



RESEARCH STRATEGY
FACTS AND THE FUTURE
THE SECTOR
THE VISION OF THE
SECTOR SKILLS AGREEMENT
RIGHT SKILLS
ADVICE & GUIDANCE
WORKING WITH THE GOVERNMENT
PROGRESSION
TRAINING PRODUCTS
EXPAND THE NETWORK
BEST PRACTICE
PROFESSIONAL AND
VOCATIONAL
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Sector Skills Agreement for the UK Marine Sector

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Business Issue

The way in which the UK develops skills, and the subsequent contribution of skills to productivity, is a serious weakness undermining the ability of UK industry to compete in the global marketplace.

French, German and US workers produce between a quarter and a third more per hour than their UK counterparts. Output per worker is 16% higher in France and 31% in the US. The percentage of the workforce with intermediate skills (associate, professional, apprenticeship, technician, skilled craft or trade) within the UK is 28%; this figure is much higher in France (51%) and Germany (65%).

The ability of companies to take full advantage of knowledge transfer, enterprise and innovation will depend largely on the skills of the workforce. A workforce that is flexible in approach and equipped with the skills and adaptability to respond to rapidly changing technology is vital if productivity, performance and hence competitiveness is to achieve world standards. This document addresses the skills agenda and presents the solutions required to improve the competitiveness of the UK marine sector.

Sector Skills Agreements (SSAs)

Sector Skills Agreements (SSAs) are government initiatives designed to deliver action to meet priority skills needs that will improve business performance. They provide a means for employers in each sector to identify productivity and skills needs, the action they will take to meet those needs, and how they will collaborate with providers of education and training so that skills demand can directly shape the nature of supply. Sector Skills Councils (SSCs) - in this case SEMTA - are helping to lead the process. The Cost and Timed Action Plan, which will be drawn up as the final output of the process to establish an SSA, will provide measurable outcomes.

The Marine Sector Skills Agreement

The Marine Sector Skills Agreement comes at a time when there are new and growing opportunities and serious challenges for companies in the Sector to increase productivity and become more competitive. The skills required to utilise cutting edge technology alongside superb craftsmanship are key to winning a greater market share for the UK.

Marine Sector Skills Agreement Action Plans

The Marine Sector Skills Agreement identifies skills need, current provision and gaps and defines the areas where actions need to be taken. In the attached Sector Skills Agreement Action Plan, the actions required to be taken by Companies and key Stakeholders are identified. These action plans form a central focus for work between Companies and the key Stakeholders. Many of the skills issues are shared with other sectors, particularly Aerospace, Automotive and Electronics. The Marine, Aerospace, Automotive and Electronic Sector Strategy Groups are now sharing experiences and people development programmes.

Scope and Employment

In total, the marine sector has 56-57,000 direct employees in shipbuilding and repair, boat building and repair and marine equipment manufacturing. Together they contribute more than £1.9bn to GDP. In Scotland there are an estimated 6,000 employees. In Wales 500. The age profile of the workforce indicates that the majority of people currently in the industry are expected to retire in the next 10-20 years. Major yacht builders have a younger profile but still need ongoing recruitment to fill skilled posts. Increases in productivity could significantly reduce recruitment needs.

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Markets and Potential for Competitive Advantage (Section 4.2)

For the naval shipyards and their suppliers, a series of major orders from the MoD is likely to provide significant levels of work, and an increased demand for skills, over the next 15 years. Yacht building is a thriving, high export sector competing against strong international players and striving to win an increasing share of a growing world market. Employment in the sector is growing and new types of skilled occupations are being created in response to innovation. The merchant shipyards in the UK are expanding their business in ship repair and refitting. The supply chain in the UK includes world-class marine equipment manufacturers seeking to strengthen their position in export markets.

Europe accounts for 64% of the global market for complex vessels and 42% of world ship repair. In ship repair the UK is one of the top three European players. Ship repair and conversion industries are growth sectors, both in the UK and globally. The market has a turnover of some £6bn per annum. Around 40% of this is generated in Europe, reflecting the preference of ship-owners to dry-dock ships for repair at one end or another of the trading route. UK ship repair has the competitive advantage of being located on several busy trading routes. Regulations requiring the removal from service of old tankers and the general pressure to take sub standard tonnage out of service will increase demand for recycling facilities. There is inadequate provision for the scrapping of smaller vessels in Europe, a market of no interest to the major scrappers in Asia. Hartlepool has created one of the largest purpose-built recycling facilities in the world, which is currently awaiting the necessary permission to commence operations.

The worldwide leisure marine industry is expanding. In the luxury powerboat market, where a number of British companies and a very small number of high quality equipment suppliers have made great advances. Some powerboat builders export more than 90% of production. The total value of UK exports in 2004 was £839m, an increase of 5.6% on the previous year. The UK is the world leader in production of inboard stern drive boats under 12 metres. The market for superyachts has grown by around 90% over the last ten years. As the fleet ages, this presents increasing opportunities for new build, refit and repair. In 2002 the world market was estimated at £255m for new-build and £434m for refit and repair. The Superyacht UK Group has brought together builders from the leisure marine and ship sector, and equipment manufacturers, (including naval architects and designers) some of whom already have significant markets in the superyacht arena. The turnover of UK suppliers of equipment

and services for; commercial seagoing vessels; warships, and naval auxiliaries (excluding weapons and associated equipment); yachts over 30m and large workboats; is £1.7bn of which 62% is exported.

There may be more potential for UK yards in building smaller specialist cruise ships, as this is a developing market. The market for converting former naval and fishing craft into superyachts is also developing. This is a potential market for naval ship builders and a potentially important niche market for marine equipment suppliers, whereby the cutting edge technology developed in naval defence work can be transferred to these luxury craft.



The Key Strategic Skill Issues (Section 4.3)

identified by the SSA come under four headings:

- **Management and Leadership (Section 4.3.1):** Leadership is required to drive change including, for example, responding to fast moving developments around New Product and Process Development and Implementation (NPPDI), in large projects such as the naval builds and to deal with, in shipbuilding and repair, the cyclical nature of the sector.

The sector needs world-class management skills to be able to develop in an international context. Such skills would include, for example, Supply chain management, Lean manufacturing, driving down costs and enabling supervisors and team leaders to develop management skills, following de-layering and a reduction in the number of middle managers. In addition, Managers need the skills to understand the training provision market and how workforce development can contribute to continuous improvement.
- **Productivity and Competitiveness (Section 4.3.2):** To compete globally there is a need for training in 'Lean', 'Six Sigma' and other types of business improvement techniques, new product and process development and implementation, supply chain management and project management. These in turn will demand multi-skilling and cross-skilling in the workforce.
- **Technical Workforce Development (Section 4.3.3):** The sector needs specific technical skills at level 3 and above. As with other sectors, they need multi-disciplined craftspeople, well grounded in the fundamentals and able to absorb training for new technology and business processes - and this will take Level 2 employees up to more skilled work at Level 3. They also need more graduates with relevant degrees, and ready for productive employment. This includes naval architects and marine electrical engineering graduates capable of using the latest technology and materials in design.

- **Manpower Planning and Recruitment (Section 4.3.4):** The sector wants support for employers' training initiatives, such as the Marine Schools Challenge in South West England. This helps to influence schools to improve maths, engineering and science education and recruitment campaigns. Funding for relevant adult training is also essential. Workforce-pooling schemes and manpower planning tools (e.g. Skills Passport) are currently under development.

Assessment of Education and Training Provision (Section 5)

We estimate that over £28 million per annum is being spent by companies, governments and individuals in the marine sector on education and training. 44% of companies in shipbuilding and repair and 27% of companies in the boatbuilding sector, including several large organisations that account for the majority of employment, say that their training budget is due to increase. Several training providers surveyed, reported that they were finding increased demand from marine employers. The main issues that emerge are associated with General Education (Section 5.2), Technical Workforce Development (Section 5.3) and Globally Competitive Interventions (Section 5.4).



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Gaps between Need and Provision (Section 6)

The issues affecting both Management and Leadership Skills and Productivity and Competitiveness Skills are largely, though not exclusively, 'Market Gaps.' Those affecting Technical Workforce Development are often linked to government policy in education and training and stem from 'Institutional Weaknesses' as well as some market mismatches.

Because the Action Plan will be set of mutually reinforcing measures, by a range of stakeholders, at both market and policy level, it can potentially be a very powerful engine for progress.

If companies can get a business expert that will come to them, help to identify business improvements and prioritise training that will give results quickly, then it should be possible to overcome many of the barriers to training that companies perceive. Coupled with the commercial pressure to train coming through from their customers, as discussed in the Gap Analysis, this could qualitatively move forward the demand for training. The policies to facilitate that demand need to be in place.

The MSSG wants to establish and monitor the standards that need to be met in order to remain internationally competitive. This would allow companies to determine the gap that the UK marine sector needs to bridge, in a form that is easily digestible for senior decision makers and to measure the returns on training investment. The Group wishes to establish by how much improved productivity and competitiveness would enable the UK marine sector to increase its market share; approximately how much this would add to UK Gross Value Added (GVA) and how many jobs will be created or maintained.

The Vision of the Marine Sector Strategy Group is of a UK sector that can:

- Sustain an efficient naval ship and submarine building and repairing resource in the long-term.
- Enable high value-added commercial shipbuilding and repair to compete internationally.
- Ensure that boat builders can continue to increase world market share in a growing international market.
- Support, and be supported by, a vibrant and competitive supply chain of cutting edge marine equipment companies that are seeking to maintain and expand their strength in export markets.

Employers have already begun to organise their support for taking forward the priority issues into actions. Employers have contributed a great deal of time and value to developing this draft agreement. They are seeking qualitative changes from governments and other stakeholders to ensure a step change in the delivery of a well-educated and trained working population and ensure that young people and adults in the UK have the knowledge and skills matching the best in the world and are part of a fiercely competitive workforce.



Members of the Marine Sector Strategy Group

Chris Faint		DTI
Christian Warden	UK Employer Networks Manager	SEMTA
David Long	Director-Specialist Projects	Institute of Marine Engineering Science & Technology
David Wilson	HR Manager	BAE Systems Marine Ltd
Don Logan	Training Manager	BAE Systems Submarines
Dr. Bernard Capaldi	Director of Industry Products & Services	SEMTA
Eddy Perry	Apprenticeship Training Manager	Fleet Support Limited
Ian McMahon	Head of Scottish Shipbuilding and Marine	Scottish Enterprise Glasgow
Jim McHarg	Head of Learning and Development	BAE Systems Marine Ltd
John Brown		JB Consulting
John Lawrence	Chief Executive	International Institute of Marine Surveying
John Mitchell	Project Director CVF	Swan Hunter (Tyneside) Ltd
John Murray	Chief Executive	Society of Maritime Industries
John Wall	General Secretary	CSEU
Keith Hazlewood	National Secretary	GMB
Ken Munro	Head of Personnel	Babcock Engineering Services
Lynn Tomkins	Director of UK Operations	SEMTA
Matt Cherry	Director of Human Resources	Sealine International Ltd
Mike Leece (Chair)	Chief Executive	National Marine Aquarium
Nic Waide	HR Training and Development Manager	DML
Rachel Tonucci	Head of Learning and Development	BAE Systems Ltd
Ray Davies (Vice Chair)	Director	First Interim Ltd
Sarah Dhanda	Director of Training	British Marine Federation
Tom Dougherty	Director	Shipbuilders and Shiprepairers Association
Trevor Blakeley	Chief Executive	RINA
Trevor Cartwright	Human Resources Director	VT Shipbuilding

Reporters

Marcella FitzGerald	Research Team Leader	SEMTA
Simon Fathers	Labour Market Researcher	SEMTA

Introduction

Sector Skills Agreements (SSAs) are government initiatives designed to deliver action to meet priority skills needs that will drive improved business performance. They enable employers to identify productivity and skills needs. The action they will take to meet those needs and how they will collaborate with providers of education and training can directly shape the nature of supply. SEMTA is helping to lead this process in the Marine sector. The Costed and Timed Action Plan, which will be drawn up as the final output of the process to establish a Marine SSA, will provide measurable outcomes. The scope of the Marine SSA is shipbuilding and repair; boatbuilding and repair and marine equipment companies.

This document is a précis of the Pathfinder Sector Skills Agreement for the Marine sector, which is comprised of Skills Needs Assessment, Analysis of Current Provision and Gap Analysis components. The full content can be found in the relevant sections of those documents, along with all references to sources of data and information.

Economic Background

The UK economy has benefited from the competitive advantages of low regulation and taxation since the 1980s. These conditions have allowed it to compete and halt the economic decline of the pre-1980s. In order to prosper in a global marketplace, the industry needs to develop competitive advantage in niche markets through continual innovation. However, competitors have innovated too, and the UK now needs to make the move from competing on relatively low costs to competing on unique value and innovation. This change requires investment, such as the upgrading of company strategies and the creation or strengthening of new types of bodies (e.g. the Marine Foresight Panel or Leadership Council) to set the long term position for the marine

cluster in the UK. This underlines the issues prioritised by the Marine Sector Strategy Group (MSSG).

The skills required to utilise cutting edge technology alongside superb craftsmanship are key to closing the productivity gap between UK manufacturers and those in France and Germany, and winning a greater market share for the UK. Although new technology is essential in the search for value-added, the required capital investment and associated training costs are often deemed prohibitive. It takes a leap of faith to make such investment, but without it a company will find it harder and harder to survive in the international market. Infrastructure or capacity in some marine companies is world class. Examples of investment in new plant and new design tools have been referred to earlier in the report (e.g. VT, Princess, Selden Masts, Babcock). Numerous companies are also aligning their capabilities with the evolving demands of their global customers. From a different starting point, the marine sector is converging on many of the same "lean" organisational innovations that have been adopted by the automotive industry to increase quality at the same time as reducing costs and delivering products on time in a flexible market environment. As the aerospace sector has also found in recent years, the intensive application of lean principles can have significant benefits in a high technology, high-value, low-unit volume industry such as the marine sector. However, overcapacity and peaks and troughs in production remain major issues in shipbuilding because plants still require 'care and maintenance' through periods when skills are lost because of layoffs or lack of production.

4.1 Sector Profile

Around 56,000 people are directly employed in shipbuilding and repair, boat building and repair and marine equipment manufacturing in the UK. Together they contribute around £1.9bn to UK GDP, broken down as in Table 4.1. Of the 24,000 directly employed, between 15,000 and 18,000 are employed in naval shipbuilding and around 4,000 are employed in merchant shipbuilding, building 25-30 vessels per annum. Approximately 4,000 are employed in ship repair and conversion.

Employment in shipbuilding and ship repair is mostly concentrated in a small number of companies such as BAE Systems, DML, Babcock Engineering Services, Swan Hunter and VT Shipbuilding. The number of employees varies annually; at any time as many as 3,000 additional employees may be employed in ship repair and conversion on a contract basis.

Boatbuilding and leisure marine equipment manufacture is a growth sector in the UK. Although ABI figures for boatbuilding and repair show around 8,000 people, British Marine Federation (BMF) figures, which include marine electronics and equipment manufacture, indicate that the figure is closer to 16,000. Using the BMF definition, the sector contributed almost £1 billion to GDP in 2003. It is likely that there was a significant expansion in employment between 1998 and 2001. There are a number of reasons for believing this. Firstly, the total turnover of the industry increased by nearly 40% over that period. Secondly, exports rose sharply, led by powerboat manufacturing. Thirdly raw employment figures from the major boat manufacturers show increases of between 30% and 60% between 1998 and 2002. Employment is highly concentrated in a handful of large companies. 48% of employees in boatbuilding and boat repair are crafts persons and employment growth is strongest among these occupational groups.

The 2001 DTI estimate of employment by sub-sector in Marine Equipment manufacture is given in Table 4.2 on the right.

The national and regional breakdown of employment is given in Table 4.3 over.

Table 4.1 Turnover and Gross Value added in the Marine Sector

	Turnover	GVA	GVA per employee
Marine sector 35.1	£2.50bn	£0.96bn	£28,000
Shipbuilding and ship repair 35.11	£1.84bn	£0.71bn	£26,400
Boatbuilding and boat repair 35.12	£0.66bn	£0.25bn	£30,900
Marine Equipment Sector	£1.70bn	£0.90bn	£56,300
Total	£4.20bn	£1.86bn	

Table 4.2 Estimate of UK Employment in Marine Equipment Manufacture

Sub Sector	Employment
Propulsion	3,384
Accommodation	2,365
Deck/cargo equipment	1,376
Navigation/Communications	1,270
Electrical Distribution	1,250
Auxiliary equipment	1,181
Controls/monitoring	1,110
HVAC/refrigeration	1,105
Generators	912
Safety/Security	867
Coatings	779
Valves	419
Pumps	385
Cables	201
Total	16,604

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South East	According to the ABI, the South East region contains over a quarter of all shipbuilding and ship repair firms, and 17% of all employment. It has 28% of companies and 19% of employees in boatbuilding. The main firms in the region include VT, Fleet Support, A&P, Kelvin Hughes, Raymarine and Lewmar. The last three are major equipment manufacturers in boatbuilding. VT has a subsidiary, Halmatic, which is a leader in the workboat market and also heavily involved in the yacht building sector (they built the mast for Mirabella). British Maritime Technology is a major marine equipment firm.
South West	The South West accounts for 18% of firms and is the largest employer with 27% of all GB shipbuilding and ship repair workers. It has 19% of firms and 33% of employees in boatbuilding. The main firms include A&P, Pendennis, DML, Princess Yachts and Sunseeker. Major Marine equipment firms include Rolls Royce Naval Marine, Hamworthy and BMT.
Scotland	Scotland has over a hundred firms employing more than 6,000 employees. The heart of Scottish shipbuilding has traditionally been centred on the Glasgow Clyde area. The main employers are BAE Systems Marine and Ferguson. Babcock Engineering Services is a major player in ship repair. MacTaggart Scott, Thales Optronics, IMESand Marine Shield are major marine equipment firms.
East of England	The East of England has 13% of GB workplaces but only 3% of employees - it is largely characterised by smaller firms, particularly in boatbuilding. The main firms in this region include Oyster and Broom who are significant boatbuilding firms and also Trend, an important equipment manufacturer. Kelvin Hughes is one of the major marine equipment firms.
North West	In contrast, the North West is characterised by larger firms - having 7% of workplaces but 19% of employees. Major firms include BAE, North Western Shiprepairers and A&P. Boatbuilders include RFD Beaufort and Liverpool Boat Co. MAN B&W Diesel is one of the major marine equipment firms.
Yorkshire and the Humber	Yorkshire and the Humber have over 50 workplaces but only 500 employees. Both employing about 100 people, Dunstons and Mobile Marine of Hull are the largest shipping repair companies.
West Midlands	The West Midlands has a small presence in shipbuilding and ship repair, predominantly in the supply chain. The main firm in this region is Sealine who employ over 600 people in luxury boat building in Kidderminster. There are also a number of canal boat builders. FCX Truflo Marine is one of the major marine equipment firms.
London	London has 30 workplaces but a very small number of employees, as there are a number of shipbuilding company headquarters based there.
North East	8% of employees in shipbuilding and ship repair are based in around 30 workplaces in the North East. Swan Hunter and A&P Tyneside are the major firms.
Wales	Wales has a small presence predominantly in the supply chain. Companies include Linde Heavy Truck Division, Avon Inflatables, APE Fabrications, Pehrros, Holyhead Marine and Dale Sailing.
East Midlands	The East Midlands does not have any significant presence in shipbuilding. It is more active in boatbuilding. Fairline Boats is based there.
Northern Ireland	No accurate figures are available for workplaces and employees (ABI data covers Great Britain only). SEMTA has identified 5 companies, with an approximate employment of 400 including Harland and Wolff, Sea King and RFC Beaufort.

Table 4.3 Geographical Clusters in the Marine Sector

4.2 Market Trends and Sources of Competitive Advantage

4.2.1 Shipbuilding and Ship Repair

Shipbuilding in the UK has declined throughout the second half of the 20th century. Large merchant shipbuilding has largely been lost to strong, and sometimes unfair, competition. Today shipbuilding in the UK accounts for just 0.1% of world production in terms of Gross Tonnage (GT). In 2002, the industry was worth around £1.8 billion, generating around £700 million Gross Value Added (GVA). However, world shipbuilding figures are at record heights, with 1,034 new builds worldwide in 2003 being a new annual record. Gross Tonnage (GT) has increased from approximately 26 million in 1996 to over 36 million in 2003. Global demand for commercial ships is at its highest level for 30 years. In 2003 worldwide shipbuilding production grew by 9% to 22.8 million tons CGT. Japan and South Korea maintained their market share while China increased hers.

Use of Gross Tonnage as the only measure overstates the advantage of the Far East in the global market. 'Compensated Gross Tonnes' (CGT) is calculated using the tonnage of the ship and weighting for the complexity of the vessel; it offers a measure of shipyard work. The Far Eastern yards tend to concentrate on large ships, while Europe is increasingly building smaller ships with high CGT factors. To compete with the Far East, European shipbuilders need to adopt specific innovations during the concept design phase in order to establish crucial competitive advantage.

Since the UK competes in the complex ship market the main challenge is to compete with its rivals in Europe. Germany, Italy, Croatia and Poland are major players. European shipbuilding (including accession countries) accounts for 20% of the world's shipbuilding capacity. Europe has 64% of the market for complex vessels and 42% of world ship repair.

According to the leadership report produced by the European Commission, European naval yards are 'unmatched leaders in some areas such as conventional submarines and fast patrol boats' due to the coming together of technologies in a 'cross-fertilisation between naval and highly competitive merchant shipping'. After delivery, the life expectancy of a submarine or a luxury yacht is decades (anything up to 50 years) – with a regular requirement for maintenance, repair and

overhaul. The 'after sales' market is an increasingly important aspect of both ship and boat-building.

This is the context in which the increased capability developed to meet the MOD orders may allow UK yards to develop competitive advantage in some niche markets.

The MOD is a highly demanding customer. This gives yards in the UK the advantage of demonstrating that they meet the requirements of such a customer. However it also means that they incur greater costs of production through changing specifications. A recent presentation at the conference on naval construction added a customer factor on top of a complexity factor to calculate a measure of CGT for naval craft of 8.94. This compares to 0.31 for container ships.

In ship conversion the UK is competitive with approximately 19% of the world market in terms of turnover. The UK is well placed to repair ships because there are many trade routes that pass through the channel or up the east coast north of Scotland to cross the Atlantic.

The DTI Shipbuilding and Marine Industries Forum study of the international competitiveness of the industry in 2000 concluded that a sustained programme of performance improvement could deliver a globally competitive sector in the UK. Following the implementation of the Shipbuilders and Ship Repairers Association (SSA) LINK programme on business improvement techniques, overall turnover across 10 yards had increased by 40% and there had been a 25% improvement in value added per employee by 2004. This underlines the importance of skills in Business Improvement Techniques.



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4.2.2 Boatbuilding

Boatbuilding production is concentrated in Europe and the US. Italy has the world's largest boatbuilding sector, with the US second. In Europe the UK's main competitors are Italy, Germany and France. International competition is greater than ever, spurred on by the weakness of the US dollar and a number of key players pursuing a strategy of acquisition and consolidation. The industry also has to withstand the high costs of raw materials such as steel (due to increased demand in developing countries).

Between the main boat building nations there are major differences in the type of boats built, although the market trend is towards bigger and more technically advanced craft. The Dutch and Italian yards are the key competitors for boats over 24 metres in length (the 'superyacht' sector). A number of EU naval yards including VT and DML, are diversifying into this market segment. In France and the UK there is a dominance of smaller boat building. Germany, France and Italy are the main competitors in the building of sail and power craft less than 24 metres. The US remains a powerful player, with the Brunswick Group and Luhrs/Hunter organisations firmly placed in Europe as well as continuing to push into new markets such as the Middle East and South East Asia, as direct competitors.

In 2003 UK leisure boatbuilding (excluding supply chain, repair etc) accounted for approximately 14% of European workplaces, 16% of European employment and 15% of European revenues in the sector. The UK is the largest producer of inboard stern drive motorboats over 12 metres, with internationally recognised brands. Canal boats are included within this category. The 51 canal boat builders in the UK employ 350-400 people, with a turnover of £17 million per annum.

BMF has launched a series of projects on competitiveness. The first phase is a supply chain project to push skills and business improvement techniques down the supply chain and in some cases learn from suppliers who have excellent business techniques. Driven by the need to make the transition to world class producers, the leading boatbuilders realize that they can learn from sectors like automotive and aerospace, where a set of manufacturers cooperates as a group with their shared supply chains in a supplier development programme, in order to upgrade the capabilities of the entire cluster of firms.

The boatbuilders have looked at the regional breakdown of companies in their sector in order to

allow RDAs to improve results. In 2003, EEF South trained 300 Sunseeker employees in practical improvement techniques. The Shipbuilders and Shiprepairers Association, South East England Development Agency (SEEDA), and the South West Regional Development Agency (SWRDA) supported the programme. At VT Halmatic there was a 40 percent reduction in work in progress and a 32 percent increase in productivity following EEF training. However a great deal more remains to be done. Phase 2 includes participating in the Sector Skills Agreement work and collaborating with the DTI on a competitive analysis of inboard stern drive production, where UK is world leader, being conducted by KPMG. There is also a knowledge transfer project to assist companies to adopt new materials and processes.

4.2.3 Marine Equipment

The reduction in commercial shipbuilding in the UK has driven the marine equipment industry to seek alternative markets overseas. As a result it has remained one of the world leaders against strong international competition. In 2000 UK Marine Equipment manufacturers had 52% of the domestic market share and 4% of the world market. Overall productivity has increased by 10% since 1996 and, although there has been some rationalisation of the industry, the surviving companies are winning business. A competitive analysis of the UK marine equipment sector found that companies face intense international competition and in 2001 some equipment manufacturers were losing market share to overseas competitors. Some overseas customers will favour suppliers in their own country regardless of price.

The main UK markets for the marine equipment sector are the naval shipyards and exports, particularly to the Far East. DTI estimates that 62% of output is exported but companies indicate that the actual proportion may well be greater. Some companies consider the lack of a thriving home market, and over-reliance on exports (similarly to luxury yacht builders) a weakness. Yet the naval programme has the potential to provide such a home market. The superyacht marine equipment sector is a potential niche market with the prospect of higher margins for equipment that has been visually enhanced to meet customers' exacting standards.

Shipyards view suppliers as a source of expert knowledge, able to supply solutions as well as hardware. The ability to offer technical support and to provide installation services is integral to

winning sales. The increasing trend for shipyards to outsource specific aspects of their work has placed increasing demand on the sector (e.g. in the design and construction of complete bridge systems). This trend has also benefited smaller companies that have been able to set up cooperation deals with similar companies to meet this requirement. For example, there are a number of different value solutions for the major naval programmes.

However, customers have high expectations for the design capability and technical resources of UK companies and these are not always met. This indicates that design and technical skills are crucial for marine equipment companies to maintain and expand market share. To meet these challenges many companies have had an innovation agenda, to ensure they keep a technological lead over the competition. In some cases targeting niche areas offers greatest potential for growth. Examples can be found in the expanding LNG carrier market and in the response to increasingly stringent waste treatment requirements for cruise liners, warships and other craft.

4.2.4 Firm Strategy, Structure and Rivalry

Given the size of the UK marine sector in relation to world production it is worth UK companies acting as an alliance or geographical 'cluster' that nurtures a national, globally competitive sector. These might be interconnected companies, specialised suppliers, service providers, firms in related industries or associated institutions that compete but also co-operate. Acting as an alliance also provides for economies in accessing specialist suppliers. It facilitates close relationships with the training and higher education institutions including through student placements and other schemes.

In the past shipbuilding has sometimes been seen to allow internal competition to overshadow the common need to promote the UK as a centre of excellence. The long-term investment in training to develop the skilled workforce and deliver MOD contracts is more sustainable in a climate of commercial relationships that nurture a national naval sector. Opportunities for success in fulfilling MOD contracts will be enhanced by collaborative working across yards on a number of levels from design and software systems as well as scheduling production and the pooling of skilled personnel. This may become a long-term collaboration on areas of common interest as the Dutch shipyards do to good effect. This is also the case in the UK marine equipment sector where contracts and commercial relationships are often designed to be mutually advantageous.

4.2.5 Government Policy

The DTI has commissioned KPMG to carry out a Sector Competitive Analysis study that will look at the issue of government support in the luxury boatbuilding sector.

The UK Government is also assisting the marine sector by demanding advanced products in the naval programme. However it also needs to focus on the creation of specialised factors such as the education system, and strengthening national infrastructure such as road and rail links etc, as well as the financial infrastructure.

Specialised education and training programmes, university research programmes, trade association activities and the private investment of companies create a culture of innovation essential to competitive advantage. Government is promoting these through the SSA process. The strategy that is emerging from this process needs to be implemented through changes to policy and resources. One clear example raised by several companies is the need to fund training for adults.

4.3 Marine Labour Market and Workforce Development

The occupational profile of the Marine sector includes a higher proportion of craft and operator/assembler roles but a lower proportion of professional engineers than other engineering sectors. Hard-to-fill vacancies are greatest at craft level – the hardest to find skills are in engineering, electrical/electronics, welding and fabricating, as well as people with previous work experience. Metal workers, pipe workers and electrical engineers might be in short supply in the next five years. 24% of boatbuilders reported hard-to-fill vacancies in the last 12 months, particularly for carpenters, joiners and laminators. Technician posts were also hard to fill.

There are clusters of companies in the South East and South West of England and in the West Midlands where skill shortages are acute.

The four large UK luxury boat builders operate in these areas, greatly affecting their ability to compete for skilled people. In response to this, boatbuilding companies are increasing their recruitment efforts

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and are taking on less qualified and experienced staff than they would like – these people require immediate training. Where skills were not available in the local job market, the sector has begun sourcing from other European countries including Poland and Slovakia. There is now concern that poaching of skilled staff may occur if there is not a sufficient supply of skills. This may particularly affect companies in the South East, where employment is tighter and there is a concentration of both shipbuilding and boatbuilding.

The age profile of the workforce indicates that the majority of the people currently in the industry are expected to retire in the next 10-20 years. Major yacht builders have a younger profile but still need ongoing recruitment to fill skilled posts. Increases in productivity could significantly reduce recruitment needs.

Additionally, there is a pool of craft level labour that marine employers will draw on to meet the skill requirements of any particular project. These mobile contract workers are taken on for the duration of specific contracts. These workers do not benefit from any additional structured employer training. The onus is on the individual to keep their skills up to date.

4.3.1 Management and Leadership Skills

Technological changes and rapidly changing organisations are creating a need for managers to develop additional competences to meet the challenge of gaining competitive advantage. Change management skills are particularly important in order to be able to respond to fast moving developments. If there is a change in technology, e.g. in the use of composites, then companies need to develop and implement new products and processes in a matter of months. This is termed New Product and Process Development and Implementation (NPPDI). Project management skills are essential to organising resources, meeting deadlines and budgets. They are particularly important in large projects such as the naval builds.

A particular set of change management skills are needed in shipbuilding and repair due to the cyclical nature of the sector. Management needs to be effective at dealing with both downturns and upturns in market conditions; to be proactive rather than reactive in an uncertain environment. Over-reliance on short-term contracts and sub-contracting gives the shipyards a reputation for a lack of

resource planning. Manpower planning all too often becomes crisis manpower planning. If there is no continuing development of staff, a point may be reached where there is insufficient staff capability to capitalise quickly on the immediate requirements of improved market conditions and new opportunities. A lack of readiness will inevitably lead to greater difficulty when tendering for contracts.

Supply chain management is not as well developed within the marine sector as in other sectors (e.g. automotive and aerospace). This is due in part to the contract nature of work within the marine sector, where there is a tendency for supply chains to be reformulated for new projects (i.e. they are not rigid and stable networks). Supplier development is therefore restricted to the segments with more stable chains. The challenge for suppliers is to avoid the lowest common denominator approach, trying to be 'all things to all firms'. The marine sector is competing globally against other sectors for a small pool of supply chain managers with international experience. Only a small number of educational institutions, both nationally and internationally, teach supply chain management to the level and quality required by industry, and the marine sector will be competing against all other sectors for these skills.

Lean manufacturing (like supply chain management) is not as well developed within the marine sector as in other sectors. Managers may have heard the label "lean" and even introduced programmes to achieve lean operation and secured some benefits, but they do not necessarily fully understand what lean implementation really involves, and in particular their role in achieving that form of high performance working. Other sectors have initially introduced lean practices into factory environments. As shipbuilding and repair is not a factory environment, and production runs consist of a 'first of class' followed by a short series or highly customised batches (rather than mass production), the penetration and take-up of lean principles is not currently as advanced. Nevertheless, modular production in particular does lend itself to lean techniques and processes such as waste reduction. Outsourcing and 'just in time' ordering are well established in some companies.

Marine employers are implementing activities to drive costs down, that are having a direct impact on supervisors and team leaders who now have to develop management skills, following de-layering and a reduction in the number of middle managers.

Managers also need the skills to closely understand the training provision market so that they can source providers who understand their business context. They need to be ambitious about their

goals for continuous improvement and understand how workforce development can contribute to achieving this within a budget. There is a strong need for training programmes for managers to meet world standards.

4.3.2 Productivity and Competitiveness Skills

Responsibility to improve business operations clearly centres on management and the managerial skills to drive productivity are dealt with below. However there are a range of skills for all levels of the workforce that are part of a culture of continuous improvement. Taking the need to increase competitiveness as the starting point allows companies to address skills in a more strategic and focused way.

To compete globally there is a need for training in 'Lean', 'Six Sigma' and other types of business improvement techniques, new product and process development and implementation, supply chain management and project management. Multi-skilling and cross-skilling are necessary to lean production techniques and to managing skill retention. It has become well established in the marine sector and has the support of the trades unions because it increases job security. Unit accreditation of NVQs will support this development –unit accreditation of SVQs already exists in Scotland. Several companies have also highlighted the importance of people skills among managers, particularly in relation to establishing the culture of innovation throughout the business. Companies are also far more aware of the need to spread business improvement techniques through the local supply chain.

4.3.3 Technical Workforce Development

Graduates

Graduates are essential to the design process and the ability to harness and use new technological developments that are highlighted as key to competitiveness. They are also essential to the technical

customer support required by marine equipment companies. However there are not enough of these graduates and some of them do not meet the standards of education needed by employers.

Employers are frustrated by the lack of science and engineering graduates, particularly in naval architecture and in mechanical, electrical and marine engineering. Marine employers have to compete against other sectors for the best mechanical engineering graduates. Companies have highlighted the lack of a specific qualification in marine electrical engineering, and the need for a postgraduate course in Marine Safety Engineering.

They feel that the public purse provides funding for tertiary education when it should be focused on supporting the delivery of education to areas where industry is experiencing skill shortages, and areas which are important to future economic prosperity.

Like other employers, marine companies are concerned about the quality of graduates, particularly from universities with hybrid and modular degree courses. Due to the dilution of the curriculum in maths, graduates in engineering and science often lack the basic mathematical skills they need to perform their duties.

Craft

Craft skills are essential for companies to be able to innovate and produce high quality products. For several of the luxury boatbuilders, craftspersons form a majority of the workforce. More work is needed to encourage increasing numbers of young people into the industry (i.e. apprentices aged 16-24 years), update the skills of those already in the industry and attract older workers, both new to the sector and those who had worked there previously. However there are skill shortages in many craft skills.

The numbers of young people entering the sector as Apprentices has increased as yards have begun gearing up for the MoD contracts. Despite this, recent layoffs due to lack of contracts have made it difficult for companies to ensure that these young people can complete their apprenticeship.

In boatbuilding, new craft skilled jobs are being created through the adoption of innovative processes. This provides a challenge in terms of recruiting and developing people. As there is a

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shortage of skilled workers, businesses inevitably take longer to fill their vacancies. This, in turn, impacts their growth aspirations. Those that are employed have high expectations of their employers in terms of receiving formal training to achieve recognised qualifications. In a tight labour market, employers strive to meet these expectations in order to attract good staff. This activity places a substantial financial burden on the businesses concerned, especially for developing those over 30 years of age who attract no funded support for training to national standards. New Marine N/SVQs, including units on new technologies, have recently been accredited. Work is underway to incorporate BMF's boatbuilding standards into these qualifications to ensure they are fit for purpose for boatbuilders.

The concerted view of companies throughout the marine sector is that there should be more government funding available for relevant adult training in England and Northern Ireland. Funding for adults would enable a two-pronged approach encompassing both Adult and other Apprenticeships. The former reduces training lead times by 2 years. Companies would then be able to afford to train and/or up-skill adults who wish to take up, or return to, a career in marine engineering.

Development of Operators and Assemblers

Because of the recruitment difficulties that the sector faces, particularly in the South East, Basic Skills training is important. It allows companies to address a number of skill gaps and to prepare level 2 workers for training to more skilled work. Those working in semi-skilled occupations who have the aptitude to develop to Level 3 are another source of craft skills, particularly where employment rates are high. However funding for this kind of training is not standard and one company that has been commended for its achievements in training staff to gain Basic Skills has had funding withdrawn. SEMTA and Job Centre Plus work to ensure that their Advisors are well briefed on the Marine sector.

4.3.4 Manpower Planning and Recruitment

Shipbuilding

The peaks and troughs in demand for skilled labour in shipbuilding, as yards are moved into 'care and maintenance' mode or even 'mothballed' for a time, creates manpower planning and workforce development issues that are specific to shipbuilding. Experienced project teams are broken up. Skilled technicians and craft level workers are not needed for a period due to lack of orders. Some yards have to let them go but aim to recall them at a future date. Larger companies may be able to retain some skilled staff during periods when there are no orders. Different skills are needed in phases of the build. In some instances this is addressed by multi-skilling or cross-skilling so that the same workers can work on different phases and by up-skilling semi-skilled workers to create a broader pool of skills.

For these reasons, there is a high proportion of contracted labour employed in the marine sector. Given the periodic contracts, the most highly skilled workers are the first to go, and often cannot be persuaded back. This affects competitiveness. Redundancies can also occur at the lower end of the skills ladder. This is not a climate conducive to up-skilling or continuous professional development (CPD). As mentioned above, companies to find ways to keep their workforce in the 'down' part of cycle, otherwise shipbuilding will be seen as 'hire and fire' sector which will damage the image of the industry and make it unattractive for the more able candidates at all levels. Many firms in the sector have difficulties getting suitable applicants to apply. Potential applicants may not feel they will have the opportunity to meet their career aspirations. This affects the average level of skills of those coming into the sector.

The present shipbuilding programme requires considerable gearing up of capability in the naval yards and recruitment began some time ago to prepare for the peaks of production expected during 2009/10. Delays and changes in the programme can therefore be very damaging.

If the recruitment of apprentices that has taken place for the last few years could be maintained and extended to other companies it would be a significant contribution to the flow of skilled technicians and workers. However the recent redundancies in naval shipyards have set back these efforts.

Boatbuilding

Manpower planning does not present the same issues in boatbuilding. However, there are high rates of growth in production and employment in the luxury yacht sector, coupled with the need to re-skill to stay abreast of technological innovations and utilise highly skilled labour. These factors mean that companies need to plan the flow of skills and talent into the business. The location of companies in areas of high employment increases the need for planning.

A number of initiatives within the sector are designed to assist manpower planning and recruitment. However, employers still report serious problems finding enough candidates with appropriate commitment, inter-personal skills, and academic qualifications, particularly in mathematics.

This problem was particularly acute in the South East of England, probably due to greater levels of employment and the number of alternatives, e.g. the Terminal 5 project. Given these difficulties, employers appreciate support for the initiatives they take locally to improve recruitment and training. The Marine Skills Centre in Poole (with potential CoVE status) is providing high quality training designed to meet employers' needs and to ensure the development of skilled people with good career prospects. It is part of an initiative by SWRDA with support from several companies to establish three such centres. The other two are planned for Plymouth and Falmouth.

According to the SEMTA Labour Market Survey, 71% of G.B. marine employers had recruited new or replacement staff in the previous year (compared with 64% for engineering). The growth of employment in naval yards has already been described. The result is that many companies are forced to settle for applicants with slightly fewer skills than they are looking for and turning external skill shortages into internal skill gaps. Once again this reinforces the importance of funding for adult training. Companies who offer training to nationally recognised standards that allow staff to gain qualifications report less hard to fill vacancies than other companies.

The Adult Apprenticeships in England, Scotland and Wales which offer recognised training and qualifications to those beyond the age for funding through Apprenticeship and Advanced Apprenticeship schemes, would also alleviate skills shortages and gaps. These Adult schemes are

popular with workers who may not have had the opportunity to do a Modern Apprenticeship and they are popular with employers who are more confident to invest in motivated people in their 20s and 30s. This funding would also be applicable to young people who went straight from school in to university, but were unable to find employment within their degree discipline.



5 assessment of current provision of education and training

5.1 Expenditure on Further Education, Higher Education and Training

We estimate that almost £29 million per annum is being spent by companies, government and individuals in the marine sector on education and training, broken down as illustrated in table 5.1. The aim of this section is to look at the effectiveness of this expenditure and propose ways to reshape it in light of the Priority Skill Needs. There are other funds, e.g. from Research Councils, that are not included here, that would increase the figure.

44% of companies in shipbuilding and repair and 27% of companies in the boatbuilding sector, including several large organisations that account for the majority of employment, say that their training budget is due to increase. Several training providers surveyed reported that they were finding increased demand from marine employers. In Shetland, there are new programmes for engineering cadets in the merchant navy and shipping companies. One college in Scotland and another in the South West of England report that their marine courses are fully subscribed including the new provision that they have added.

The aim of the SSA is to assess the effectiveness of that expenditure in providing the skills needed and to propose, where necessary, ways to re-shape it. We have used three dimensions of people development to assess this:

- General Education - covering school to higher education
- Technical Competence - which delivers the occupational skills for the workplace
- Globally Competitive Interventions that support training and development that takes into account linkages between organisational, operational and people development to increase profitability.

Table 5.1 Estimate of UK expenditure p.a. on marine specific training and education.

Sub Sector	£m	%
Companies	10.2	35
FE funding	8.0	28
HE - Student fees	5.2	19
HE – Government contribution	5.3	19
Total	28.7	100

The following issues emerge:

5.2 General Education

School science and mathematics are not delivering the numbers, or quality, of educated young people required by industry and the economy - numbers with five good passes at GCSE are not expanding rapidly enough to meet need.

The lower quality of education for school leavers is a factor in the productivity gap between the UK and France and Germany. Although 98% of pupils in England and Wales sit Mathematics GCSE, only 53% achieve grades A-C.

Small numbers take pure science subjects but the achievement rate is very high. On the other hand, many more pupils take the double awards in science and engineering but attainment of grades A-C is far lower. Part of the explanation may be the constant changes in awards – GNVQs are being phased out this year; more than 70% of students taking VCEs in engineering and science did not get A-C grades and these are also being phased out to be replaced by vocational A levels. Employers are concerned about this constant switching, which undermines the possibility of either candidates, HEIs or employers gaining confidence in the qualification. There is also a need to address the shortage of qualified teachers in mathematics and science subjects.

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Of those taking Mathematics in England and Wales, 53% achieved at least grades A*-C, while pupils increasingly opt for the GCSE Double Award in Science for which there was a similar achievement rate. In Scotland, 60% of pupils who took Physics and Chemistry achieved Level 5, and 39% achieved Level 5 Mathematics.

Students are dropping out of both apprenticeships and degrees, often due to lack of proficiency in maths.

Employers report that candidates for apprenticeship often do not have the mathematical skills they will need to cope with their training. Even among those recruited quite a few drop out because they cannot achieve the required level of Maths. There is a relatively high level of non-completion on engineering degrees, which some believe is due to a lack of mathematical ability among students entering university. Employers find that even those who do graduate in engineering can lack basic mathematical knowledge. One employer reported having to spend time teaching electronics graduates calculus before they could perform the work required of them. The dilution of the content of maths A level is well documented, not least in the Tomlinson Review. It needs to be reversed.

Schools channel talented young people into the academic route rather than vocational routes. This increases the difficulties in manpower planning and recruitment.

The government target in England of 50% of school leavers going into HE reinforces this bias towards academia, and with fewer students taking the vocational route, this means that employers in marine find that the calibre of applicants for apprenticeships is often a problem. Even those recruited have serious difficulties coping with the engineering training they are given. One employer included 'Key Skills from Schools' as a type of training they had been unable to access.

Although they are involved in a variety of local initiatives to inspire and encourage young people to join the sector, there can sometimes be difficulties. "Many local schools are extremely reluctant to allow us to

promote apprenticeships, because they are given incentives to keep their pupils into the sixth form. Because we cannot attract the 16 year olds, we then look at 18 year olds. However having done A levels children then have aspirations that we cannot meet. "

In Scotland, where the targets for getting school leavers into HE include HNC and HND, this is not the case. The Employers Skill Survey there found that 55% of employers found school students well prepared for work.

The supply of highly numerate graduates is insufficient to meet demand from both the financial and industrial sectors.

There is a long-term trend of the numbers of engineering students falling as a proportion of the HE total, from 11.8% in 1996 to 4.6% in 2003. Approximately 300 undergraduate students per year are enrolled on a 4 year course in Naval Architecture and Marine Technology making a total cohort, at any one time, of between 1,000 and 1,200.

Overall, women constituted only 13.4% of applicants accepted onto engineering degree courses in 2003, and this percentage has remained fairly constant at around 13-14.5% since 1991.

Engineering graduates have skills that are in demand outside the engineering industry and more than three quarters are recruited into sectors outside manufacturing. There is a need to increase engineering graduate numbers and the Government target of 50% participating in higher education should be far more focused to meet industry needs. HEFCE's decision to recognise science, engineering and technology as strategic subjects is welcome. There is a need to address regional provisions of HE in engineering.

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In response to this situation, the MSSG, is strongly in favour of developing a Higher Apprenticeship for the marine sector just as employers in automotive, aerospace and electronics are doing for their sectors.

The aim of the Higher Apprenticeship programme is to increase the number of high-level engineering technicians and incorporated engineers by 1,000 per year for the engineering, manufacturing and technology sector. Clear pathways to engineering technician, incorporated and chartered status for school or college leavers, advanced apprentices, direct entry adults and adults from the workforce will be established. This will help to rectify the higher level intermediate skills shortages as well as aiming to improve the already established links between larger employers and HE/FE. It will also aim to engage SMEs in the employment and training of engineering technicians / incorporated engineers by establishing SME clusters around HE/FE and Training Provider establishments. It will also encourage the development of Foundation Degree programmes to meet learner, employer and sector needs. According to the chair of the MSSG "The ability of young people to start as craft trainees and aspire to become professional engineers is refreshing. It provides opportunities that are only limited by the trainee's ability and their tenacity to apply themselves. It will be a real boost for the industry." This is only a pilot programme and needs support from employers to be mainstreamed.

Without changes to LSC policy, this framework would still face the same restrictions as other apprenticeships i.e. the separate assessment of 5 Key Skills. Additionally, candidates over 24 would not be eligible for funding. These issues are dealt with to the right.

There are some regional and national variations in the quality of academic provision in engineering and science.

But there are no significant patterns that emerge on quality of provision in HE. Employers in the South West have raised concerns about the quality of some courses. In Scotland however engineering and marine employers are well served by higher education, with Universities in Aberdeen, Edinburgh, Glasgow and the University of the Highlands and Islands.

Higher Education in Scotland

In Scotland there were nearly 5,400 students studying Engineering disciplines in the academic year 2002-3 (including Postgraduates). 38% of all engineering students were over 25. This figure is even higher for Marine Engineering (52%). 65% of Engineering students are studying part-time, and this rises to 82% for Marine and 79% for Electrical. In line with the overall trend, however, there has been a 30% decline in the overall number studying different Engineering disciplines since 1998. Electrical and Electronic Engineering has declined the most (82%), possibly related to the slump in the electronics sector. Only Electrical Engineering (37%) has shown a significant rise.

Research and Development

There has been a decline in the amount spent on research and development, as a proportion of GDP, in the UK over the last two decades, despite increases in public expenditure. This has been largely due to a reduction in business spending on R&D. This has serious implications for UK universities and businesses because the development of new products and new processes in all fields is crucial to competitiveness. Several schemes already exist to facilitate business/academic collaboration, such as LINK and Knowledge Transfer Partnerships. In Scotland SMEs can apply to Scottish executive for funding under several schemes SMART, SPUR, and SPURplus. Scottish Enterprise also operates a scheme for large companies which can fund up to 25% of a company's R&D costs. As a consequence of the Lambert Review, which makes a number of proposals to increase the number of links, the English RDAs are putting greater emphasis on building links and forming regional clusters.

Government funding of university research departments is sometimes at odds with the needs of local business. More notice needs to be taken of those departments that are serving local and national business needs through the excellence of their teaching. As a result, SEMTA needs to ensure that it can articulate the issues and help to influence university courses and curricula. Regional clusters could also ensure that there is quality of teaching locally.

5.3 Technical Competence

Companies

Despite the emphasis placed on Management and Leadership and Productivity and Competitiveness as priority skill needs, the majority of training carried out by companies is technical workforce development. New technology training is more common among engineering manufacture companies, particularly the electronics sector companies, than in the economy as a whole, and this confirms the importance of technology in marine equipment, in shipbuilding and repair and in luxury boatbuilding where such investment is key to being globally competitive.

44% of companies surveyed in the boatbuilding sector, provided training, and 56% did not. In-house training and training provided through GTAs scored most highly in terms of quality. Among those who used external providers, only 32% say that they met business needs well or completely. The main reasons that desired training was not accessed were the lack of local availability and lack of information.

54% of the courses that boatbuilding companies were unable to access were engineering courses. This underlines the importance of the regional distribution of good quality training provision and good brokerage as well as the work by SEMTA to ensure that the marine engineering N/SVQs cover boatbuilding technologies.

Fewer than half of the companies who did provide training, accessed government or any other funding. This could be due to not meeting funding criteria e.g. for training those over 24, or short training courses to expand or update skills. Lack of information about funding criteria is another reason. For example Vendor training is increasingly common. It becomes necessary when companies invest in new plant and equipment. However, many employers do not know that it is possible to access some funding to help with the costs. Therefore expert information advice and guidance on sourcing and prioritising training that will allow companies to quickly see benefits on the bottom line would therefore be of great use.

68% of training providers surveyed say that they expect demand for engineering courses to increase. Some report that the rise in demand for marine engineering will compensate for the decline in other

areas of engineering. Additionally, there is an increased demand for marine electrical installation which at least in part reflects an increase in the number of marine apprentices. In Scotland marine work based learning and FE training rose from 284 learning outcomes in 1998-9 to 868 two years later and back to 591 in 2002-3. This probably mirrors the beginning of the naval building programme.

Courses that providers would like to be able to offer include pneumatics, polymer science and materials, GRP/FRP composites and technical/vocational courses of all types. The main barriers to providing extra courses are lack of space, and lack of sustained demand from employers.

In England the LSC "are responsible for planning and funding high-quality vocational education and training for everyone". The LSC is therefore an important ally in implementing change. Their objective is that, "by 2010, young people and adults in England have the knowledge and skills matching the best in the world and are part of a fiercely competitive workforce." 2005-6 will see a 4.3% increase in the funds available from the LSC to support training. Scottish Enterprise has policies that are more attuned to the needs of industry in several areas, as illustrated below and ELWa is looking at the Scottish experience.

Low success rate in Apprentice training

We estimate that there are about 25,000 apprentices and other recognised trainees in the engineering sector. The apprenticeships in marine engineering are new but are being well received. However, the success rate for Advanced Apprentices in England and Modern Apprentices in Wales is low (57% in 2002-3 and 44% in 2003-4) for AMAs in 2002-3 and 2003-4. The success rate for Apprenticeships in the same years was 46% and 43%. In Scotland and Northern Ireland the success rate was 67% and 65% respectively.

Failures to achieve the full Apprenticeship Framework mask the fact that candidates do gain individual credit against the components. The Framework has been set as the combination of standards needed by employers, but many candidates are failing to achieve the whole package of qualifications. In Scotland, some Core Skills (similar to Key Skills) are assessed as an integral part of the qualification and the training plans are monitored. The policy of separate assessment of Key Skills should be changed and more monitoring introduced.

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The MSSG believes that take-up and success rates can be increased by ending the separate assessment of Key Skills.

Success rates may well increase if the separate testing of Key Skills components, which is government stipulated, were removed. Success rates among apprentices are much higher in Scotland where Core Skills are assessed as an integral part of the SVQ. ELWa has adopted the Scottish example and it will be interesting to see if success rates there improve in the next few years. As LSC policy stands, separate testing of Key Skills at the relevant level, would be part of the new Higher Apprenticeship Framework. They would like to see a change in the LSC policy on this.

Pre-apprenticeship schemes, such as that run by Babcock Engineering Services, also increase retention and success rates as do better selection techniques (as demonstrated at VT). Improved information, advice and guidance could help other companies to adopt similar practices. In Scotland, monitoring contributes to the level of success. It would also be useful to do further research on the reasons for higher success rates among apprentices in Northern Ireland.

Constant re-branding is a problem

As mentioned earlier in relation to secondary education, constant re-branding of qualifications undermines their market value. Companies understand the importance of brands and are baffled by the serial re-branding. Despite using the brand name "Apprenticeship" because it is highly regarded, there seems to be little recognition of the need to build the reputation of a qualification. This re-branding does not build confidence in the frameworks, and may result in employers and candidates not regarding them in such high esteem. Most recently, for example, the English Foundation Modern Apprenticeships have become Apprenticeships and Advanced Modern Apprenticeships have become Advanced Apprenticeships, although Wales have not followed suit. Scotland meanwhile has retained the brand Modern Apprenticeship and this may contribute to the higher achievement rates there.

There is a need to fund relevant adult training

The Skill Needs Assessment has explained in detail why this is a priority. It is also highly successful. Adult Apprentice programmes have a far higher success rate - in the recent pilot at Swan Hunter (2 cohorts of 12), 100% of the Adult Apprentices achieved their goals, many in around half the time taken by younger apprentices. The scheme has ended due to withdrawal of funding.

The most widespread experience of Adult apprenticeships is in Australia, where age restrictions to apprenticeships and traineeships were removed in 1992. This rule change was not driven directly by government policy but by changes in demography. By December 2004, over 30% were aged 25-44 and a further 13% were aged over 45. According to the National Council for Vocational Education Research in Australia (NCVER) the new apprenticeships available ...now "reflect the structure of the Australian labour market better than ever before. The opening up of the system to people of all ages has not meant a reduction of opportunities for young people. It means Australia's apprenticeship system is adjusting to global changes in the nature of work and the rapid ageing of the population better than the apprenticeship systems in any other countries".

However LSC funding remains heavily weighted against apprenticeships for over 25-year-olds as illustrated in table 5.3 opposite. In England, 98.5% of LSC funding goes to under 25s, and 66% to 14-19 year olds. This proportion is the opposite of the priorities made by companies in boatbuilding where more companies accessed funding for training adults than for 14-19 year olds. Of those that accessed funding, 52% did so to fund adult up-skilling (11% of total), 19% did so to fund apprentices (4% of all) and 11% did so to fund NVQs (2% of all). This appears to support the view that training adults is a very good investment. The majority of companies in this sub-sector are small and micro companies, so it appears that funding for adults is popular with small companies. This supports the finding of the Skills Needs Analysis that companies want greater funding available for training adults.

The MSSG wants to see a step change in the LSC funding regime to provide for training adults such as the pilot scheme at Swan Hunter.

Industry is unanimous that the policy on funding for adult training (i.e. for learners aged over 24) is an obstacle and needs to be changed. However, there are some differences in support available. In Scotland Modern Apprenticeships are funded; in Wales there is limited funding for Foundation and

Table 5.3 Comparative Funding for Apprentices Aged 16-18, 19-24 and Adult

	£Max	£Min
AMA for 16-18 year old	15,338	13,448
AMA for 19-24 year old	10,649	8,759
Adult apprenticeship	3,072	1,536

Modern Apprenticeships for those over 25; however in Northern Ireland there is no Adult Apprenticeship funding. As mentioned earlier, the Higher Apprenticeship that the sector wants to develop will have separate assessment of 5 Key Skills at level 3 and will be subject to the same restrictions on adult funding. At present there is also no funding for Level 4 pathways in England. In Scotland we have already seen that 52% of those studying for a Marine Engineering degree are over 25 and many are studying part-time. 23% of those undergoing Work Based Learning (WBL) and FE training are over 25. There is also a massive increase in the number of marine engineers in WBL and FE, which probably reflects the start of the naval build programme. The decline to 591 in 2002-3 is still more than double the numbers in 1998-9.

Quality

As with the HE provision, employers have raised a number of issues of provision quality. Problems in the quality of training were reported in general skills, marine refurbishment and fitting, making boat propellers, sail-making and rigging, electrical engineering related to marine industry, ship based technical courses, corgi registered training and composites. However there are no consistent patterns. Sometimes one college has high quality in some training and poor quality in another. In these cases better links between the company and the provider could be enough to deal with the problem.

5.4 Globally Competitive Interventions/Training for Productivity and Competitiveness

Research by the EEF has shown that differences in working practices such as Lean Manufacturing and High Performance Working contribute most to the productivity gap between the UK and the US, while the productivity gap between the UK and France and Germany, is mainly due to skills, innovation and investment. In fact, working practices and investment in skills, innovation and new equipment are complementary; they reinforce each other and a failure to invest on one front could undermine improvements from investment on another. Greater investment requires more skilled people to operate and maximize the efficiency of new capital equipment. For innovation, firms need to be using the latest technology and have people with the right skills to both generate and implement innovative ideas. Technical Competence underpins Productivity and Competitiveness.

However, the current funding rules in England mean that companies have to choose between funding for Technical Workforce Development and funding for the Globally Competitive Interventions qualifications, particularly at levels 2 and 3. This needs to change to encourage companies to train in technical competence and also business performance, and this should be reviewed.

According to the Financial Times, 88% of shop floor workers in China are aware of business performance techniques. In Scotland both technical and business performance training can be funded in appropriate circumstances.

Many marine companies recognise that skill needs are changing. These changes are required in order to be able to adopt improved technology and business procedures that are currently practiced in the global marketplace. 55% of those in the boatbuilding sector who recognise skill changes say that new skills are due to new materials and processes. For the purposes of the Sector Skills Agreement, the most important companies are those who understand there will be changes and consequently plan to increase training. Other companies can, of course, come to understand the need to improve over time.

5 assessment of current provision of education and training

The question of how to turn the objective need to improve business performance into active demand for training services is dealt with in the Gap Analysis section below. To the extent that the Costed and Timed Action Plan flowing from this Agreement succeeds in increasing the demand for training business improvement, there will need to be a significant expansion of the supply of Lean Manufacturing, Six Sigma, BIT, and other business improvement courses at all levels.

5.5 Information Advice and Guidance - Benchmarking and Brokerage

Throughout this assessment we have seen the need for good information advice and guidance on training. The March 2005 DfES Skills White Paper for England and the Skills and Employment action plan for Wales identify workforce development brokerage as a gap in the business support portfolio. It recognises that brokers will need to be skilled and experienced to be effective. In the view of the MSSG, these brokers need an understanding of the best practices in the sector and how the company can measure its own performance on a basket of measures. There is a substantial international body of benchmarking in shipbuilding that demonstrates irrefutably that productivity increases as companies adopt better practices. However, companies need to benchmark themselves in order to identify the key areas in which improvement can measurably enhance the bottom line. No such benchmarking has yet been done in boatbuilding, although the forthcoming work by KPMG for DTI will provide information on competitiveness.

The view of employers from the automotive, aerospace and electronic sectors is that the brokerage system should be developed as a national service, albeit one that is designed to be delivered in a single company. A business analyst, who has generic business knowledge, would be able to work with a company to define an improvement strategy. The business analyst would then be able to call upon specialists (e.g. productivity, marketing, occupational skills etc) from the brokerage service to help the organisation deliver the strategy. Alternatively, a company should be able to request support from a particular specialist activity, e.g. productivity, and while that specialist is on site, working on the company issues, he/she should also be capable of recognising other key areas where improvement is required and introduce another specialist from the brokerage into the company to deal with other issues.

If companies can get a business expert that will come to them, help to identify business improvements and prioritise training that will give results quickly, then it should be possible to overcome many of the barriers to training that companies perceive. Coupled with the commercial pressure to train coming through from their customers, as discussed in the Gap Analysis, this could qualitatively move forward the demand for training.



This section looks at the nature of the gaps between skill needs and training provisions. It aims to inform the kinds of actions that need to be taken and by whom to get the right results for the sector.

6.1 Future Demand for Skills

In order to understand the size and scope of the action that needs to be taken, we have made some projections for significant shifts in future employment in the sector.

Naval Shipyards

We estimate that 4,680 employees are aged 50 and over, (680 of them aged over 60). Including a small allowance for attrition of other kinds, we can say that the replacement demand over the next fifteen years is around 5,000 or 300-350 per annum. On top of this there is the need to expand employment by some 4,000-4,500 by the end of 2007. The gestation period for different skills varies greatly. On average, it takes three years to produce a graduate or to train an apprentice to become productive and two years to train an adult apprentice (as some yards have been doing). Less complex skills such as rigging and scaffolding take less time and are more generic. An approximation of the naval yards' required recruitment for the MoD builds is

shown below. This clearly demonstrates the scale of recruitment and or productivity improvement needed. Depending on the schedule, demand for skilled staff in the naval yards could be as many as 5,500 between now and 2007.

Based on a number of assumptions made explicit in the full report, Table 6.1 gives the current employment on the MoD build programme, the likely jump as CVF (Carrier Vessel of the Future) passes the main gate at the end of 2007 and the date and volume of peak demand for each skill.

Individual companies will know how the table would look for them but they need the lead time to ensure that the skilled people are in place. Figures for FE and Work Based Learning in Scottish FEFC report 2005, demonstrate that the system has been gearing up to provide the skills needed, but there have recently been redundancies as contracts have not yet been allocated. Actual recruitment in the sector has averaged 950 per annum for the last three years - this is equivalent to 10% of the direct head count in the naval yards. According to the report by Rand for the Defence Procurement Agency, the yards can effectively assimilate around 8% new staff each year.

Significant increases the levels of employment in boatbuilding will be centred on the major boat builders and, to a lesser degree, their supply chain. Estimates from the sector are shown in Table 6.2. The age profile of the workforce here is more youthful than in ships. Replacement demand is therefore likely to be less important than in shipbuilding and repair over the next decade, but still requires continuous recruitment and training. As described in the Skills Needs Assessment, employers are recruiting skilled workers from Central and Eastern Europe to meet shortages.

Table 6.1 Summary of estimated employment on naval new build programme

Skill	Q 2004	CVF ⁺ Start – Average Level During Q1-Q4 2008	Size of Increase	Overall Peak 2004-2015	Date of Overall Peak
Metal workers	1,003	2,647	1,644	2,844	Q4 2008
Pipe workers	443	663	220	679	Q1 2008
Fitters	11	298	287	416	Q4 2010
Electricians	286	1,173	887	1,272	Q2 2010
Woodworkers	18	184	166	235	Q4 2010
Services	281	694	413	737	Q2 2010
Others*	338	635	297	671	Q4 2010
Total	2,380	6,293	3,913		

* This includes naval architects

+ Carrier Vessel of the Future

NB figures do not include Barrow

6 gap analysis

Table 6.2 Major boat builders

Occupational Category	Empt 2004	Change on 2004	Empt Estimate 2014
Managers	742	+5%	779
Professionals/Engineers	635	+5%	667
Associate Professionals/Technicians	410	+15%	472
Supervisors/ Team Leaders & Craft	4,617	+20%	5,540
Operators	1,680	+10%	1,848
Admin/Clerical	576	+5%	605
Sales and customer Services	341	+5%	358
Total	9,000	+15%	10,270

6.2 Regional and National Dimensions

The availability of people able to be trained to meet the demand for skills varies between nations and regions and also within regions. The Marine Gap Analysis includes the employment rates by region and nation, including the range between the highest and lowest rates by local area., Taken together with the geographical breakdown of workplaces and employment given in the Skill Needs Assessment, this should enable companies and stakeholders to take appropriate action.

SEMTA's research does not reveal a clear picture of significant regional or national differences in the market mismatches. However, in recognition that the Sector Skills Agreement delivery and implementation needs to take account of variations in regional or national make up and be placed within the specific context of a region, we would refer stakeholders to a range of resources. The Future Skills Scotland and Future Skills Wales websites have many documents providing labour market projections and regional labour market information that are of great use to stakeholders¹. SEMTA has also recently given presentations on the projected skill needs for the naval build programme to two meetings in Scotland. In England SEMTA is also piloting a Skills Balance Sheet project with one LSC. The differences based on policy have been included in section 5 above. These do show clear national patterns.

6.3 Nature of the Gaps and Mismatches

In line with SSDA guidance, the gaps are described as either 'Market' or 'Institutional'. These categories are relevant to the type of action that needs to be taken to meet them.

- Market gaps are quantitative mismatches between supply and demand because of poor signalling or sudden movements. They iron themselves out – classically, a growth sector will exhibit a skills shortage because growth in demand for goods and services is not anticipated within the labour market; demand then pulls supply after it.
- Institutional weaknesses relate to qualitative mismatches, sustained because of structural barriers. This can occur, for example, because of regulations or cultural norms hindering changes in behaviour.

Most of the gaps have elements of both. The issues affecting both Management and Leadership Skills and Productivity and Competitiveness Skills are largely, though not exclusively, 'Market Gaps.' Those affecting Technical Workforce Development are often linked to government policy in education and training and stem from 'Institutional Weaknesses' as well as some market mismatches.

Because the Action Plan will be set of mutually reinforcing measures, by a range of stakeholders, at both market and policy levels, and adapted to regional needs that are derived from close consultation, it can potentially be a very powerful engine for improvement.

6.4 Market Mismatches

Overall 64% of training providers, surveyed by SEMTA, say that they have excess capacity and capability i.e. that there are other courses they could provide, if there was demand. 48% have existing courses under threat from lack of demand, however 44% have demand for courses that they cannot provide. IT specialist courses feature strongly, including CAD, CAM, 3D modelling and CNC programming, as well as business improvement courses. We've noted earlier that providers would like to be able to offer courses in pneumatics, polymer science and materials, GRP/FRP composites and technical/vocational courses of all types. The main barriers to providing extra courses are lack of space, and lack of sustained demand from employers.

Less than half of employers find that the training available meets their business needs well or completely.

¹ e.g. Dickerson, Jones and Wilson 2004 Labour market projections 2003-8: technical report; Scottish Enterprise Grampian 2004 Employment forecasts for North East Scotland; Percy SLIMS 2004 Transformation of the West of Scotland Economy.

However some sources of provision, notably private and in house, score more highly. There is, therefore, a significant amount of mismatch between the kind of training that businesses are demanding and that which is being provided. Industry must work with FE and HE to provide the foundation of practical and technical skills employees need to develop successfully.

The main mismatch is the great need for Productivity and Competitiveness that emerges from the Skill Needs Assessment and the low levels of training being accessed on this. The market mechanisms to create demand are still undeveloped and this is one of the central themes of the Scope for Collaborative Action.

Along with in-house training by companies and courses offered by private training companies, FE provision should make a contribution to up-skilling on the key productivity and competitiveness themes within the sector, i.e. lean manufacturing/continuous improvement, supply chain management and new product and process development and introduction. This will require a substantial increase in the capability of FE providers and there is, at present no sustained demand. However, the current funding regime means that companies have to choose between funding for Technical Workforce Development and funding for the Globally Competitive Interventions qualifications, particularly at levels 2 and 3 (and SCQF levels 5 and 6). Below we look at the market mechanisms that can be operated to help turn need into demand.

6.5 Institutional Weaknesses

In section 5 we have looked at a number of gaps in the systems of general education, particularly the numbers and quality of knowledge of young people in school and higher education. They vary by nation, as described. All of these have a strong institutional component, because they require national governments' collaboration with other bodies in order to remove them. Taken together these issues represent a serious threat to national and sectoral growth and innovation.

In England crude targets such as 50% of young people to gain a degree, regardless of subject, are an obstacle. Such policies have contributed to a dilution of curricula, and the growth of hybrid degrees that enable such targets to be met by attracting students. At the same time world-class degree courses are closed on the grounds that they are too expensive to run. Schools are also given incentives to keep students on into sixth form and this reinforces the bias that is strangling the supply of talented young people to industry, particularly young people with intermediate skills.

Public expenditure on training is almost exclusively directed to the 16-24 age range of certificated programmes that tend to be delivered over a longer period of time and a considerable part of the expenditure is for young people who have not yet entered the workforce. It is directed to training where there

are considerable rates of drop out and failure to achieve the full award. Industry purchases training across a wide range of activity, much of which is job specific and ranges from short to long term programmes across the age profile of the workforce and predominantly delivered on site. Regulations on the funding of relevant adult training in England need to be changed. Funding also needs to be available for short courses to be able to improve skills and use new equipment and processes. Employers think that better returns can be achieved from combining public and private funding.

The Higher Apprenticeships that are being developed to address the ongoing decline in the numbers of professional engineers by creating a clear vocational pathway through to incorporated status are very welcome. Nevertheless, the positive impact of such a framework will be limited if the separate testing of Key Skills and the restriction of funding for those over 25, which affects all Apprenticeship Frameworks in England, is not changed.

6.6 Gaps and Potential Actions

The table over lists the priorities that have been identified in the Skills Needs Assessment and indicates the nature of each gap. Based on this, the Scope for Collaborative Action table that forms the second part of this document is a first attempt to say what kind of action is needed, by whom, over what timescale, and with what objective.

6.7 How Action on the Priorities Will Move the Situation Forward

Turning need into demand

The heart of the DfES Skills Strategy, the Scottish Executive's Framework for Economic Development and the Welsh Assembly's Economic Development Strategy 'A Winning Wales' and 'Wales a Vibrant Economy' are turning the objective need for the skills that underpin productivity and global competitiveness into an active demand for training. UK national governments' policies on skills will be effective if they understand, and work with, the drivers that lead companies to develop their workforce.

The ability of the market to resolve the mismatches over time, and provide training to underpin competitiveness and future prosperity, is strongly affected by the fact that public training provision responds

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Management and Leadership		Productivity and Competitiveness	
Priority Issue	Gap	Priority Issue	Gap
(i) Management Development	Market, co-incident	(i) Management Development	Market, co-incident
(ii) Workforce Development Planning Skills	Market, co-incident	(ii) Workforce Development Planning Skills	Market, co-incident
(iii) People Skills among Managers	Market, co-incident	(iii) New Product and Process Implementation	Market, co-incident and Institutional, sustained
(iv) Supervisors and Team Leaders need management skills	Market, co-incident		

Technical Workforce Development	
Priority Issue	Gap
(i) Falling number of graduates in naval architecture and in mechanical, electrical and marine engineering	Institutional, sustained and market, co-incident
(ii) Graduates able to use new technologies for cutting edge design and processes	Institutional, sustained and market, co-incident
(iii) There are no qualifications in Marine Surveying within UK qualifications frameworks	Institutional, sustained and market, co-incident
(iv) Improve craft supply at level 3 through recruitment and up-skilling of current workforce	Institutional, sustained and market, co-incident
(v) Training for Multi-skilling and Cross-skilling	Institutional, sustained and market, co-incident
(vi) In Boatbuilding, new craft skilled jobs are being created through the adoption of innovative techniques	Institutional, sustained and market, co-incident
(vii) Skills shortages and gaps in specific trades impact on business development	Market, co-incident
(viii) Self led Teams creates the need for IT skills among crafts people	Market, co-incident
(vx) Basic Skills (Skills for Life) for new recruits to allow development	Institutional, sustained and market-coincident
(x) Up-skilling from Level 2 to Level 3	

Workforce Planning and Recruitment	
Priority Issue	Gap
(i) Candidates well-equipped with knowledge of mathematics	Institutional, sustained
(ii) Peaks and troughs in demand for skills in shipbuilding	Institutional, sustained and market, co-incident
(iii) High rates of growth in luxury yachtbuilding requires planned supply of high quality skills	Market, co-incident

Table 6.3 Nature of Gaps and Priority Skills Needs

to pressure from its customers – the UK national governments and fee paying students. This pressure is not the same as that from industry. A sample of 25 training providers showed that 70% of their income is from Government and 22% from companies.

Income from UK national governments' funding clearly has a major impact and governments' policy can act as an obstacle to overcoming the gaps or as a facilitator in closing them. The message of industry expressed in the Skills Needs Analyses (SNAs) is universal. Employers perceive that public funding is being spent in a way and in areas that too often do not meet the needs of a globally competitive economy and thus should be changed in the ways proposed. The SSA provides an opportunity to affect changes in the pattern of governments' funding and increase the return on the investment of public money.

Achieving business improvements by deploying the business drivers that lead companies to invest, innovate and develop their workforce

Wherever companies are exposed to pressures from their customers to improve, they have a commercial need to invest and train. They are then far more likely to seek information, advice, guidance and funding to overcome the barriers and access training to develop their workforce. The policies to facilitate that demand need to be in place.

Some companies in all parts of the sector compete globally and/or operate in more than one country. These organisations pass on the pressures of global competition to their supplier companies by demanding that they achieve certain standards of quality cost and delivery (QCD). These standards include the need to measure supplier performance and help underperforming companies to improve. The need to adopt modern manufacturing techniques is thereby pushed down the supply chain to smaller companies, who are then under commercial pressure to invest and train, in order to meet their customers' standards.

The operation of market pressures through the supply chain will increase as business improvement skills expand. Governments' policies should be designed to encourage training in business improvement at all levels, and also support companies who have taken the commercial decision to invest and train as a result of market pressures. The changes in policy proposed in this report, alongside an effective brokerage system staffed by business analysts, are important elements of a strategy to raise employer demand, improve skill use and deployment and ensure responsive supply-side activity.

Examples of best practice from industries, in which up-skilling has led to competitive improvement, can be used to build confidence and encourage companies to carry out further training. Typical examples of the impact of such activity are:

- Management training facilitates other business improvements.
- Training in sourcing and procurement has a substantial and rapid payback.
- Specialist ICT training in the use of new equipment and techniques allows companies to reap the benefits of investment and see the result on the bottom line.

The Marine SSG, in line with Automotive, Aerospace and Electronics SSGs, has prioritised Management and Leadership and Productivity and Competitiveness skills as essential to their sector. The initiatives being taken in the marine sector to improve business performance through the supply chain are reported in the Skill Needs Assessment and the main providers of business improvement in marine are given in the Assessment of Training Provision.

The automotive industry has longstanding experience of implementing training in these skills. Employers in automotive have prioritised a limited number of National Occupational Standards and related N/SVOs that support the business improvement they need. It is therefore useful for marine employers to be aware of these and decide how they wish to take forward standards for the sector. They are included in the full Marine Gap Analysis document.



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Training Provision is a High Value Added Service

As already recognised, the link between skills, productivity, competitiveness and profitability is strong and as such, investment in skills must be seen as a high value added activity. Companies want to purchase training that has a strong and proven track record. The constant re-branding of public sector training provision is detrimental to building up a track record and the public sector cannot afford to ignore this.

Companies themselves are making choices about who will be trained in what and when and sometimes these choices are based on inadequate information from internal and external sources. The brokerage envisaged in the recent 'Skills Strategies Across the UK' needs to directly involve industry experts. The initial point of contact with a firm - when the point of intervention for any business process development is under consideration - is a critical and high risk moment.

In South East England the Marine Engineering and Manufacturing Skills Partnership offers a training brokerage service, working with companies to assess their training needs. A team of advisors visit companies to help put together a training programme, ensuring value for money and sustainable training solutions. In Scotland, Business Gateway offers a service of specially trained Business Advisers who go into companies and can refer companies to specialist teams to improve performance.

The MSSG wants to establish and monitor the standards that need to be met in order to remain internationally competitive. This would allow companies not only to determine the gap that the UK marine sector needs to bridge, in a form that is easily digestible for senior decision makers, but also to measure the returns on training investment.

The Group wishes to establish by how much improved productivity and competitiveness would enable the UK marine sector to increase its market share; approximately how much this would add to UK Gross Value Added (GVA) and how many jobs will be created or maintained.

Employers have already begun to organise their support for taking forward the priority issues into actions under three headings:

i. Leadership

- Those actions associated with turning need into demand
- Support increased employer demand for training through the supply chain
- Help to develop FE to deliver high quality technical and productivity training

ii. Technical Support

- Making available industry experts for the development of National Occupational Standards that support a suite of qualifications and a network of provision in technical skills and business improvement

iii. National Strategies

- To develop national strategies to deliver the actions in response to the priority issues

The actions that have been included in the Scope for Collaborative Action have clear and specific goals to address the weaknesses laid out and to move things forward in the short, medium and long term. These actions are designed to:

- Build the capacity and capability of the provider network to keep abreast of emerging issues and to share good practice
- Ensure that information, advice and guidance provided externally about the provision network, is fit for purpose, up to date and being provided by competent people.
- Develop products and services that deliver flexibility based on an appropriate mix of bite size and large scheduled training interventions.

Employers have contributed a great deal of time and value to developing this draft agreement. They are seeking qualitative changes from governments and other stakeholders to ensure a step change in education and training, so that young people and adults in the UK have the world class skills essential to future economic prosperity.

Actions agreed with Delivery Partners across the UK are detailed in Section 7 - Marine UK Action Plans (available separately)

For further information please contact Lynn Tomkins, Director of UK Operations at our Northern Office

ENGLAND

Northern Office

Wynyard Park House
Wynyard Park
Billingham
TS22 5TB

Tel: 01740 627000
Fax: 01740 644799
www.semta.org.uk

Head Office

14 Upton Road
Watford
WD18 0JT

Tel: 01923 238441
Fax: 01923 256086

Westminster Office

22 Old Queen Street
London
SW1H 9HP

Tel: 0207 222 0464
Fax: 0207 222 3004

SCOTLAND

Glasgow Office

105 West George Street
Glasgow
G2 1QL

Tel: 0141 847 0977
Fax: 0141 847 0080

WALES

Pontypridd Office

QED Centre
Main Avenue
Treforest Estate
Pontypridd
Rhondda Cynon Taff
CF37 5YR

Tel: 01443 842555
Fax: 01443 842811

NORTHERN IRELAND

Engineering Training
Council (NI)
Interpoint
20-24 York Street
Belfast
BT15 1AQ

Tel: 02890 329878
Fax: 02890 310301
www.etcni.org.uk

Contact Details