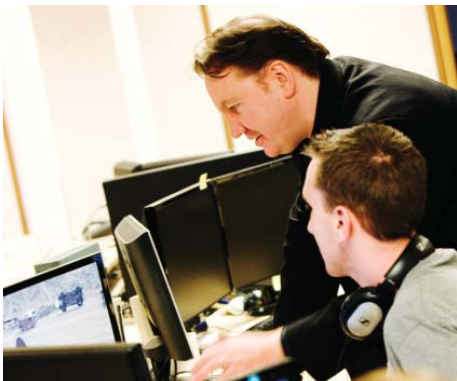


North East Competitiveness Research Summary

To inform the Regional Image Campaign 2010



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Background

The Competitiveness Research was commissioned by One North East in Autumn 2009 to update its understanding of the North East's competitive position in key sectors, ahead of developing the next phase of the business and innovation strand of the Regional Image Campaign. The research was undertaken by independent market research company, Marketwise Strategies.

The assessment looked specifically at the region's positioning within the following sectors:

- Low Carbon Technology/New and Renewable Energy
- Process Industries
- Life Sciences
- Digital
- Plastic Electronics

Research methods comprised a desk-based study and 31 in-depth interviews with 35 informants. 23 interviews took place in North East England, with the remaining eight taking place nationally.

Research Objectives

- To identify the leading regions in the UK, in each of those sectors and understand why they are considered 'leading'
- To identify emerging developments and trends, in those sectors in those regions
- To understand the North East's positioning (in those sectors) in comparison to other UK regions
- To establish the most significant strengths and weaknesses of the relevant industries and sectors in the North East
- To identify emerging developments and trends in these industries and sectors within the North East
- To identify the actions and initiatives that would be required to improve significantly the region's competitiveness in each of the five industries and sectors

Summary of Findings

The research led to a number of core findings:

- **Low Carbon Technology** and **New and Renewable Energy** present an opportunity to position the region as a knowledge-based economy that includes significant R&D activity, together with manufacturing and commercialisation.
- **Process Industries** is historically one of the strongest areas of the regional economy, but is undergoing a period of transition. Whilst the traditional elements of the Process Industries are expected to remain very important, the sector is likely to experience a number of shifts in focus and activities. The region is developing new capacities in low carbon and sustainable processing and Industrial Biotechnology (IB), although most of these are some way from market.
- Some very significant strengths (including world-class research) exist in the region's **Life Sciences** sector, but the business base here is less developed than that in Low Carbon / Renewables. Long development timescales for medical biotechnology mean that economic impacts are emerging very slowly in that sub-sector. There are, however, some notable business successes in medical devices and assistive technology. Strong links exist between life sciences and process industries, in that the successful scale-up of life sciences research activity results in process manufacture.
- **Digital** also has some notable areas of strength, including a nationally important games cluster, several significant events and initiatives that have no national (or sometimes European) comparators, and a pervasive 'can-do', creative attitude that is seen to underpin an environment highly conducive to business growth and success.
- **Plastic Electronics**, though an exciting and growing area, is at a very early stage in the industry and technology lifecycles. Although there are good reasons to expect major growth in this field in the North East, particularly in the creation of high-value, knowledge-intensive businesses, manufacturing jobs are likely to be created in high added value niche sectors.

In developing an overarching strategic message, North East England could be framed as a region that is developing a wide range of assets and expertise in low carbon technologies and their applications. The North East is already strong in several key areas including vehicles, renewables and microgeneration which can contribute to this.

SECTOR SUMMARIES

Low Carbon Technology/New and Renewable Energy

Low Carbon Technology and New and Renewable Energy have been identified as priority sectors for economic growth leading to substantial job creation. The North East is currently well positioned to benefit from this growth and has a strong reputation in these areas, with particular strengths in offshore wind and low carbon vehicles. Low Carbon Technology and New and Renewable Energy also represent an important opportunity to position the region as a knowledge-based economy that includes significant R&D activity, together with manufacturing and commercialisation.

The region is also home to two Centres of Excellence, Narec and CPI, which are actively and successfully assisting in the commercialisation of new technologies for renewable energy.

Linking together low carbon energy, printable electronics, industrial biotechnology and certain conventional aspects of the process industries, it was suggested that there is a realistic prospect that the region can currently be promoted as leading the UK in sustainability. This would position the North East as an 'incubator' for sustainable ('green') technologies and, potentially, as a region where the social aspects of 'green living' are addressed (via sustainable housing, transport, waste management etc.).

Low carbon vehicles

The North East is seen as having an international reputation in electric vehicles – which, in the short to medium term is the focus for the automotive industry's ultra low emission vehicle developments. The region has been awarded special status as a Low Carbon Economic Area for low carbon vehicles and is viewed as an international leader in their development. The region's most significant developments in low carbon vehicles are currently centred around Nissan's Sunderland plant, however the region is also home to a developing business base which includes companies such as Smith Electric Vehicles, AVID and Sevcon. North East England will also install a fully functioning electric vehicle charging grid during 2010.

The task is to remain the UK leader by attracting inward investment from manufacturers of low carbon vehicles and components.

In the longer term, hydrogen powered vehicles may become important but the timescale is considered elastic and may be a decade or so. The region is therefore taking a twin track approach and is seeking to position itself to be a leading player in hydrogen vehicles as the technology and market develop, but is also focusing strongly on electric vehicle development in the short to medium term.

Assets:

- Nissan: The site will be one of just three worldwide which will manufacture the zero emission Nissan LEAF. The site, at Sunderland, will also house a test track and a battery plant is currently under development.
- The Regional Centre for Sustainable Manufacturing and Productivity (RCSMPI): a low carbon training centre to be based at the Nissan site and delivering 'green collar skills' to the region. This is intended to be of national significance, and to attract training contracts from the private sector UK-wide. A research and development facility will be established at the same location.
- Plans are being developed to incorporate hydrogen fuel into these initiatives, with the involvement of CPI.
- An electric vehicle charging grid: being established in the region with over 1,400 charging points.
- Sunderland, Newcastle and Northumbria Universities are each research active in low carbon vehicles, but have different areas of focus.

Offshore wind

Major economic opportunities will emerge in offshore wind within the next five years. Crown Estates have recently announced their allocation of development contracts to major power companies for the nine offshore wind development zones, which include Dogger Bank. Regions along the east coast of England, and other areas that afford easy access to Dogger Bank will then compete to attract major supply chain activities for the zones. In total, the economic impact from those zones is expected to equal that of several major car plants. There is scope, therefore, for the North East to lever significant benefits. One North East is already working to attract supply chain members and is liaising with major power companies.

Nationally – and internationally – significant test facilities and commercialisation support are available at Narec, which is seen as a key differentiator in the region's ability to attract offshore wind companies to develop and manufacture here, due to its ability to secure development and prototyping work. Narec can play a very important role in helping wind turbine manufacturers to develop products and take them to market.

Assets:

- The testing facilities available at the National Renewable Energy Centre (Narec)
- Nascent supply chain and Deep water ports
- Geographical location
- Skills provision (via Northumberland and South Tyneside Colleges)
- Clipper Windpower has recently announced the development of the UK's first offshore wind turbine manufacturing facility at Shepherd Offshore Renewable Energy Park in Newcastle
- Academic research – especially:
 - Durham Energy Institute (Durham University)
 - Sir Joseph Swan Institute for Energy Research (Newcastle University)
- Commercialisation support – at Narec and CPI
- Marine and tidal testing facilities at Blyth (Narec)

Microgeneration and distributed energy

Whilst the market for microgeneration and distributed energy is somewhat tentative at present, government initiatives are providing some stimulus and are expected to have an increasing impact in the next decade. Feed-in tariffs for electricity are expected to stimulate demand for distributed energy sources in the next year, and therefore to increase the need for training and support to installers; Narec is responding to this.

The North East has wide-ranging (e.g. Photo Voltaics, onshore wind, CHP) rather than focused capabilities, but some internationally significant research exists including into PV at Durham University. There are nationally-significant test facilities at Narec, which include the ability to link to the national grid. Currently there is a limited business base within the region, but there is potential to build this to serve UK and European markets.

Process Industries

The North East's process industries have historically been one of the strongest in the UK, and one of the major features of the regional economy. Traditionally, the region has had major strengths in the manufacture of base and petrochemicals, with smaller (but significant) fine and speciality and pharmaceutical sub-sectors.

These industries are in a state of transition. Some of the traditional, fossil fuel based processing, concentrated largely in Tees Valley, is facing restructuring as a result of current economic pressures. To address this change, and to take advantage of emerging opportunities, the region is building its future capacity in new technologies and applications, such as industrial biotechnology (IB), biofuels, and low carbon/sustainable processing.

The North East is well-placed to achieve significant growth in these fields and is seen as playing a leading position in the industrial biotechnology sector. This is specifically as a consequence of the work of CPI and its National Industrial Biotechnology Facility (NIBF), which has won a recent £12m public sector investment in its open-access demonstration facilities.

For the future, the major opportunities within the process industries would appear to lie in establishing greater synergies between this sector, low carbon energy, printable electronics and industrial biotechnology. However, the technologies involved are at an early stage in their development.

Assets:

- Wilton International and its special development status
- Home to a substantial business base and range of activities
- R&D and major manufacturing plants
- High quality physical infrastructure
- Support available from CPI and NEPIC
- Some high-profile capital investments, e.g. Ensus – Europe's largest bioethanol plant recently opened at Wilton
- Skilled professionals
- A population that is receptive to process industries
- The region hosts the National Skills Academy Process Industries (NSAPI) which has close links to both ONE and NEPIC

Life Sciences

The North East has some very significant areas of strength in life sciences, particularly at Newcastle University, but has a relatively under-developed business base. There is an opportunity to build upon the excellence that exists – some of which is of global significance.

The North East has a relatively under-developed business population in life sciences, although there are number of businesses which can rightly be regarded as ‘stars’. In view of that ‘starting point’, there is realism about what can reasonably be achieved within the medium term and a recognition that progress has been made.

Research strengths:

- Cancer research – Newcastle University has a top three ranking in the UK for its quality of research outputs in cancer
- Chronic disease, ageing and health – e.g. Newcastle University is understood to be in the top 20 university liver units globally
- Neuroscience – with 90 researchers, Newcastle University’s Institute of Neuroscience (ION) comprises one of the UK’s largest groupings of neuroscientists

Research into ageing and ways of supporting older people to be independent has become an increasing priority, and this is reflected in the research funding being made available. The region already has significant research strengths in ageing, and there are recognised opportunities for new starts and spin-out enterprises in this area.

However, it is not yet clear what ‘ageing’ will mean for inward investment. There are suggestions that some key players aspire to see the North East develop as a ‘test bed’ for health and wellbeing-related activities, for example around technologies that support people’s independence as they age. Such a strategy would combine existing clinical research capabilities with the region’s already strong focus upon design, which sits well with developments in medical devices and assistive technologies. There is therefore an opportunity for growth in an area in which the region is already quite strong, but it is currently unclear whether that growth will be predominantly via an enterprise agenda (i.e. encouraging and supporting new starts and spin-outs) or will be on a much larger scale.

Assets:

- Newcastle University – providing research strengths, particularly in Cancer, Neuroscience, Chronic Disease and Ageing, and with an established and growing emphasis upon translational medicine.
- Newcastle Hospitals NHS Foundation Trust, independently and via its relationship with Newcastle University’s Medical Faculty, which enables researchers to access a clinical environment – and clinicians to benefit from leading-edge research.
- Cels – which is largely ‘business-facing’ but which, via its HealthConnect network, brings together academics, businesses and clinicians.
- Newcastle Science City – with an ambition to ensure that Newcastle is synonymous with science excellence: in ageing and health at Newcastle University’s Institute for Ageing and Health; in stem cell and regenerative medicine at The International Centre for Life; and in sustainability.

There is now an opportunity to build upon the research excellence that exists in the North East – some of which is rated as world-leading. The task is to focus upon the region’s areas of strength in health and life sciences – notably around translational research and ageing – and to develop strategies, across all of the key players, to maximise those. To move forward significantly in life sciences, it will be important to have in place a clear focus, a shared vision and a co-ordinated approach to drive forward a coherent programme of activities across the region.

Digital

The digital sector is seen as a major growth sector that underpins the wider economy. In recent years the North East has seen significant growth in its creative businesses and continued growth potential.

The North East's wide-ranging digital sector has some important areas of strength, with its games cluster one of the strongest outside London and the South East. The region has a genuinely significant cluster of games development companies and related businesses. Though the North East's core strength is in traditional video games, particularly driving games, it is clear that serious gaming and mobile gaming are both current areas of growth, with some innovative companies working within these areas.

In comparison, the region's software industry has less critical mass, and particularly requires the development of more small and medium-sized businesses. However, the Sunderland Software City initiative is both capitalising on and promoting opportunities for growth in areas such as Software as a Service (SaaS).

Overall, competition from digital-related strengths and assets across all parts of the UK means that it is challenging for the North East to portray itself as an overall leader in digital. However, the region's digital sector benefits from some unique and tangible assets of national note, complemented by important and well recognised 'softer', personality attributes that help to create an environment highly conducive for business growth. The North East is seen as one of the best venture capital environments for digital start-ups in the UK – exemplified by NSEI's Design and Creative Fund, Codeworks DEV and DigitalCity's upcoming programme of venture capital funding for early-stage start-up businesses, which is unique in Europe.

This combination of assets and attitude give the North East some notable areas of distinctiveness that can be messaged further, particularly in terms of its creativity, entrepreneurialism, and ability to "punch above its weight".

Assets:

- Sunderland Software City.
- DigitalCity.
- Codeworks.
- Thinking Digital conference – unique in its focus on theory and analysis; building an international reputation as a "must-go-to" event.
- The GameHorizon Conference – unique in Europe as an event targeted at international games company executives.
- The North East's funding, support and infrastructure offer – providing a key opportunity to promote the North East as a business start-up location. The North East has one of the best venture capital environments for digital start-ups in the UK.
- Universities and research including Teesside University's Institute of Digital Innovation (IDI), Culture Lab at Newcastle University and world-leading research into computer science at Sunderland University.
- NorthernNet – offering an opportunity to support cluster development.

Plastic Electronics

The North East is recognised as a major national centre for the emerging global plastic electronics industry, and is one of only two areas of the UK with the infrastructure for significant R&D and commercialisation of new technologies in this industry (the other is the East of England, which has a major plastic electronics cluster around Cambridge).

The North East is particularly strong in printable electronics, for which it has world-leading facilities. The North East is in a better position to benefit from this than other parts of the UK, most notably as the home to PETEC, the UK's national printable electronics technology centre. PETEC focuses on product commercialisation and brings together leading experts in design, development and prototyping. With significant public sector investment, PETEC is viewed as a crucial national resource for printable electronics.

At present, this is a very new sector, with much of the activity that is taking place regionally, nationally and globally being centred on R&D for new applications that have yet to come to market. It is likely that UK manufacturing for the industry will focus on specialist devices, with mass manufacturing of high-volume applications likely to be outsourced to developing economies. Jobs are likely to be created in high value added niche sectors.

Furthermore, it will be important to communicate strongly the advantages of the North East to an international audience in order to attract further investment in Printable Electronics.

Other than possible manufacturing opportunities, the main benefits of this industry are likely to be in reinforcing the theme of the North East as an incubator for sustainable technologies and more broadly as a centre of innovation and creativity.

Assets:

- The North East is viewed as a major centre of the UK's PE industry.
- The key driver behind the continued growth of the industry in the North East is the ongoing investment in PETEC.
- PETEC has established itself as the UK's national prototyping organisation for printable electronics.
- Unique in UK and Europe as a location for testing printable electronics ideas in a semi-commercial environment (i.e. to alleviate the risk involved in commercialisation) with the initial focus on three technology areas:
 - Organic thin-film transistors (OTFT)
 - Solid state lighting (SSL)
 - Organic photovoltaics (OPV) – arguably the furthest from market.

THE NATIONAL PICTURE

Low Carbon Technology/New and Renewable Energy

There is some evidence that the North East is viewed nationally as the leading region for offshore wind, but no area has yet been given LCEA status for that particular industry. The North West is promoting offshore wind very actively and is developing a supply chain. Yorkshire and Humber has relevant manufacturing capacity that can be utilised. The South West can also make some claims in this industry. ONE is exploring scope to collaborate via the Northern Way.

Process Industries

The North East's traditional competitors in the process industries are the North West, Yorkshire and the Humber, and Scotland. Two of these (North West, and Yorkshire and the Humber) are investing in, or have received investment for Centres of Excellence that are intended to stimulate the development of new process technologies.

Life Sciences

To build a critical mass of businesses in life sciences, it is necessary to have in place some very specific assets: typically a significant private sector research centre engaged in R&D (e.g. within a pharmaceutical or biotechnology company) and a large medical school within a university. Such assets then act as attractors for inward investors and, particularly in the case of private sector R&D, tend to produce spin-out businesses. These attributes underpin the two areas of the UK that are nationally leading in life sciences: the Golden Triangle (Oxford, Cambridge and London) and the Stirling Triangle (Edinburgh, Glasgow and Dundee).

Plastic Electronics

Far fewer regions are making public statements about their focus on these areas – only the North West and Yorkshire and Humberside within process industries and the East of England with plastic electronics.

Digital

All UK regions articulate particular strengths and assets in digital sector which makes finding a truly, distinctive position, challenging. In gaming, however, the North East's strength as a cluster is well recognised nationally. The North East is known for having one of the best venture capital environments in the UK for this sector.

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