SMEs have a tremendous opportunity to unlock Turkey's full renewable energy potential and collaborate with Turkish companies to achieve the country's ambitious renewable energy targets. The table below (ISPAT, 2013) quantifies current installed capacity of wind, hydropower, geothermal, biomass/biogas and solar, showing the gap between current energy share and full potential and/or policy goal.

Figure 34: Installed and potential renewable energy capacity of Turkey (2012)



Source: ISPAT, Renewable energy and environmental technologies report, Page 10, (ISPAT, 2013)

Wind energy

Turkey has abundant wind resources, being surrounded by four seas, and its capacity is estimated at 48 GW by the Ministry of Energy, with the Marmara and Aegean regions having the highest wind potential.

In 2012, wind energy constituted only 4% of Turkey’s installed capacity at 2,261 MW, but its wind energy share is expected to rapidly increase driven by projects currently under construction and upcoming licensing opportunities for wind projects (ISPAT, 2013). The feed-in tariff determined for wind energy is \$7.3 cent/kWh with the addition of extra bonuses available for facilities that utilise locally manufactured mechanical and electronic components for their projects.

Solar energy

Turkey also has abundant solar power and some of the longest sunshine duration in Europe, yet much of this potential remains unexploited. Opportunities for British SMEs providing solar products and services are on the rise with the introduction of feed-in tariffs for solar (\$13.3 cent/kWh plus extra bonus available for using locally manufactured components) and the publication of the Tender Regulation Regarding Electricity Generation from Solar Energy. High impact regional opportunities exist in South-eastern Anatolia, region with the highest average sunshine duration and solar radiance (ISPAT, 2013).

Geothermal

Turkey has an estimated 2,000 MW of generation capacity from geothermal sources according to the General Directorate of Renewable Energy and although Turkey’s installed geothermal capacity has been rapidly increasing at a CAGR of 25% between 2001 and 2012, it only represents a small fraction (162 MW at the end of 2012) of its full potential. A feed-in tariff is also offered for geothermal projects (\$10.5 cent/kWh), with extra incentives (up to \$2.7 cent/kWh) for steam or gas turbines, generators, power electronic components, steam injectors and vacuum compressors manufactured in Turkey.

In addition, there are currently 18 new geothermal fields that have been discovered by the general Directorate of Mineral Research and Exploration, which are all suitable for electricity production and located in Western Anatolia (ISPAT, 2013).

Biomass and waste

Biomass installations have increased year on year since 2000 at 19% CAGR and installed biomass capacity was 158 MW at the end of 2012, 26% higher than in 2011 (ISPAT, 2013). The feed-in tariff applied to biomass is \$13.3 cent/KWh and includes electricity generation from landfill. In addition, biomass projects using locally manufactured components can receive up to \$18.9 cent/KWh in further incentives on the top of the feed-in tariff.

Waste management and disposal are high priorities for the Turkish government with a total of 3 billion Turkish lira (TL) worth of investment allocated by the government to environmental technologies in 2010 (where 91 million TL is directed to waste management activities). Furthermore, it is estimated that there are some 600 MW of potential gasification capacity that exist from forest waste. In addition, some of the major municipalities, such as Ankara, Istanbul and Adana, are already accustomed and utilising electricity generation from waste.

Top tips to get into Turkey

1. Consult expert bodies such as BCCT, TBCCI and UKTI

It is very important to perform extensive checks on potential partners and clients before signing agreements and this is an area where having an established network and working with local trade bodies can help. The Turkish Business Chamber of Commerce and Industry (TBCCI) and the British Chamber of Commerce in Turkey (BCCT) are excellent information sources and can provide credit and financial reports for Turkish companies.

UKTI, TBCCI, and BCCT can support UK SMEs with crucial information and introduction to effectively export to Turkey. International trade advisers can help with a range of services such as financial subsidies information, export documentation, contacts in Turkey, organising visits, e-commerce and export training and market research.

2. Learn about the culture, have a personable and flexible approach

Turkey is a secular country with a predominantly Muslim population and it is therefore crucial to adapt to Islamic customs. Business heavily relies on relationships and networking, making it a crucial aspect of exporting to Turkey. UK SMEs should take time to get to know their Turkish counterparts and spend a lot of time to build a relationship before doing business.

It is customary to address Turkish associates by their professional title and when the title is not known the word "bey" should be used after the first name for men and the word "hanem" should be used for women. Most meetings start with a friendly chat about personal topics (e.g. family, food and sports) over a cup of tea and coffee. Invitations to dinners are very common and should be used to warm up the relationship and learn about the personal life of the counterparts. Hospitality is a central aspect of business in Turkey and accepting hospitality is considered as important as offering it. The pace of business and decision-making is much slower than in Europe and the US, reflecting the hierarchical structure of most Turkish companies. It is not advisable to use deadlines or pressure tactics to accelerate decision-making as these could be perceived as threats.

Handshakes are exchanged only at the beginning of a meeting; a kiss on the cheek should be expected when the relationship is warm. Business cards (with a Turkish translation on one side) should be handed over with both hands and are commonly exchanged at the beginning of meetings. Appointments should be made well in advance and punctuality is very important, although most Turkish executives would receive visitors without an appointment if they have time.

3. Identify a strong local partner

One of the most successful ways to access the market quickly is through a local partner, such as an experienced local representative or distributors, as they can provide immediate knowledge about the regulatory environment, language assistance and valuable business contacts and introductions. As business develops, SMEs can open independent subsidiaries and make further local investment to expand in the region. Limited liability companies are common among SMEs while joint stock companies are more appropriate for larger companies.

4. Be well prepared for meetings and plan your price carefully

Foreign businesses are expected to give lengthy presentations and disclose detailed technological information before a full agreement can be reached. Turkish businesses are very good at negotiating and it is important to anticipate a price reduction as this shows compromise and is perceived as a willingness to put relationships first. Effective negotiation strategies should also take into account non-financial benefits (e.g. respect or influence).

Useful contacts in Turkey

British Consulate-General (Istanbul)

Tel: +90 212 334 6400

Email: istanbulukti@fco.gov.uk

Web: <http://www.ukti.gov.uk/export/countries/europe/southerneurope/turkey.html>

Turkish-British Chamber of Commerce and Industry (TBCCI)

Tel: 020 7321 0999

Email: info@tbcci.org

Web: <http://www.tbcci.org/>

British Chamber of Commerce in Turkey (BCCT)

Tel: +90 (212) 249 04 20

Email: buscenter@bcct.org.tr

Web: <http://www.bcct.org.tr/>

Sources: UKTI website, country and business guides, blog and interviews

3 Four steps to seize the MUST opportunity

1. Mission possible

UKTI and local trade bodies are doing an excellent job of helping SMEs access international opportunities. They offer a wide range of services and can reduce the time, cost and risk associated with accessing export opportunities. There are also a variety of trade missions for UK SMEs organised by UKTI, the FCO and local trade bodies to take advantage of. Some of these trade missions focus specifically on the low carbon sector like the Clean and Cool Missions. These trade missions provide an opportunity to visit high potential export countries (e.g. the MUSTs), meet potential clients and partners, and build relationships that provide a platform for low carbon export success.

2. Confident in your offer, sensitive to local culture

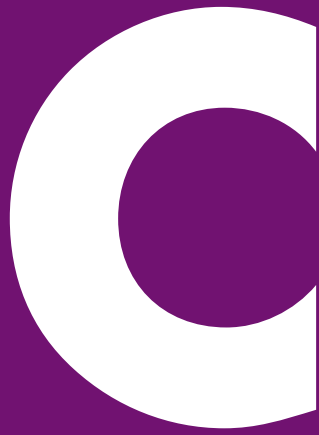
A good understanding of local norms is vital to doing business, and practices can vary enormously in emerging economies – exporters must be prepared for these nuances, and should consult local experts to ensure negotiating style, communications, and professional decorum meet local expectations. Trust and respect are fundamental to building strong personal relationships, which are a prerequisite for doing business in all MUST countries.

3. Protect your IP

Seek specialist legal advice on how best to protect your intellectual property rights before disclosing sensitive information and if you are in doubt that your products or services could be copied or counterfeited. This is an area where UKTI and trade bodies can provide support.

4. Focused but flexible, prepared for pitfalls

As with every venture, planning and preparation are crucial for success – but it's important to build in flexibility when dealing with emerging economies, as negotiation, bureaucracy and decision-making can proceed at a slightly slower pace. Planning for these eventualities will avoid costly mistakes. UKTI and trade bodies can help with a wide range of tailored services. Obtaining good quality independent legal and professional advice is also essential.



Overcoming barriers

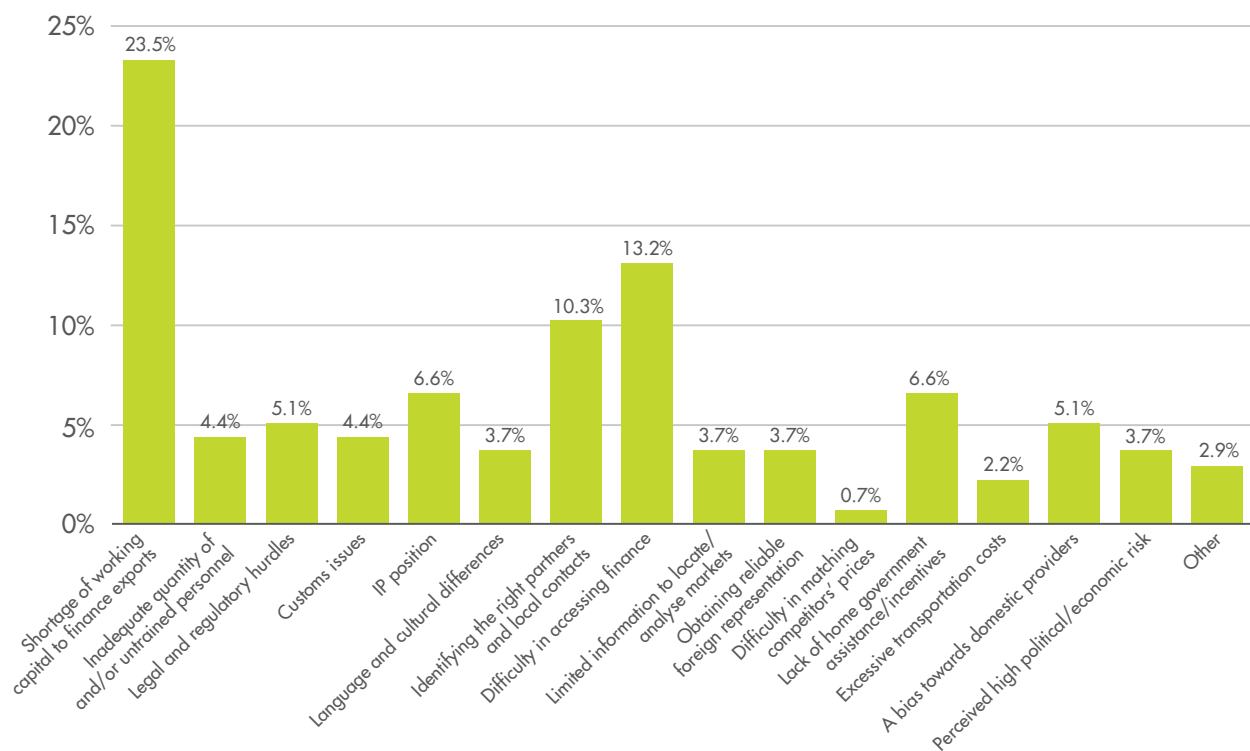
Access to finance and identifying partners are key obstacles

1. Finance challenges
2. Identifying the right partners
3. Equipping low carbon SMEs to flourish – three steps for success

1 Finance challenges

Shortage of working capital and access to finance (e.g. Venture Capital investment) emerged as the top two challenges for exporting low carbon SMEs in the UK.

Figure 35: Top export barriers for exporting low carbon SMEs



Shortage of working capital to finance exports

Almost a quarter (23.5%) of all respondents highlighted shortage of working capital to finance exports as a key challenge when going overseas.

This is a well-known market failure in the UK and has been a key area of government support over the last two years through UKEF, which is the operating name of the Export Credits Guarantee Government Department (ECGD), that has been working with exporters, banks, buyers and sponsors over the last ninety years assisting exporting companies by providing guarantees, insurance and reinsurance against losses, taking into account the UK government's international policies.

Over the last two years (2012-13), UKEF business support has been at its highest level in the last decade, representing an important contribution to the government's export strategy. A growing number of companies, including many SMEs, have benefited from UKEF support (either directly or through the supply chains of the prime exporters), and the destinations of the exports supported by UKEF have increased to over 85 markets including countries in the Middle-East and all four BRIC countries, to expand its remit from traditional focus countries such as Europe and North America. In 2012-13 UKEF supported £4.3 billion of business through the issue of guarantees to banks and insurance policies to exporters, up from £2.3 billion over 2011-2012.

UKEF has widened its business domain and introduced new products (through the Export Insurance Policy, the Bond Support Scheme and the Export Working Capital Scheme) to support exports conducted on short terms of payment (e.g. typically under two years) to meet the gap in the availability of commercial support to exporters, especially SMEs. In 2012-13, 66 exporters were supported under UKEF short-term products, of which 49 were SMEs. Although this

related to support with a total value of £65 million to 89 buyers in 41 markets for a total contract export value in excess of £500 million, it is still low in terms of total numbers of businesses supported (only 49 SMEs).

In an effort to further raise awareness of its products and services, especially among SMEs, UKEF has created a regional network of export insurance advisers to engage locally with exporters and make its products and services widely known to exporters, banks and intermediaries, working alongside UKTI representatives. The establishment of this network is expected to play a key role in UKEF's market awareness strategy for 2014 (Export Credits Guarantee Department, 2012-2013).

A summary of UKEF products and services is listed in the table below:

Figure 36: UKEF products and services overview table

Product	How the product works
Buyer Credit Facility	A guarantee to a bank that makes a loan to an overseas borrower to finance the purchase of capital goods and/or services worth at least £5 million from a supplier in the UK.
Supplier Credit Financing Facility – bills and notes	A guarantee to a bank to cover payments due under bills of exchange or promissory notes purchased by the bank from a supplier in the UK, who has received them in payment for goods or services supplied to an overseas buyer.
Supplier Credit Financing Facility – loan (without bills and notes)	A guarantee to a bank for a loan to an overseas borrower to finance a contract with a supplier in the UK
Line of Credit	A guarantee to a bank that makes a loan to an overseas borrower to finance several export contracts with different exporters.
Project Financing	A guarantee to a bank that makes a loan of at least £20 million to an overseas borrower to finance a major project where the loan will be repaid out of the revenue generated by the project.
Export Insurance Policy	Insurance to an exporter in the UK against not receiving payment under an export contract and to cover costs which are wasted because of the contract being terminated for reasons not related to the performance of the exporter or because its performance is prevented by certain political events.
Bond Insurance Policy	Insurance to exporters against the unfair calling of bonds that they are required to provide under export contracts (for example, advance payment bonds or performance bonds).
Overseas Investment Insurance	Political risk insurance for a term of up to 15 years to investors in the UK who invest in overseas enterprises.
Letter of Credit Guarantee Scheme	Guarantees to UK banks to enable them to confirm letters of credit issued by overseas banks in favour of UK exporters. The guarantee covers part of the overseas issuing bank's obligation to reimburse the UK confirming bank for payments which it makes under the letter of credit
Bond support scheme	Help exporters raise tender and contract bonds by sharing with banks who issue those bonds (or who arrange for them to be issued by giving counterindemnities to another bank) the risks of not being reimbursed by the exporter following a call on a bond.
Export Working Capital Scheme	Facilitate exporters' access to working capital finance for specific export contracts by sharing risks with banks on loans.
Foreign Exchange Credit Support Scheme	In connection with specific export contract UKEF increases the UK Export Finance's guarantee under the Export Working Capital Scheme to provide additional credit capacity which will be used by banks to support forward foreign exchange hedging facilities in relation to that contract.

Table source: BIS, SMEs Access to Finance Scheme, Page 9, (Export Credits Guarantee Department, 2012-2013).

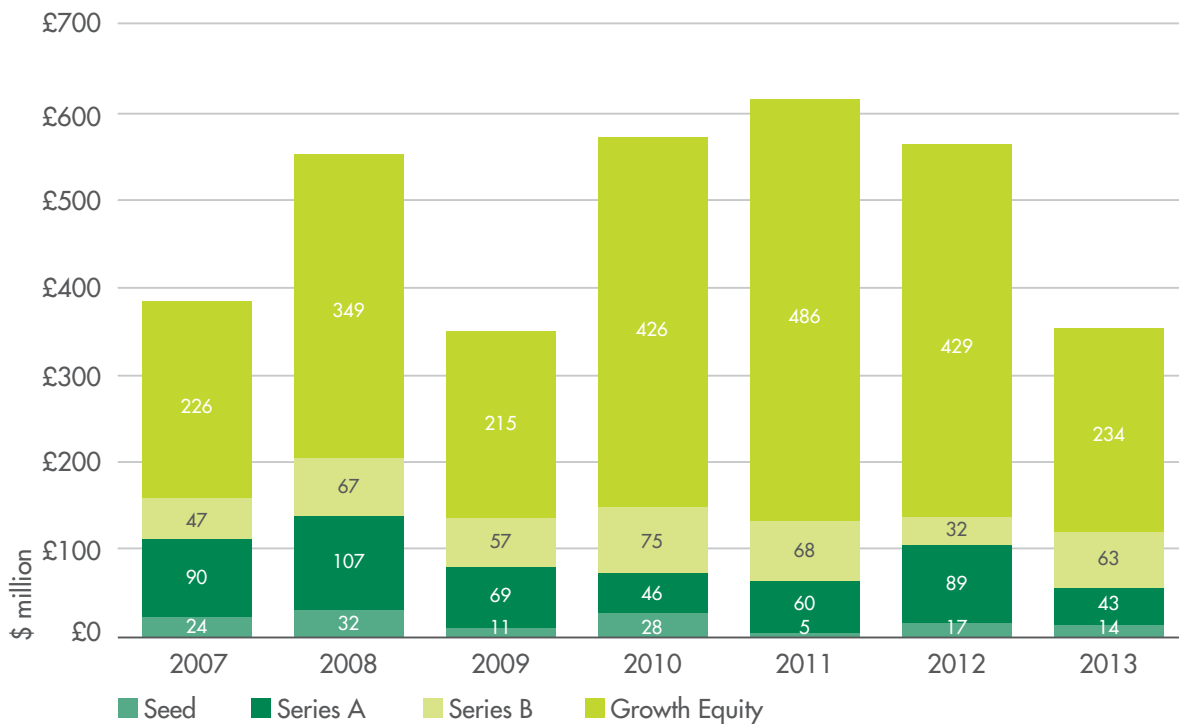
Given the scale and importance of exports to low carbon SMEs, there seems to be an opportunity to build on existing activities of UKEF to help de-risk and fund low carbon entrepreneurs, helping SMEs to realise the export plans. This could involve for example specific low carbon export products (e.g. to build on existing short-term products) and/or a fund in collaboration with UKTI to provide “riskier” loans to low carbon SMEs.

Difficulty in raising venture funding

The second challenge that low carbon exporting SMEs are facing is access to funding.

Early-stage (seed and Series A) venture capital investment activity has dropped from a peak in 2008 with 2013 representing a record low year for both amount invested and number of deals. When looking at the overall amount invested in 2013, all early-stage investment has decreased, with Series A activity contracting by more than 50% from 2012. When observing the overall number of deals in 2013, Series A activity has been following a downward trend since 2012 and only seed activity has slightly increased from 12 to 16 deals (but with lower deal size).

Figure 37: UK Venture Capital Investment, 2007-2013 (\$ invested)



Source: Cleantech Group, i3 Platform, Carbon Trust analysis (March 2014)

Figure 38: UK Venture Capital Investment, 2007-2013 (Number of deals)

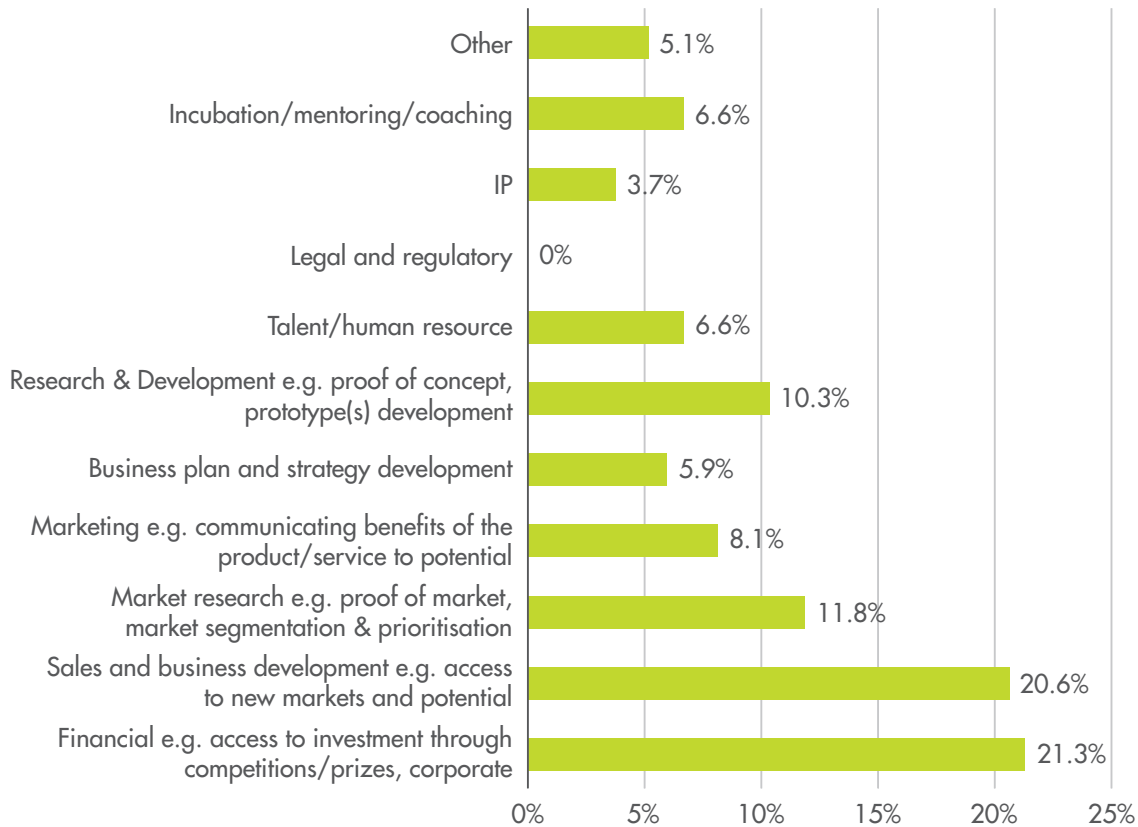


Source: Cleantech Group, i3 Platform, Carbon Trust analysis (March 2014)

The Carbon Trust's experience is that early stage venture capital investment activity has been dropping for a number of reasons including:

- A trend towards later stage funding rounds as investors look to consolidate existing portfolios;
- Difficult macro-economic conditions in the UK and Europe that make it challenging to raise new funds;
- Lack of exit opportunities to demonstrate profitable fund returns.

This puts pressure on low carbon SMEs to identify alternative sources of funding and highlights a need for both financial and sales and business development support to help low carbon SMEs grow their business both in the UK and overseas.

Figure 39: Support needed by low carbon SMEs to export (survey results)

In our *“Low carbon entrepreneurs: the new engines of growth”* report (Carbon Trust and Shell, 2013), we talked about the role for big companies (“corporates”) to play in helping to plug this gap and engage with SMEs to help them fast track their commercialisation and unlock low carbon market opportunities they would otherwise miss.

Perhaps, one of the most encouraging results of our 2014 survey is that more than 60% of exporting SME respondents have already engaged with a corporate partner and they have benefited from such relationships. Financial backing (e.g. competition, prizes, corporate VC investment) and sales and business development support (i.e. access to corporates established sales channels and customers in foreign markets) were cited as the most useful support received by exporting respondents. Research and development backing, in terms of joint development and pilots, was mentioned as the third most important area of support, as SMEs benefit from engaging with corporate R&D teams and are granted access to state of the art testing facilities.

Qualitative interviews also acknowledged the benefits of such relationships in terms of their route to market and access to customers in overseas markets, but also cited the challenges involved in working with big industrial partners (e.g. slower decision-making processes).

Figure 40: Number of companies that have engaged with corporate partner and benefits of such relationships



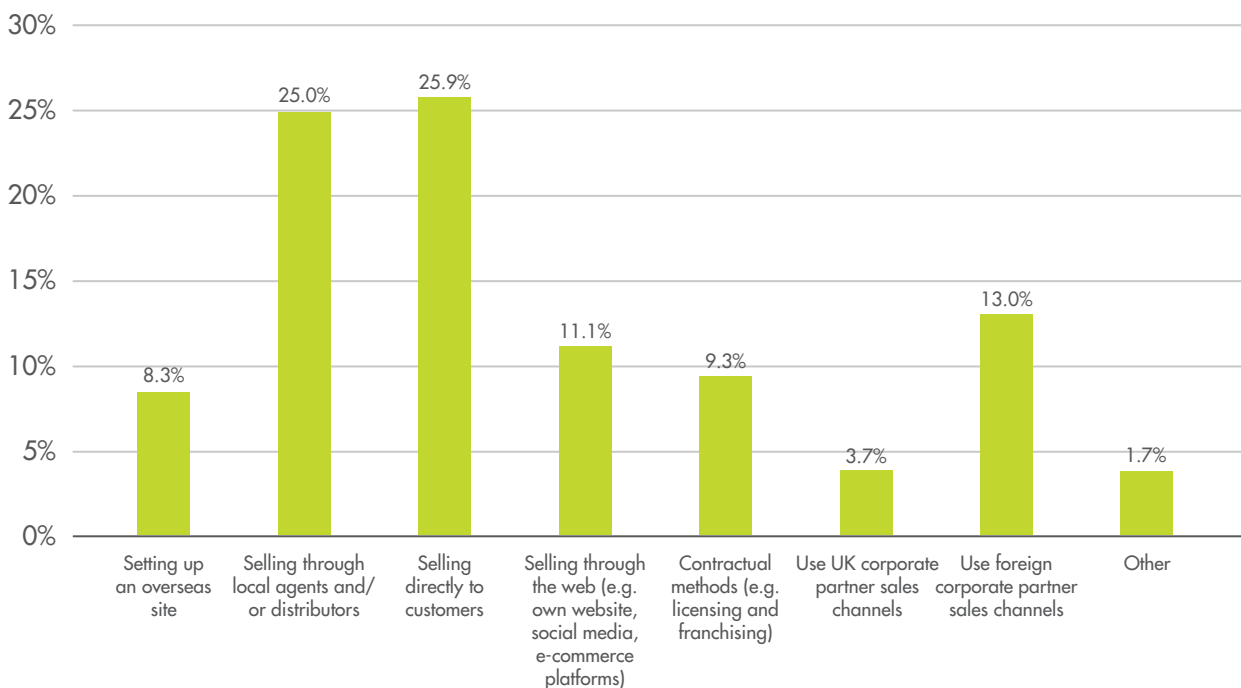
Although the majority of companies have partnered with corporates, more than a third (37%) of exporting respondents have not engaged with a larger organisation and have therefore missed possible financial and/or business development support. Our 2013 survey results (Carbon Trust and Shell, 2013) highlighted how the vast majority of entrepreneurs have been relying mainly on their own finance as their main source of funding (80% of 2013 respondents) with friends and family (25%) and grant support (54%) also important to funding the development and demonstration of their products.

2 Identifying the right partners

Identifying the right overseas partner was indicated as the next most significant barrier when breaking into overseas markets. Qualitative interviews also highlighted how this challenge represents the most critical and time consuming phase in the path to successfully exporting. Some companies decide to sell directly without having a foreign presence, others start seeking representation with a single agent and then move to a distributor model (as this is perceived as a lower-risk route to market) and others again sign joint ventures or licensing agreements without going the agent/distributor route.

Low carbon SMEs indicated their preference for either selling directly to customers overseas (26%) or selling through agents and distributors (25%). One in ten SMEs (13% of respondents) indicated they were using foreign corporate partners' sales channels and only 4% have used their UK corporate partner sales channels as a route to overseas markets.

Figure 41: Low carbon SMEs export model



The current situation suggests more innovative models are also needed to create partnerships between low carbon SMEs and larger UK companies to join forces overseas and this could be an area where further support to SMEs is useful (e.g. through support organisations establishing low carbon industry consortia for high growth international opportunities).

Case studies: Springboard alumni benefiting from UKTI trade missions

UKTI's trade mission programmes have been identified by low carbon SMEs and expert interviewees as a fantastic source of practical support for small enterprises looking to establish a presence in foreign markets. Shell Springboard alumni have also benefited from these initiatives:

Ziko Abram, Director and co-founder, Kiwi Power

"UKTI's trade missions demonstrate that the UK government is serious about stimulating exports. Kiwi Power's innovation consists of using complex software to create a simple solution to an energy challenge, and everything we do is made and manufactured in the UK. The domestic market for demand response is developing rapidly and remains highly attractive, yet the greatest opportunities for expansion exist in countries where this technology is still unfamiliar. We accompanied the Prime Minister on a delegation to China in December, and Israel in March. These were invaluable experiences, and have already resulted in promising conversations and warm leads for future foreign partnerships and sales. We can only commend the work of UKTI in this respect, and are sure that many other businesses like ours would benefit enormously from its support."

Alex Schey, CEO and co-founder, Vantage Power

"We were thrilled to be part of the Technology Strategy Board and UKTI-backed Clean and Cool mission to Colorado at the end of last year. UKTI's support and input was first class, and gave us a clear sense of how to move forward and maximise the opportunity. Although it's still too early to talk of concrete outcomes, the contacts the trip opened up are already proving beneficial, and gave us access to a network that might otherwise have been tough to establish on our own. As a company we're still focused on building a foothold in the UK, but ultimately we have global ambitions – and the trade mission has allowed us to build the foundations for future expansion. We'd definitely recommend that other small businesses and start-ups look to take advantage of these services, as they provide highly valuable experiences."

CASE STUDY 7

Lontra

How to overcome funding challenges and identify the right partner: from one prototype to a global licensing deal



Lontra Ltd (“Lontra”), a small, yet fast-growing Midlands firm, has secured the first global licence for its Blade Compressor™ technology. The deal signed recently with Sulzer, a global leader in pumping equipment with 21 manufacturing facilities worldwide, will see aeration equipment incorporating the British technology sold across the globe.

Lontra develop energy saving compressors and engine products with a focus on waste water aeration compressors, automotive superchargers and oil-free industrial air compressors. It has been operating for eight years, employs more than ten people (of which three were recruited in the last 12 months) and is looking to add new people to its growing team. The company has successfully raised capital from institutional investors and won grants from the Carbon Trust, Technology Strategy Board and Regional Development Agencies since 2005.

The new licensing deal provides Sulzer with global rights to incorporate the Blade Compressor™ design into aeration equipment for the treatment of waste water. The deal does not restrict the ability of Lontra to license the Blade Compressor™ across related applications such as industrial compressed air.

Only a few low carbon companies in the UK have gone down the licensing route as the terms of these deals often discourage SMEs to proceed, according to CEO Steve Lindsey. However, for Lontra: “We have decided to sign a global licensing deal with one of the leading companies in the industry, as this gives us immediate access to local distributors, which means we have local presence across many different locations. It is like having many local branches around the world without the attached overheads to it” says Steve.

Going down a licensing route can be an attractive option for many low carbon SMEs: “Licensors provide immediate access to the market, local support, warehousing facilities and this is not insignificant”.

The Blade Compressor™, the feature of the new Sulzer deal, was awarded the Most Innovative New Product at the 2013 Water Industry Achievement Awards and was described as a “step change in air compressor technology”. Its novel design means the compact double acting rotary compressor is simple to manufacture. It has been proven in commercial operation with Severn Trent Water and delivered energy savings of 20% that no current compressor technology can match.

Steve Lindsey says: “The Lontra Blade Compressor™ was first run at Worcester in September 2012 and, after running full time as a ‘duty blower’ for more than 10,000 hours (the equivalent of three years) without issues, was proved to run on 21.2% less electricity, to deliver an equivalent amount of air, when compared to the existing blowers, which is a truly remarkable result”.

These results prompted Severn Trent Water’s chief executive Tony Wray, in his presentation of preliminary results in May 2013, to report that, were the Lontra Blade Compressor™ to be rolled out across all of Severn Trent’s wastewater treatment works, the company could save more than £1.8 million a year in electricity costs, with a commensurate reduction of three per cent in the company’s overall carbon emissions.

Steve goes on to comment that “the deal with Sulzer is significant, but it’s the first of many potential applications of our intellectual property. We’re challenging the industry to think differently about compressor technology to deliver a better performance and significant energy savings across a wide range of industries.”

3 Equipping low carbon SMEs to flourish – three steps for success

We highlight three steps for success that the government, business community, and UK plc can take to help the UK's low carbon SMEs grow, create jobs and deliver the innovation needed to realise the UK's environmental and export ambitions.

1. Re-direct some existing funding to provide risk capital for low carbon SMEs

Our analysis has confirmed that shortages of working capital and access to funding are two key challenges for exporting low carbon SMEs. The market for early stage funding has contracted significantly over the last year. It is also a challenging environment for private investors with venture capital funds struggling to raise new money. There is an urgent need to address this funding gap to correct a critical market failure which is limiting growth in the low carbon sector.

One suggestion on how to do this is to redirect some of the R&D tax credit funding that currently goes to large companies into a low carbon venture capital fund. According to the Green Alliance just 10 per cent of the money used every year for R&D tax credits would be enough for a £100 million fund to provide risk capital to low carbon SMEs (Green Alliance, 2013).

An alternative source of funding would be to provide loans to low carbon SMEs in their growth phase by re-directing a small portion of the £3.9 billion of government resources managed by The Department of Business, Innovation and Skills (BIS) Business Bank (BIS, 2013).

2. Harmonise and promote export support for the low carbon sector and focus on unlocking high growth emerging markets

UKTI and the FCO were praised (both in our survey and the interviews) for the quality of their support in creating the conditions for overseas growth and for their work with UK businesses to capitalise on these opportunities. We are calling on these organisations, and others involved in providing export support like UKEF, to build on their excellent work and produce a joint roadmap for the low carbon sector to harmonise and promote their low carbon export support and deliver the most value from currently available budgets.

A key element in this joint roadmap would be to focus on unlocking export growth to high priority emerging countries (such as the BRICs and the MUSTs) which could lead to a range of new support activities. For example, trade missions emerged as an invaluable source of export support. A series of MUST country trade missions is one way these agencies could help SMEs seize low carbon export growth opportunities in high priority emerging countries. The UK government could help export support organisations achieve this by allocating funding to UKTI and FCO to develop this series of trade missions and other new activities to unlock high growth emerging markets.

3. Seek competitive advantage from partnering with UK low carbon SMEs to drive shared growth in overseas markets

Identifying the right overseas partner was indicated as a key barrier by SMEs targeting overseas markets. Around 60% of the exporting low carbon SMEs we consulted have received support from a corporate partner in the form of financial backing, sales and business development help, and R&D support. Our analysis demonstrates how vital this engagement was in stimulating export growth. However, despite progress from our 2013 findings, this means that a significant proportion of low carbon SMEs still miss out on this support.

We call on corporates to actively seek competitive advantage from partnering with low carbon SMEs to unlock export opportunities as both parties can reap the benefits from open innovation. We also suggest that new innovative models are needed to help low carbon SMEs join forces with larger companies to enable export success. Allocating new funding, or redirecting some existing budget, to enable UKTI to work with trade bodies and business councils with the goal of setting up low carbon industry consortia between SMEs and large UK companies could help low carbon SMEs to access international opportunities.

Appendix 1 – Methodology

The principal aims of this research are to uncover new insights into the export activities, outlook and challenges of low carbon SMEs in the UK. SMEs play an important role in driving low carbon innovation and growing the low carbon economy. By improving our understanding of these businesses and their export activities, this research aims to contribute to discussions about how to help ensure that the potential of these businesses and the wider low carbon economy can be realised, as well as helping the UK to realise its ambitious £1 trillion annual export target by 2020.

This research analysed data from two main sources during January and early April 2014:

1. Online surveys

- Survey of 182 low carbon SMEs who had applied to Shell Springboard or the Carbon Trust. The aim of this survey was to uncover the materiality of export activities, geographical focus and the challenges that low carbon SMEs face when exporting.

2. Qualitative interviews

- This involved in depth phone interviews (ranging from 30-60 minutes) with 32 contacts, 12 low carbon entrepreneurs and 20 UKTI, Foreign Commonwealth Office and trade bodies representatives who have advised multiple low carbon SMEs on their businesses export strategies;
- The aims of this part of the research were to provide colour, depth and new insights that would not be uncovered from the survey on entrepreneurs, their businesses, their geographical focus and their challenges.

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- Gillian Harrison (Whitefox)
- Ian Cooper (ENER-G)
- Ian Gadsby (Biogas Technology)
- Mark Simmers (Celtic Renewables)
- Michael Laurier (Symphony Environmental)
- John Hoyward (PPtek)
- Rupert Cruise (Texchange)
- Steve Lindsey (Lontra)
- Lise Bertelesen (China-Britain Business Council)
- Chris Knowland (FCO)
- Eric Bakken (FCO)
- Paul Carter (FCO)
- Tim Hanson (FCO)
- Carl Woolf (UKTI)
- Corin Wilson (UKTI)
- David Slatter (UKTI)
- Duncan Hoyland (UKTI)
- Enrique Cornejo (UKTI)
- Kerstin Rath (UKTI)
- Iain Mansfield (UKTI)
- Jacqueline Sanchez (UKTI)
- Jeferson Manhaes (UKTI)
- Jonathan Giliam (UKTI)
- Maria Smirnova (UKTI)
- Natalia Shibanova (UKTI)
- Officials from the British High Commission in India and British Deputy High Commission Chennai

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Shell's approach to Social Investment goes beyond our commitment to corporate social responsibility, which is embedded in the way we carry out our day-to-day business. We make a wider contribution to the future of UK society via our Social Investment Programmes that focus on the core themes of science education and enterprise development.

We believe these will play a central role in the UK's ability to drive economic growth and meet growing energy demand in sustainable ways.

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