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Enterprise, Innovation and the Environment

UK Enterprise, Innovation and Environment Survey 2010/11

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In the five years following the Stern Review, political focus on the role of innovative companies for realising UK environmental targets has sharpened.

Whilst some progress has been made towards achieving the 2020 targets for CO² reduction and uptake of renewable energy sources, the need for innovative clean technology solutions remains very strong.

The aim of this survey was to highlight and profile the activities of UK SMEs in the environmental sector in an attempt to identify their potential for innovation and their business needs in general. One of the most important themes in the survey covered the financial needs and challenges facing the SMEs in light of the financial crisis and subsequent reform of the public sector.

The findings suggest that the environmental sector has a range of highly entrepreneurial, Research and Development oriented, innovative SMEs that have increased the size of their businesses regardless of the adverse economic conditions since 2007.

Despite the unfavourable financial environment, innovative small firms have been able to access traditional debt finance and informal finance, with a small minority of firms also securing venture capital funding. There was a strong message that SMEs' need for borrowing will increase in the near future and that they perceive access to a range of funding sources as crucial for sustaining their success.

Three key needs:

- continued ease of access to finance (including government finance)
- access to high quality managerial and technical staff
- building external relationships with other companies and institutions

Addressing these needs is seen as crucial to enable the continuing success of this highly entrepreneurial group of small and innovative environmental firms. SMEs in the environmental sector present a unique opportunity for driving a green economic recovery, and this sector could be vital for ensuring the UK's success as a clean technology solutions provider in the near future. For instance, small and innovative firms have historically played a very important role in major technological changes such as the IT and bio-pharmaceutical sectors.

Recommended policy targets:

- take necessary measures to ensure that firms are able to borrow at a reasonable cost, and government funding is available to the most promising of the R&D active firms
- support development and integration of the relevant managerial and technical academic curricula in order to meet the specific needs of this sector
- develop and implement schemes to facilitate the necessary platforms within industry and academia to capture the benefits of external alliances to support the development of the UK sector.

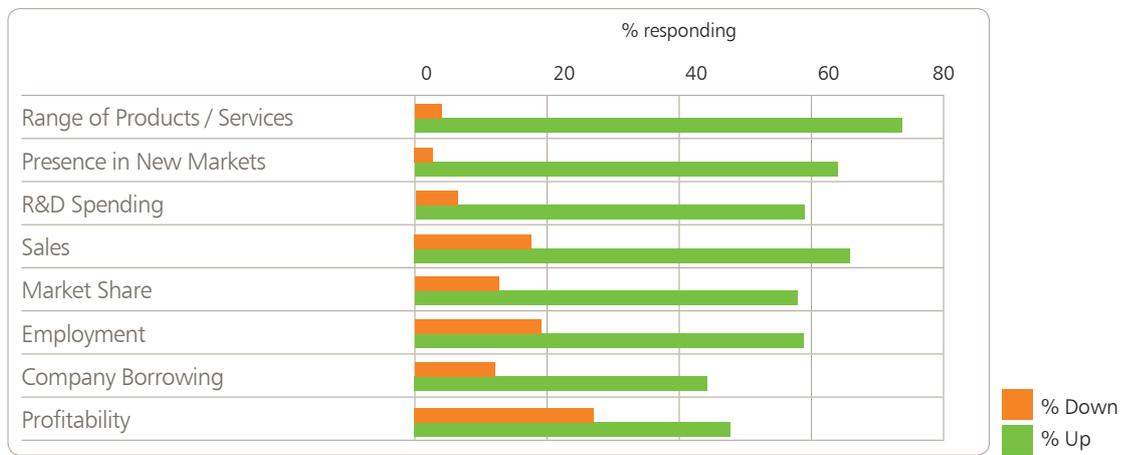
Summary of key results

- Performance in the UK's environmental sector is improving in most areas of activity.
- SMEs engaging in research and development activities recorded even stronger performance during 2007-2009.
- Firms perceive themselves as highly entrepreneurial and growth-minded compared to the wider UK business population.
- External finance (debt and equity) and retained profits are the most commonly used sources of finance to support firm growth strategy.
- The cost and availability of finance is currently not perceived as the most critical issue, however the reliance on key sources of investment is expected to increase in the next three years, particularly with regard to debt finance.
- Critical issues in performance relate to internal factors such as skilled technical and managerial labour, as well as external factors such as environmental regulation.
- Research activity is perceived as important for 60% of responding firms, although currently external R&D collaborations are not regarded as particularly important when compared to other hi-tech industries.

Performance is improving in the UK environmental sector

Most firms report robust performance in years following the financial crisis, indicating growth in products, market share and employment. The net balance (% reporting increasing performance minus % reporting decreasing performance) is smallest for profitability, suggesting that business growth has yet to be rewarded by profitability in many cases.

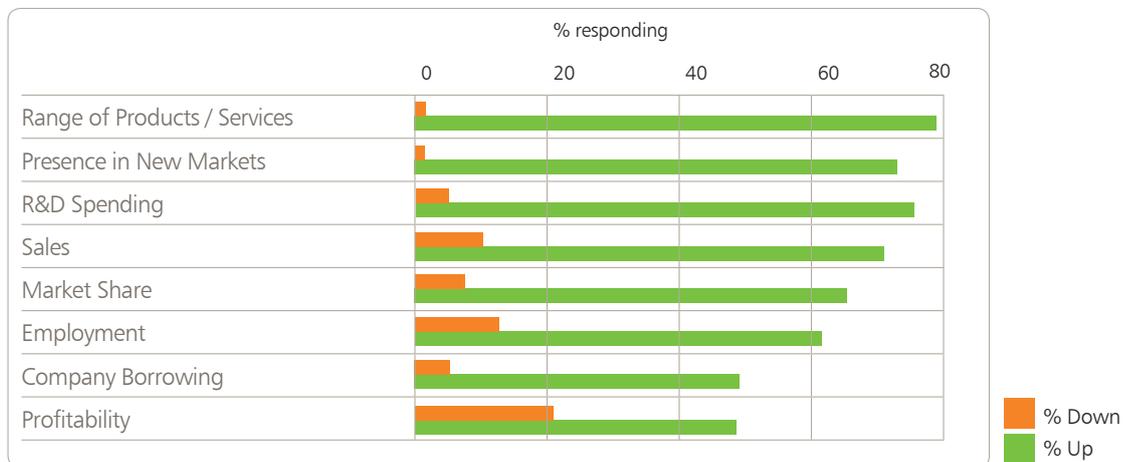
Figure 1: Performance of firms



R&D intensive companies have performed better in the last 3 years

Firms that report activity in basic or applied R&D as important for business show slightly higher levels of performance relative to the whole population. Importantly 76% of these R&D active companies report increasing investment into R&D related activities in the prior period.

Figure 2: Performance of firms regarding either Basic or Applied Research and Development as important business activities

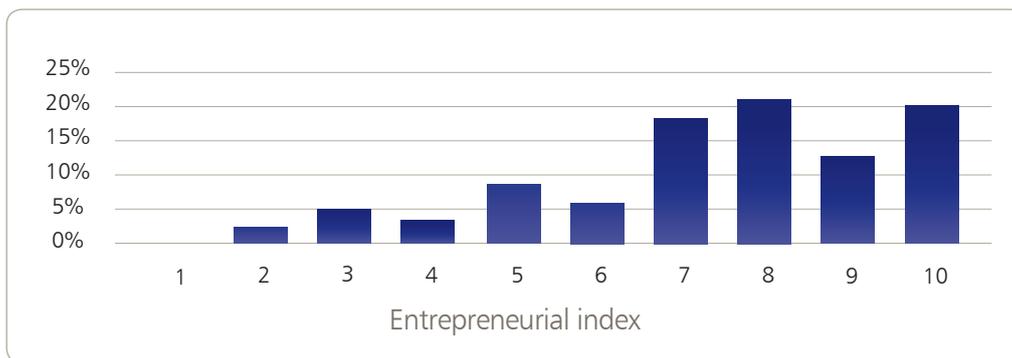


SMEs in the environmental sector are highly entrepreneurial compared to the rest of UK's SME sector.

Companies were asked to rate themselves on an entrepreneurial scale of 1 to 10, 10 being the highest score in entrepreneurial motivations of the company. The results display an average index score of 7.5 out of 10. This largely exceeds the entrepreneurial index scores reported for the rest of the UK's SME sector by the Open University Quarterly SME survey¹.

Given the innovative challenges of developing solutions to environmental problems, the entrepreneurial motivation of SMEs in the environmental sector is a promising factor in UK's attempts to decarbonise its economy. We find that R&D active companies show a similar profile, although with a slight shift towards higher ratings, reflected in the mean index score of 8.0.

Figure 3: Entrepreneurial Index



¹ The Open University survey (2010 Q2), in conjunction with Barclays SME team reports a mean entrepreneurial index between 4.8 for sole traders to 6.6 for firms of over 20 employees.

Traditional debt finance has been the key form of finance but R&D firms expect to receive future public funding.

Sources of finance

Overall 42% of firms surveyed have sought commercial finance, such as bank loans, and/or equity finance to support their business. 15% of firms used informal sources of capital, which include funding sourced from personal accounts, friends and family, whilst 10% obtained funding from company staff. Approximately 22% of companies accessed funding from public sources such as the UK Government and European Commission. Venture capital (VC) funding was used and secured by only 13% of firms despite the increased VC interest in the clean-technology sector internationally.

Increased demand for finance

The most frequently used source of funding by firms in the last three years has been traditional debt finance. Clearly, firms have been able to access some amount of debt capital despite the banking crisis. It is also clear that future demand for finance is expected to increase overall, with companies strongly indicating an increased need for debt and equity finance in the next three years.

Expectation of continued government funding

The use of retained profits is also expected to be a key source of finance for the future activities of the firms. Importantly, despite the extensive public sector cuts looming, there remains a strong expectation that some form of Government funding will be available for the environmental sector. In fact the results suggest a comparable proportion of companies will seek investment from public sources versus venture capital over the next few years.

Table 1: Sources of finance used and expect to use

Top 5 Sources of current sources of finance	Used in last 3 years (% firms)		Expect to use in next 3 years (% firms)	
	All firms	R&D only	All firms	R&D only
1. Bank Loans	29%	25%	30%	27%
2. Retained Profits	22%	26%	23%	30%
3. UK Government Funding	19%	28%	14%	20%
4. Venture Capital	13%	19%	15%	20%
5. Company Staff Funds	10%	13%	3%	5%

Quality, Skills and Environmental Regulations are top issues for the environmental sector.

Self evaluation of issues critical for business performance highlighted the importance of the internal characteristics of the business, in priority order these were:

- quality of products and services
- skills and ability of management
- scientific labour

However external factors such as the state of UK environmental regulations and access to domestic markets were also perceived as critical factors in determining the success of businesses.

Notably neither the cost of, nor access to, commercial finance featured in the top ten critical issues for these businesses.

Figure 4: Critical issues for business performance

FACTORS RATED FROM MOST IMPORTANT TO LEAST IMPORTANT	
MOST CRITICAL	1 Quality of products and services
	2 Managerial skills
	3 Skilled labour
	4 UK environmental regulations
	5 Access to domestic markets
	6 Ability to innovate new products and services in-house
	7 Ability to innovate new processes in-house
LEAST CRITICAL	8 Marketing activities (including market research) associated with introducing new products and services
	9 Access to external collaborators and expertise
	10 UK government business regulations
	11 Access to international markets
	12 Government support
	13 The cost of obtaining external finance
	14 Access to venture capital and equity based investment
	15 Access to credit or loans

R&D is very important for the environmental sector but firms under-utilise external R&D collaborations.

Investigating the research and development (R&D) activity of companies in the sample indicated that research of new or alternative products and services is very important for businesses. However, developing external R&D relationships and collaborations is viewed as less important for performance. Benchmarking with a recent survey² of UK manufacturing and business services which found 59% of firms had collaborations and 24% had collaborations with public sector organisations, our results suggest that collaboration as a strategy is being relatively underutilised in the environmental sector. Increasing the use of external collaborations could have significant performance implications for the UK's environmental sector as external collaborations have proved to be an integral part of the development and commercialisation of important innovations in other high-technology sectors such as biotechnology and semiconductors.

Figure 5: Research and Development activity – mean scores



² Cosh and Hughes (2010) Never mind the quality feel the width: University–industry links and government financial support for innovation in small high-technology businesses in the UK and the USA, *Journal of Technology Transfer*

Quality, Skills, Innovation and Finance are top issues for the R&D active environmental sector.

For R&D active companies, similar factors were also considered to be the most critical. In fact more R&D firms viewed access to skilled labour (52%), quality of products and services (61%) and managerial skills (52%) as highly critical factors compared to the overall average.

Unsurprisingly, for R&D firms innovative product development strategies were also a critical factor (57%), whilst 46% R&D firms perceived access to finance as a highly critical business factor indicating the increased reliance on external capital for this sub-group of companies.

Protecting Intellectual Property Rights remains an issue for the SMEs in the Environmental Sector.

Only 38% of the responding firms indicated that they had attempted to apply for a patent to protect company intellectual property. Despite being heavily involved in R&D, SMEs in the environmental sector indicate that protecting the outcomes of R&D through patenting is still challenging. A closer look into the set of firms that applied for patents reveals that a high majority of these firms regard R&D to be important for business.

Table 2: Patenting activity

Patent	R&D not important	R&D important	Total
No	34%	28%	62%
Yes	5%	33%	38%
Total	39%	61%	100%

Respondent profile

Profile of sample

Over 300 firms responded to the survey, the vast majority were commercial SMEs with less than 500 employees. Approximately 33% of companies perceived themselves to be R&D companies, although 60% of companies perceived basic or applied research to be very important for the firm's performance. The measure of R&D firm reflects the wider sample of firms engaging in R&D activities, rather than the narrower classification of firms that perceive themselves as an R&D company. We also note 34% of companies provided consultancy and advisory services, either as a sole activity or jointly with other activities. The majority of companies sold directly to business, however given the low level of export activity (19%), the UK was the major market focus for companies. In terms of technology applications 48% of companies were involved in "clean-tech" applications and 54% in environmental applications.

Table 3: Patenting activity

COMPANY CHARACTERISTICS			
Commercial For Profit	73%	Clean-technology Applications	48%
Entrepreneurial	36%	Environmental Applications	54%
Family Owned	17%	Green Business	45%
Non-Profit Organization	5%	Sustainability	54%
COMPANY ACTIVITIES			
Research and Development	33%	Selling to General Public	20%
Manufacturing	28%	Selling to Businesses	51%
Service Based	26%	Selling to Government Institutions	26%
Consultancy and Advisory	34%	Exporting	19%
		Importing	12%

How the survey was carried out

Firms that responded to the survey were drawn from a sample of firms identified as operating within the UK Environmental Sector. The sample frame was constructed from a wide range of overlapping sources using firm directories, business reports and national media material to provide a comprehensive coverage of UK small and medium sized business.

The survey was administered in a series of waves. In late 2010 the survey was piloted using an online questionnaire, and subsequently sent to firms in the sample. All non-responding firms were contacted again using a paper version of the survey in early 2011. Results from both survey waves were collected and analysed in May 2011.

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