



Final Report

2nd August 2006

Phase 2 Report
Sector Competitiveness Analysis (SCA)
of the **UK Plastics Processing Industry**

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Executive Summary

Introduction

This is the final report of a Phase 2 study into productivity and competitiveness of the UK plastic processing industry. It was commissioned by the Department of Trade and Industry in conjunction with the British Plastics Federation (BPF) and the Packaging and Industrial Film Association (PIFA).

It makes use of international field research to explore in greater depth the possible explanations identified in the Phase 1 study for the relative under performance of the UK plastic processing industry over the period 1993-2002 and makes recommendations as to how industry, supported by government, can improve productivity in the UK plastic processing industry.

Aim Of The Study

The Phase 1 study suggested that part of the productivity differences between the UK and selected European countries could be explained by relative under-investment in capital, skills, innovation and research and development (R&D) and cross-country variations in market structure and supply-chain relationships. It found that:

- Investment in plant and machinery as a percentage of turnover in the UK was 1.5% compared with 3.8% in Germany and 3.7% in France
- The UK has far higher proportion of low skills and much lower proportions of intermediate skills than in Germany
- Research and Development (R&D) in the UK plastic processing industry, as a percentage of gross value added was 0.65% compared to 2.35% in Germany and 4.3% in France
- The UK industry is more fragmented than in Germany and France with UK firms working much less closely with their customers and suppliers than German firms.

This Phase 2 study takes forward this earlier work in two ways. First, it examines in greater depth the reasons for the relative under investment in capital, skills, innovation and R&D in the UK plastic processing industry compared to France, Germany and the Czech Republic. Second, it explores – again with reference to these three European countries - the extent to which other factors may be responsible including differences in approach towards innovation and new product development, market structure and competition pressures, supply chain relationships and the institutional framework (e.g. regulation and the fiscal environment).

Summary Of Findings

The findings of this Phase 2 study are based on responses received from face-to-face interviews and structured survey questionnaires with close to 500 plastic processors in the UK, Germany, France and the Czech Republic. These were supported by consultations with a wide range of industry bodies, intermediates, raw material producers and academics.

The findings are presented by policy theme (investment in and management of capital, skills and training, product and process development, variations in market structure and pressures of competition, supply chain issues and institutional framework) and, where appropriate, broken down by end-user sector (construction, electrical/electronic, medical, packaging and transport)

Investment In & Management Of Physical Capital

- The main motive given by respondents in all four countries for investing in new physical capital is to increase productivity. In the UK, many firms also cited the need to protect existing markets and take advantage of new ones as further reasons for investment
- Firms interviewed in the UK cite a lack of confidence in the future of the industry as the main barrier to investment. They attribute this in part to the lack of trust in customer-supplier relationships stemming from the decision by more and more customers to end long standing relationships and source their requirements from lower cost locations overseas. Consultations with companies in France indicate that they are facing similar difficulties to UK firms
- German firms consulted in the study have developed close links and co-operation with technical institutes, machinery suppliers, raw material producers, service and training providers and end-users. These linkages are underpinned by investors being partners rather than lenders which has clearly contributed to the more optimistic climate for investment in Germany
- Many firms interviewed in the UK claim that the absence of government support causes under-investment. This is not a constructive critique of specific public initiatives. Rather, this is a general perception of government responsibility that is not necessarily based on a fully informed judgement. This view is less common among the German companies which were consulted, reflecting the culture of confidence in domestic manufacturing which exists in Germany.

Skills & Training

- Firms consulted in the UK tend to give a lower priority to training than those in France, Germany and the Czech Republic, preferring in many cases to acquire the necessary skills through recruitment rather than investment in upgrading the skills of existing staff

- The flexibility of the labour market is cited by UK firms in the study as a contributory factor in encouraging a short-term approach to investment in skills and training. The unrestrained movement of workers diminishes the time over which firms can recoup the cost of training investment
- A large proportion of respondents in the UK only invest in training when there is either a critical need, Health and Safety concerns or an opportunity to increase sales. In France, Germany and the Czech Republic, interviewed companies tend to link training much more to both continuous improvement of production processes and to the introduction of new technology
- One of the main barriers to investment cited by firms in all four countries is the cost of training – in terms of training fees and the opportunity cost of the output lost while workers are in training – relative to the profit margins being generated. For the companies in France, Germany and the Czech Republic, the availability of finance is seen as another obstacle to investment in training
- Respondents in all four countries perceive some type of skills shortage that impedes their business. Amongst these, a quarter indicate that the most difficult positions to fill are shop-floor positions in the manufacturing process, particularly in tool making and machine setting while a fifth experience difficulties finding engineers and sales and marketing personnel. Skills shortages differ between end-user sectors as follows:

Construction	Electrical	Medical	Packaging	Transport
Insufficient data	Suffer from shortage of sales and marketing skills	A shortage of polymer/process engineering skills	Suffer from shortage of sales and marketing skills	Suffer from shortage of sales and marketing skills

- Many of the UK companies interviewed expressed disappointment with the quality of school leavers and graduates and believed that the pool of potential employees possessing the necessary skills and qualifications to fill these positions is shrinking.

Product & Process Development

- In this study, innovation is measured in terms of the percentage of revenue derived from products less than 3 years old. On this basis, just over a quarter of UK companies derive more than 50 per cent of revenue from innovation which compares favourably with the world's fastest moving industries¹ The following table compares the proportion of firms in each end-user sector deriving 35% or more of their revenue from innovations:

¹ According to previous work by the International Association of Product Development (American Management Association (1995) World-Class New Product Development).

Construction	Electrical	Medical	Packaging	Transport
29 per cent	39 per cent	64 per cent	39 per cent	50 per cent

- For many of the UK firms, product and process development is spurred by the particular demands of a specific customer rather than competition in general. However, a lack of interest from existing customers, a lack of access to strategic customers and the tendency for some customers to pass on intellectual property and ideas to other suppliers have discouraged many from investing too heavily in new innovations
- Respondents in the UK do not tend to rely as much on innovation support as in Germany for example. They tend to work comparatively less closely with research and technical institutes, universities or government and are less reliant on machinery suppliers for product and process development.
- Previous poor experience and red tape has discouraged UK firms from taking advantage of available sources of research funding. For many, lengthy application processes are prohibitively costly and some on the margins find the application criteria restrictive
- Many companies in all four countries believe that their respective tax systems provide only moderate incentives to invest in product and process development with some firms stating that lower taxes or more generous fiscal incentives are required
- Firms interviewed in the UK view the system of R&D tax credits as offering very little support for plastic processors. They perceive the scheme to be biased towards companies that are undertaking original research and this is a requirement which many do not believe they can meet

Variations In Market Structures and Pressures Of Competition

- The UK plastic processing industry can be described as a highly fragmented market in which too many indigenous companies are chasing the same small number of end-user customers and where there is a lack of trust between customers and suppliers. Some of the key market characteristics of the different end-user sectors are:

Construction	Electrical	Medical	Packaging	Transport
Slowest rate of innovation. Predominantly domestic focus providing relatively stable demand	End-user sector with greatest concerns about cost of doing business in the UK and impact of cheap foreign imports.	Highest rate of innovation and the end-user sector attracting most interest as one to diversify towards.	Strong influence of multiple retailers in the UK. Lack of trust in customer supplier relationships. Outward investment opportunities evident	High rate of innovation and strong influence of vehicle makers.

- Firms interviewed in the UK attribute the perception that competition is more intense in the UK than elsewhere in Europe to the volatility of raw material costs and the influx of cheap imports
- Companies consulted in France, Germany and the Czech Republic tend to view close location to their buyers as more important than UK firms. Loyalty to 'home' producers also appears to help plastic processors in these countries, which is not the case for some of the UK firms that were interviewed.

Supply chain issues

- The majority view among respondents in all four countries is that supply chain relationships are moderately to highly cooperative with only a very small proportion describing them as adversarial
- Consultations with companies in Germany reveal that the emphasis on joint development activity and generally close cooperative relationships with customers has filtered down the whole supply chain. By contrast, the view among UK firms is that while relationships are similarly cooperative, there is no expectation of commitment (especially with large retailers). This lack of trust permeates the supply chain
- Respondents in all four countries believe that the current volatility of raw material costs and rising energy prices is clearly affecting competitiveness of plastics processors directly and indirectly

through the impact upon firm confidence. A common perception among UK firms is that the UK is a more expensive location to do business with relatively higher transport, energy and labour costs

Institutional Framework

- Firms consulted in all four countries express concerns about the perceived impact of existing regulation at both the regional and national level and believe the burden of regulation is growing. For the most part they resist this growth although a number recognise the benefits of regulation
- The firms interviewed in the UK believe that the application of general Health and Safety legislation is applied more stringently than in France, Germany and the Czech Republic, however they recognise the benefits of higher standards (e.g. cost savings associated with lower number of accidents).
- Smaller companies are less well placed to afford the investment associated with best practice and they perceive themselves to be disadvantaged compared to European countries like France, Germany and the Czech Republic which tend not to generally share the UK's concerns over the implementation of Health and Safety laws
- Many firms interviewed in the UK believe that the further reforms to the tax system are needed to assist the industry with nearly a fifth arguing for more financial and fiscal incentives for investment.

Construction	Electrical	Medical	Packaging	Transport
Issue with lower taxes/tax incentives and Health and Safety legislation	Issue with meeting challenges of increased global competition	Issue with certain employment legislation and lower taxes/ tax incentives	Issue with lower taxes/tax incentives and environmental legislation	Issue with lower taxes and employment legislation

- The absence of institutionalised collaboration on all forms of investment has diminished agglomeration economies, relative to Europe, making UK companies less productive and thus less competitive

Large Versus Small Companies

The obstacles to productivity growth in the UK plastic processing industry may not be the same for all firms. Firms which are relatively small in size may experience difficulties which larger companies do not face. The table below compares the responses given by large and small companies to some of key issues raised in the questionnaire.

	Large Companies	Small Companies
Causes of under-investment	<p>Large companies are more than twice as likely to disagree with the notion that we under-invest in the UK.</p> <p>Much more likely to cite the short-term perspective of operations and financial managers as an explanation of under-investment in the UK.</p>	<p>Small companies are twice as likely to cite the perceived higher cost of doing business in the UK and the difficulty in accessing finance. Furthermore, twice as many small companies were not able to explain the reasons for under-investment.</p>
Investment Criteria	<p>35 per cent of large companies compare the payback of different investment opportunities.</p> <p>A third of large companies used degree of fit with strategy as the basis for decisions.</p>	<p>18 per cent of small companies declared payback as the basis for decisions.</p> <p>Half of small companies determine investment decisions on the basis of the degree of fit with strategy.</p>
Investment Intentions	<p>70 per cent intend to make further investments in the next two years.</p>	<p>60 per cent intend to make further investments in the next two years.</p>
Barriers to Investment	<p>The large companies have a proportionally greater level of concern about visibility of customer requirements.</p>	<p>Many small companies are pre-occupied by a lack of confidence in the future of the economy and markets for plastics. Although a majority will invest, they do not intend to do so over a large scale or risk investing in innovations.</p>
Innovation Performance	<p>20 per cent of large companies derive less than 10 per cent of their revenue from products less</p>	<p>27 per cent of small companies derive less than 10 per cent of their revenue from products less</p>

	<p>than 3 years old.</p> <p>Over a third of large companies derive more than 50 per cent of revenue from products less than 3 years old.</p>	<p>than 3 years old.</p> <p>Over a third of small companies derive more than 50 per cent of revenue from products less than 3 years old.</p>
Innovation Support	Although there is low reliance on support large companies tend to find it more important than small companies.	Low reliance on support except informal networks which are of more value to small companies.
Causes of under-investment in skills and training	Larger firms are more inclined to believe that lack of confidence stemming from the perceived long-term decline in UK manufacturing is to blame for under-investment in skills, which feeds concerns about being unable to recoup the investment from training people who subsequently leave the business.	Small firms that offer an explanation refer, generally, to the absence of government support.
Health and Safety	Larger companies with experience of standards in Europe believe that higher standards in the UK are achieved and yield cost savings because there are fewer accidents.	Recognise Health and Safety requirements for training but this is balanced by commercial requirements.
Skills Shortages	A quarter of large firms report process and engineering skills shortages. Large firms are one and a half times more likely than small firms to refer to management shortages.	A quarter of small firms report process and sales and marketing skills shortages. Small firms are three times as likely as large firms to refer to sales and marketing shortages.
Intensity of Competition	More inclined to disagree with the notion that we experience	Small companies are more likely to hold the view that it is the

	greater intensity of competition and more likely to hold the view that it is the current volatility of raw material prices and raw materials in the UK market that explains perceived competitive pressures.	influx of cheap foreign imports that explains perceived competitive pressures.
Regulation	Top two concerns are about the impact of employment and Health & Safety legislation.	Small companies are most concerned about the impact of taxes/tax incentives, employment legislation and Health and Safety legislation. They are also much more concerned than large companies about cheap foreign imports.
Local Regulation	The most important concern of large companies is with respect to adapting to frequent changes in Health and Safety legislation.	The most common subjects raised were business rates, lack of support from councils in finding suitable properties, and local application of legislation with respect to Health and Safety and environmental requirements.
Working Time Directive	Large companies were twice as likely to report lost output as an impact.	Proportionally more small companies indicated they had opted out compared to large companies.

Key Characteristics Of Strong & Poor Performing Firms

The findings of this study can be used to construct profiles of strong and poor performing plastic processing firms in the UK, France, Germany and the Czech Republic. These are presented below.

Distinguishing Features Of Strong Performing Companies

- Have state-of-the-art capital equipment with investments taking place in close proximity to their customers' activities
- Have developed strong and stable relationships with their key customers that encourages investment, based on trust, close cooperation and a clear understanding of what is required
- A joint commitment with customers and suppliers to developing innovative and higher value added applications of plastics
- Have fostered a long-standing reliance on universities and research institutes that provides a wealth of expertise in new materials and plastics processing as well as technologists and new recruits who can be developed to make a major contribution alongside the well-motivated workforce of shop-floor operators
- Actively take advantage of opportunities to enhance the competence of staff through training linked to new investment and new product development and implementation, combined with a culture of continuous improvement.

Distinguishing Features Of Poor Performing Companies

- Investment in new capital is more scarce. Many of the machines show their age, are unreliable, and prone to breakdowns
- Confidence in the future is low because customers continue to face pressure from the global market on their profit margins
- Difficulty in building long-standing relationships with customers; trust between plastics processors and customers is lacking
- Although the demand from customers for innovation is strong, within the industry a culture of short-termism prevails opting for low-cost modifications to existing equipment rather than brand new investment
- Without new investment, motivation to invest in training and skills development is much reduced; compliance with Health and Safety legislation becomes the single biggest motivator for carrying-

out training, rather than training taking place in support of innovation and new product development and implementation.

Conclusions & Recommendations

The UK Plastic Processing Industry contains many successful enterprises and many that lack the competitiveness to sustain their future in the face of increasing pressures.

The Phase 1 Plastics Processing Sector Competitiveness Analysis suggested that part of the productivity differences between the UK and selected European countries could be explained by relative under-investment in capital, skills, innovation and R&D and cross-country variations in market structure and supply-chain relationships.

This Phase 2 study has made use of international field research to explore in greater depth the possible explanations identified in the Phase 1 study for the relative underperformance of the UK plastic processing industry with a view to making recommendations as to how industry, supported by government, can improve productivity and competitiveness.

Main Conclusions

Responses received identified a healthy climate for industrial investment in the UK as crucial to raising productivity in the UK plastic processing industry. This will depend on a robust confidence in domestic manufacturing. From our discussions, we found that in the UK:

- In a highly fragmented market with a small number of end-user customers, small companies are struggling to make the necessary adjustments and investments to sustain their business and remain competitive in the face of globalisation of supply
- Unpredictable increases in raw material and energy prices undermine confidence, narrow profit margins and have occasionally caused closures. The further development of the futures market for raw polymers provides the opportunity for a more predictable investment environment.
- Innovative firms are more stable because they are more often the pioneers of change. Confidence is stronger still when firms expect customers and suppliers to be faithful in their commitment to jointly developed innovations
- The flexibility of the labour market has encouraged a short-term approach to skills and training in the UK. Firms are reluctant to train without product demand which would allow them to recoup their investment and tend to acquire the necessary skills through recruitment rather than upgrading the skills of existing staff

- The pace of corporate rationalisation in the UK has resulted in spare capacity. Without investment in new capacity, physical capital assets become inflexible and out of date
- All European firms fear under-cutting by global markets. Those investing on a pan-European basis are embracing global markets as an opportunity and investing internationally.
- Customer-supplier relationships in the UK fall some way short of a best practice model of supply-chain integration which exists in some European countries where both customers and suppliers combine to focus jointly on delivering value to the end customer in a true spirit of co-operation
- Finally, respondents in the UK also identified the important role of clear and effective communication of corporate strategy across all employees in the company.

Key Recommendations

An action plan for government and industry concerning interventions to restore confidence should include:

- Clear sign-posting and better communication of existing government support schemes aimed at promoting investment, innovation, R&D and skills in the plastic processing industry and the manufacturing industry more generally and simplification of procedures at the application stage
- The provision of targeted business support, reflecting the characteristics and needs of the different end-user sectors of plastics processing. For example, manufacturing and innovation support should help companies link productivity improvement to new technology and new markets
- Policies that encourage vertical collaboration within the supply chain will stabilize growth prospects for firms (particularly smaller ones) giving them the confidence to invest in capital. This could include excellence in supply chain management, supplier accreditation and trade fairs
- Support for companies to use the polymer and energy futures market to hedge against the price volatility of factor inputs
- Fostering collaboration between plastics processors and centres of expertise in plastics and polymer engineering to improve innovation and skills
- The transparent development of regulation allowing companies to predict and plan their response. Partnership-based discussion on potential new regulations (in relation to recycling for example) is vital for the successful and profitable implementation of legislation

- A wider understanding of the profit-enhancing potential of Health and Safety best practice in order to help small companies derive the benefits of higher standards in the UK that is apparent to firms with experience across Europe
- Recognition of the importance of investing in skills; particularly for shop floor operators
- Improved image of the industry to attract (particularly graduates) and retain good quality personnel in all occupations within the industry. Better quality and more informed leadership at all levels throughout the industry
- A study conducted to examine ways of helping plastics processors more effectively protect their innovations and intellectual property.

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