



Confederation of Indian Industry



India-UK Partnerships in Manufacturing: Roadmap ahead

"A joint report by the Confederation of Indian Industry and University College London"

— Supported by —





India-UK Partnership in
Manufacturing: Research Board



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The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the growth of industry in India, partnering industry and government alike through advisory and consultative processes. CII catalyses change by working closely with government on policy issues, enhancing efficiency, competitiveness and expanding business opportunities for industry through a range of specialised services and global linkages. It also provides a platform for sectoral consensus building and networking. Major emphasis is laid on projecting a positive image of business, assisting industry to identify and execute corporate citizenship programmes.

CII considers manufacturing as a key sector of growth and works in various sectors and sub-sectors of manufacturing. CII Manufacturing Council has set up a vision to create 100 million additional jobs in manufacturing by 2025 and facilitating an increase of the manufacturing sector contribution to the GDP to 25% by 2025.

As a part of this aspiration, CII has been working on several policy interventions, industry outlook and has taken initiatives such as Green Manufacturing and clean technologies, etc to achieve the set aspiration.



Mr. Chandrajit Banerjee is the Director General of Confederation of Indian Industry (CII). He has been with the CII for 22 years and has been the Director General, CII since May 2008.

As Director General, he is responsible for overall operations of CII. Prior to his appointment as Director General, he has held several senior positions over the last many years in CII. Mr Banerjee has been responsible for important areas of work including the Sectoral Verticals in the Manufacturing, Services, Agriculture and Life Sciences Sectors and the SMEs. He has led key policy work of CII in the areas of Economic Policy, Financial Services and Corporate Governance (he was also the Executive Director of the National Foundation of Corporate Governance -NFCG, an organization set up by the Ministry of Company Affairs, Government of India). For an year he was in Bangalore to initiate the Centre of Excellence of the Indian Machine Tool Manufacturers' Association (IMTMA), which is a state-of-the-art centre for training, conventions and trade fairs.

Mr. Banerjee has been honored with the China-India Friendship Award by the Chinese Premier Wen Jiabao on 15 December 2010 for his contributions towards the development of bilateral ties between India and China.

University College London (UCL)



UCL was founded in 1826 and is one of the world's leading universities consistently ranked in the global top 10. With an annual turnover exceeding £750 million, it aims to bring its power in research and teaching to address issues of global importance ranging from global health through to sustainable cities. A key part of its mission involves creating a culture of enterprise and innovation in its staff and students alike and through its commercial arm, UCL business (UCLB) has commercialised a range of UCL IP through spin out companies, strategic partnerships and inward investment.



Professor Michael Worton is Vice-Provost (Academic and International) at UCL and oversees UCL's International developments including its current activities in Qatar, Australia and Kazakhstan. He is also Higher Education Advisor to the British Council. He was a founding member of the Arts and Humanities Research Board and also sits on advisory committees of the French Research Council (FWF) and the Austrian Research Council (ANR). His research focuses on 20th and 21st century European literature and on aspects of critical theory, feminism, gender politics, and painting and photography. He has published 10 books and more than 70 articles and chapters in books. He is an Officier of the Ordre des Palmes Académiques and in 2009 was awarded the Medal of Honoured Worker in Higher Education of the Republic of Kazakhstan.



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Executive Summary

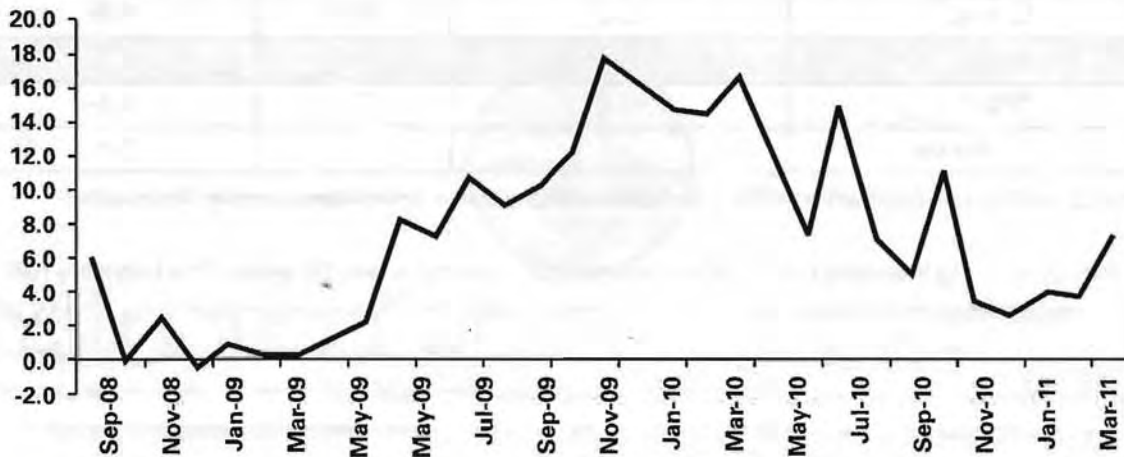
This roadmap highlights the strengths, opportunities and challenges in manufacturing in India and the UK and the important contribution that manufacturing plays in both economies. In a globally competitive environment, bilateral and multilateral partnerships are essential to maximise success, and we believe that by harnessing cross-sectoral involvement through universities, SMEs and larger manufacturing companies in both India and the UK, the entire sector will achieve growth through innovation and will continue to be an essential component of the sustainable economic growth required by both India and the UK.

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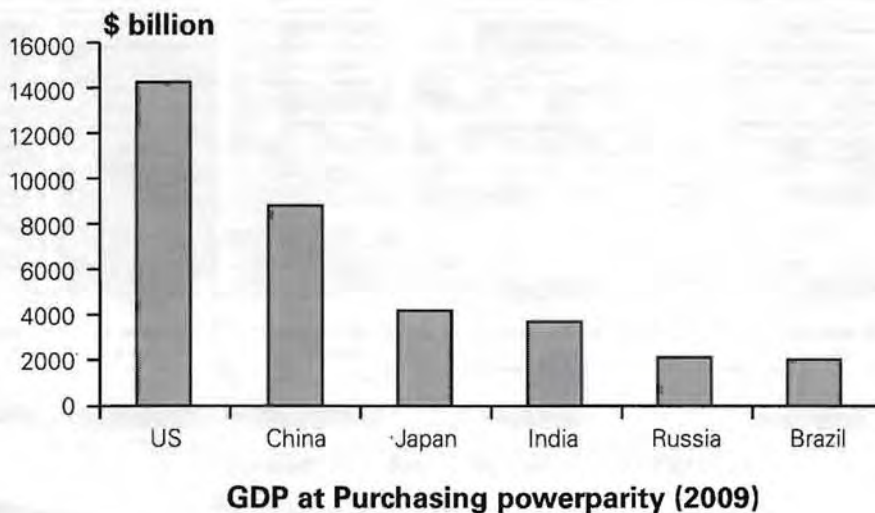
MANUFACTURING - THE INDIAN PERSPECTIVE

Indian manufacturing over the past decade has grown at a robust rate and is also considered to be one of the best performing manufacturing economies. It grew at an unprecedented average rate of 11.5% in the three years before the global economic crisis hit the world. However, the global economic slowdown led to a drop in the rate of growth for 2008-2009 to 4%. Industrial growth exceeded 10% in 2009-10 but has become more volatile in the current year.



Index of Industrial Production (IIP) growth

India is presently the 4th largest economy of the world (in PPP terms) and is one of the fastest growing globally, second only to China, making it one of the favored destinations for investment.



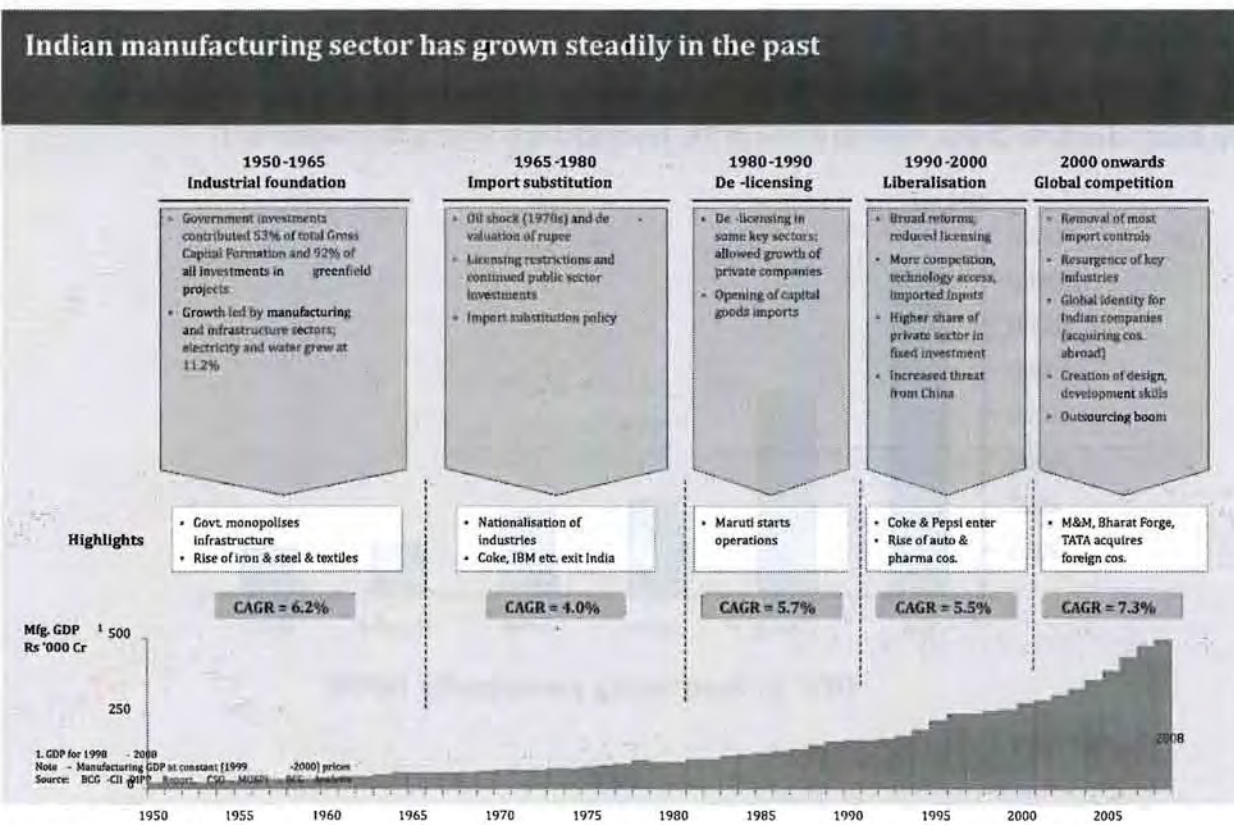
Source: World Bank

Indian manufacturing is a vital aspect of the economy contributing about 16% to the nation's GDP, a significant 50% to the country's total exports and it gives employment to 12% of the total workforce.

Economies	2009 (%)	2010 (%)	Projections (%) 2011
World	-0.5	5.0	4.4
USA	-2.6	2.6	2.3
UK	-4.9	1.3	1.7
France	-2.5	1.5	1.8
Germany	-4.7	3.5	2.5
Japan	-6.3	3.9	1.4
China	9.2	10.3	9.6
India	5.8	10.4	8.2
Brazil	-0.6	7.5	4.5
South Africa	-1.8	3.0	3.5

Actual growth or projected growth (2011) in GDP in various national economies. Source: IMF

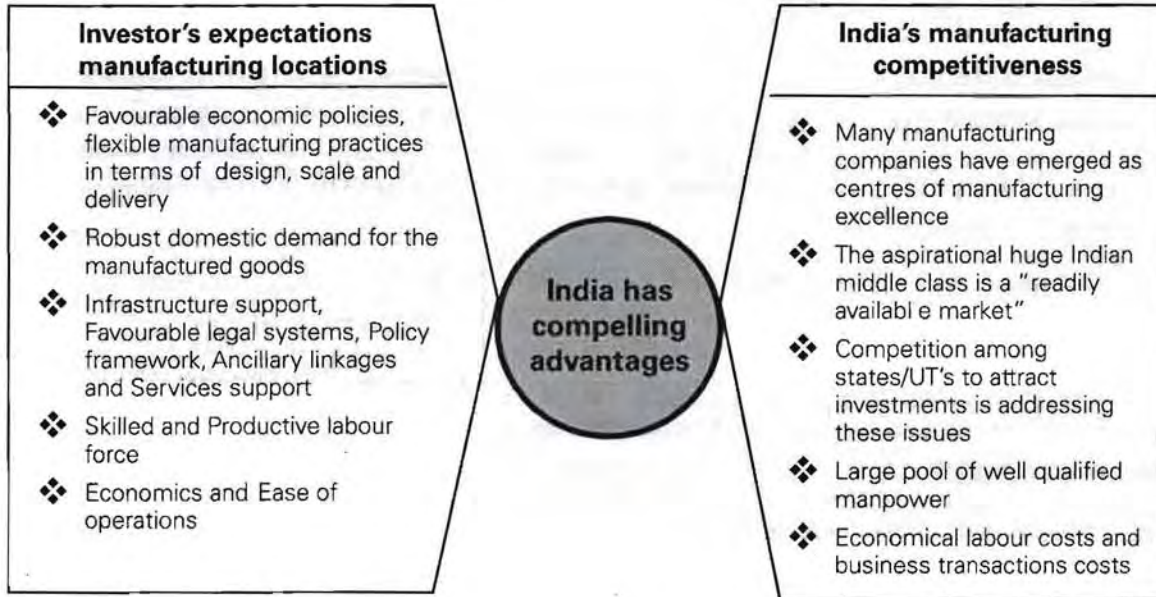
The Indian manufacturing industry has evolved dramatically over the last 60 years. The industry has moved from a highly regulated and licensed sector in the 1950s-1960s to the licensed-permit raj phase between 1965-1980 before adopting the liberalization path in the early 1990s. Since liberalization, there has been an opening up of industry to global markets and India has emerged as one of the most competitive manufacturing economies globally. The graphic below summarises Indian manufacturing evolution since 1950. (this might be difficult to read so we must watch out for this in the production)



Source: CII-BCG Report

India's attractiveness as a Manufacturing Destination

India is an attractive destination for manufacturing today due to its enabling policy environment, favorable demographics, competence with respect to quality & productivity, and domestic demand as depicted below.



India is poised to be the world's major global manufacturing hub in the near future, as is evidenced by the advent of foreign companies setting up business units in India either through joint ventures (JV) or M&As in major sectors such as the automotive area, infrastructure, consumer electronics, healthcare & pharmaceuticals, telecoms, etc.

Some of the major foreign players of these sectors are summarised in the table below:

Sector	Major Players
Automotive	General Motors, Toyota, Ford, Hyundai, Honda, Maruti Suzuki, Mercedes, Volkswagen, BMW, Renault Nissan
IT and Ite's	Microsoft, IBM, HP, Dell, EDS, Cap Gemini, Accenture, Oracle, SAP, etc.
Infrastructure	Widmann AG, DSC, Dyckerhoff, Mitsubishi, Corporation, Siemens, Alstom, Toshiba, Kawasaki, Terry, Farrell and Partners, Von, Gerkan, Marg and Partner, Aedas Ltd, Hellmuth, etc.
Pharma	GlaxoSmithKline, Novartis, Pfizer, Wyeth, Abbott, Astrazeneca, Aventis
Telecom	Vodafone, Flextronics, Nokia, Motorola, Samsung, Alcatel-Lucent, Virgin Mobile, Maxis, etc.
Electronics	LG, Samsung, Nokia, Sony,

Investment by Top UK Companies

Indian Company	Foreign Collaborator	Sectors
Cairn (I) Ltd.	Cairn UK Holding U.K.	Other Services
Castrol India Ltd	Castrol Ltd	Fuel (power & oil refinery)
Himachal Futuristic Communication Ltd	Ecom Communication Ltd.	Electrical equipment (including computer software & electronics)
Gujarat Powergen Energy Corporation Ltd	Powergen U.K. Plc	Fuel (power & oil refinery)
Tata Teleservices Ltd.	Hughes Electronics	Telecommunication (cellular mobile/basic telephone corporation services)

Policy Environment

The government has also played a major and crucial role in boosting Indian manufacturing growth. The Indian government sees a central role for manufacturing led industrial development as its part of overall growth strategy for the economy. The manufacturing contribution to Indian GDP has hovered around 15-16% for quite some time and realizing this, the Indian Government has signalled its desire to see the contribution of manufacturing to GDP rise to 25%.

Over the years, the Indian government has taken various initiatives to facilitate the growth of the manufacturing sector recognizing that manufacturing would play a key role in ensuring equitable and inclusive economic growth.

The National Manufacturing Policy, which was recently approved in principle by the Prime Minister of India, is set to achieve the aspirations of the government by 2025. This proposed National Manufacturing Policy aims to simplify and rationalize regulations, clearance and approval processes. Some key features of the policy will provide progressive exit mechanisms, incentivization for up-grading and developing technology, mechanisms for proper industrial training and up-skilling with a focus on building capacity for micro, small & medium enterprise through the identification focus sectors and through establishing National Investment and Manufacturing Zones etc.

The Foreign Direct Investment (FDI) norms in India have also been liberalised over recent years. 100% FDI in almost all manufacturing sectors is allowed with the exception of a strategic sector such as defence. Significantly, there have been indications recently that the Government of India is also considering increasing the percentage of FDI in the defence sector. With the liberalization of FDI, India has witnessed investments across the globe with companies such as Honda and Toyota establishing manufacturing plants in India with investments of about US\$205.25 million and US\$680 million respectively since 2010. Apart from the automotive sector, major sectors inviting investment in India include IT, electronics and electronic hardware, pharmaceuticals and infrastructure.

Quality and Productivity

India has gained pre-eminence and made significant achievements in the manufacturing sector over the past decade in terms of quality, productivity and innovation. Recognizing that productivity is a key driver of cost competitiveness, Indian companies have made major strides in implementing Kaizen, Just in time (JIT), Total Quality Management (TQM) etc to enhance their productivity and competitiveness.

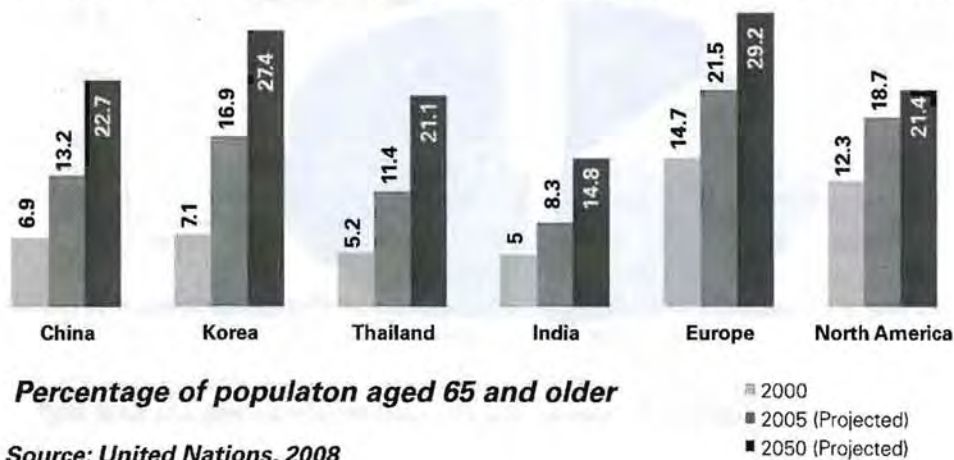
India has the largest number of companies that have been recognized for excellence in quality. As many as 21 companies have received Deming Excellence awards, the highest in any country after Japan, while 153 companies have achieved a Total Productive Maintenance (TPM) Excellence Award for their total productivity management practices by the Japan Institute of Plant Maintenance (JIPM) committee.

India has also made great advances in the field of research & development and innovation. A good example is the TATA Nano, the car with the lowest price in the world at Rs 1 lakh (US \$2,200). This breakthrough innovation is changing the entire course of automobile manufacturing across the globe, with major automakers now planning to manufacture small budget cars. It is a product that has demonstrated to the world India's technological, intellectual and entrepreneurial abilities. It is not a glorified version of the auto rickshaw or the two-wheeler but a 4 door, four-wheeled car, powered by a 623 cc engine, with four speed manual transmission meeting all safety and environment norms; it has met the most stringent safety tests and is Euro IV compliant. But, of course, India needs to further strengthen its ecosystem for innovation and R&D in the country.

There are approximately 500 foreign R&D centers in India. Some of the major sectors attracting high R&D in India are pharma, defence, automotive, petroleum and chemicals, ICT hardware and biotechnology. Companies from all over the world have invested in R&D in India and have set up R&D establishments in India.

India's Demographic Dividend

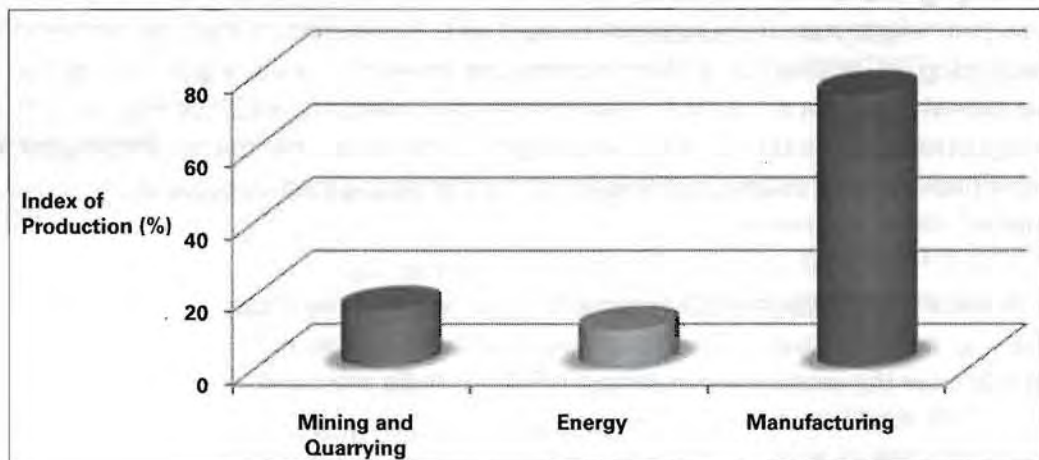
India enjoys the demographic advantages of being one of the youngest nations in the world with 45% of its population in the age bracket of 20-40 years of age and 60% of its population in the working group category, as compared to countries such as China and France with 42% and 36% in this category respectively.



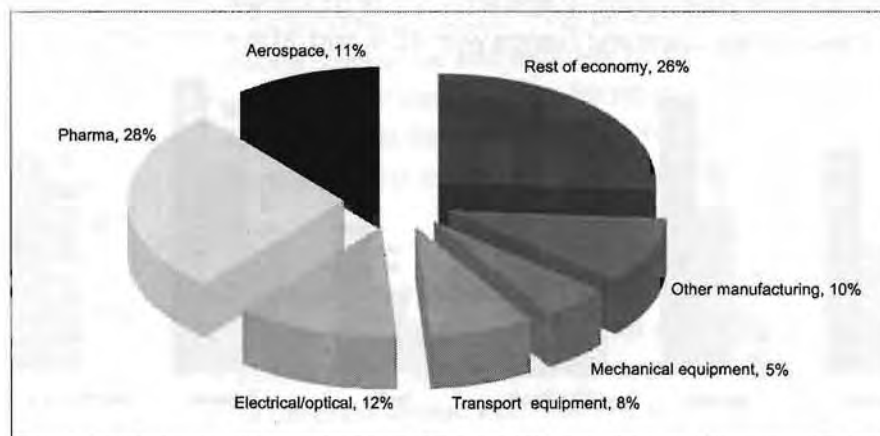
India, by the year 2020, will witness an expansion in the working population of about 3%, adding a workforce of 47 million people creating an abundant supply of local skilled and educated talent.

MANUFACTURING - THE UK PERSPECTIVE

The UK manufacturing industry generates approximately £140 billion per year to the economy and remains key to the current and future success of the UK jobs market. This statement may come as a surprise to some readers, as manufacturing is frequently portrayed by the press and other quarters as a sector that has only a minor role to play in the UK economy or one that remains in a perilous state of decline. While it is true that over recent years manufacturing share of the total UK economy has declined, it is worth remembering that since 1997 productivity in UK manufacturing has increased by over 50% with commensurate gains in employment, exports and research and development. At the time of writing, most medium term economic indicators show that, despite ongoing short term economic volatility, projections for manufacturing output growth, total orders and production remain relatively buoyant. This is emphasised by the recent announcements of significant inward investment from BMW and Nissan into the automotive manufacturing sector of the UK.



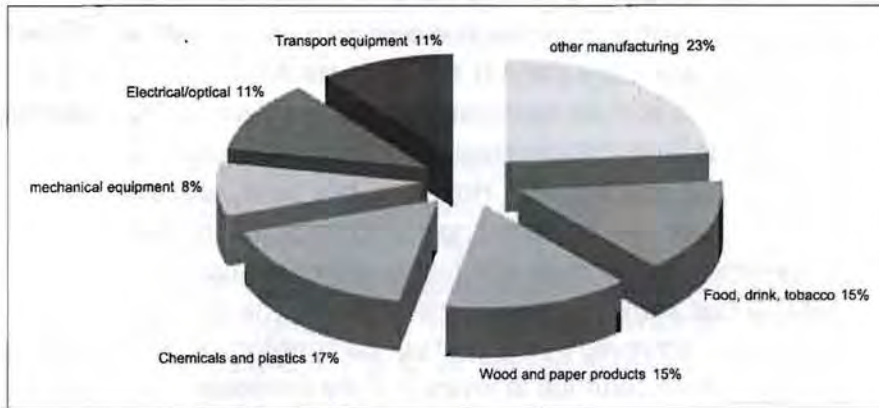
Manufacturing as a percentage of the total index of production in the UK for April 2011^e



Contributions of different sectors to total UK manufacturing output in April 2011^e

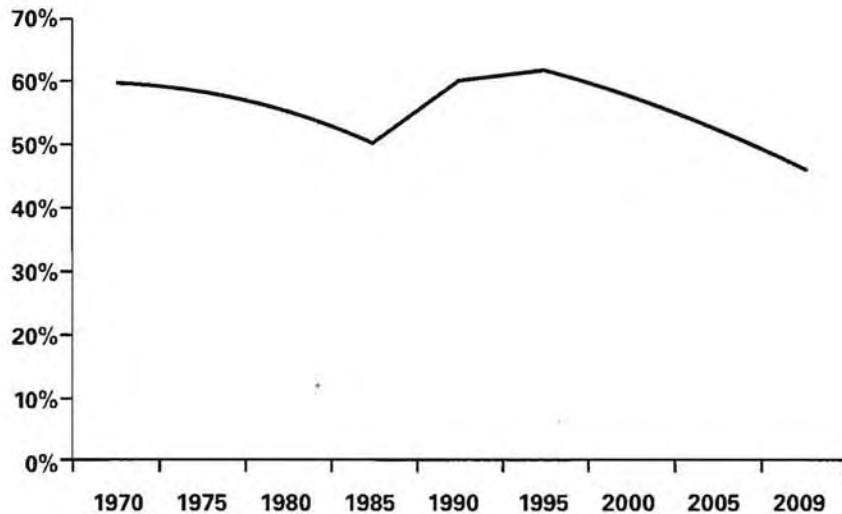
The manufacturing sector is responsible for 46% of all UK exports, employs approximately 10% of the UK workforce and contributes nearly 75% of the expenditure in R & D. The UK is a lead exporter of hi-tech

goods comparable to the USA and Japan and ahead of France and Germany, and it enjoys the 7th highest share of hi-tech exports in the OECD countries. The UK manufacturing sector attracts a significant amount of foreign direct investment (£26bn) making it one of the top 3 countries for manufacturing investment.



R & D expenditure as a percentage share by the manufacturing sector (redrawn from CBI and ONS data^{6,7})

However, on the down-side, the export growth in UK manufacturing has averaged only 4.5% over the 10-year period 1997-2007 which is substantially behind some of our European competitors such as Germany (10.3% growth during the same 10 year period) and Italy (7.8% growth), but more comparable to the USA (5.7% growth). The UK is not unique in the shrinkage of manufacturing as a proportion of its GDP since globalisation has led to more manufacturing being located in cheaper labour markets, closer to expanding overseas markets, and impacted on by falling prices of manufactured goods to maintain competitiveness and increased outsourcing.



Decline in manufacturing as a percentage of total UK exports between 1970 and 2009⁷

Nevertheless, as economies move out of recession, growth in exports and especially manufacturing exports becomes an important, if not an essential, contributor to economic stability and budget deficit reduction and the UK must ensure that it is well placed to build upon its strengths in manufacturing to allow it to contribute to the economic recovery of the UK.

The UK has many strengths including a world-class base in research and development and access to some of the brightest minds in design, basic science and engineering from both industry and academia. We must now enter into a phase of commercial evolution that allows the UK to translate these strengths into the growth of the manufacturing sector. In so doing, the UK will address a problem that has been prevalent throughout cycles of economic growth and contraction over many years - namely the lack of suitably skilled entrepreneurs and managers to take early-stage R & D projects into the marketplace. With the relevant support from the UK Government and its agencies such as the Technology Strategy Board and other commissioning bodies, an agenda for supporting rapid and sustainable exploitation of basic and early stage processes into products is being addressed. However, this area needs continued investment, and education at all levels will play a key role in producing a workforce that is able to bridge the gap between invention and the early development pathway into high-quality manufactured products which are highly desirable and competitively priced within the global marketplace. The skill mix to enable the translation of inventions into products has been achieved by many of our competitors (albeit at varying levels of success) and is an area which the UK needs to continue to invest in if the projected growth in manufacturing and its subsequent contribution to the wealth of the nation, industry and individuals is to be realised fully.

Factors that will enhance the UK manufacturing sector

There are many challenges that the UK manufacturing sector faces which need to be addressed if the sector is to enhance its profile in the UK and build upon its strengths to increase market share in an increasingly global market-place. Key factors are summarised below:

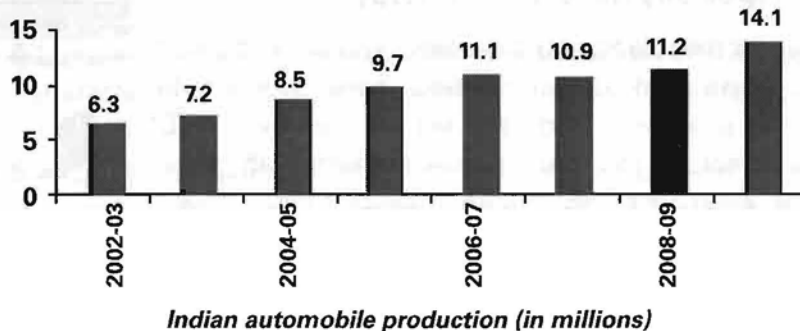
- The UK must remain an attractive place for inward foreign direct investment in manufacturing
- Enhancing the potential of the manufacturing sector requires management and governance structures to be innovative and transparent
- The incorporation and exploitation of innovation in technology provided by SMEs and the university sector through IP and spin-out companies needs to be fully realised
- The manufacturing sector needs to be well positioned to create opportunities in emerging markets for high quality goods especially within the BRICSAM countries.
- The UK must continue to build on its high technology manufacturing capacity in areas such as aerospace but continue to value the importance of other sectors relating to food, security, energy-efficient processes, infrastructure and automotive products in the overall landscape of manufacturing
- The UK government must ensure that the manufacturing sector is appropriately supported in terms of simplifying corporate tax and related areas, of providing unified thinking into its strategies for ensuring the supply chain of skilled workers for employment in the manufacturing sector, and also of encouraging and rewarding risk-taking and innovation. The extension of the Enterprise Finance Guarantee to 2015, an increase in the Enterprise Capital Fund, further investment in the Manufacturing Advisory Service, and increases in the value of the R&D tax credits for SMEs announced by the UK coalition government are particularly noteworthy
- The supply chain of both investment and raw materials needs to be secure to allow growth in the manufacturing sector and in particular to allow growth in manufacturing exports to the ambitious but achievable levels envisaged by the CBI8
- Energy-efficient processes must be incorporated into established and new manufacturing industries to ensure that the UK continues to make progress to meet its emissions targets.

PARTNERSHIPS IN MANUFACTURING: A POTENTIAL WIN-WIN SITUATION FOR INDIA AND THE UK

Sectors for Collaboration

The Automobile Industry

The Indian automobile industry seems set to sustain the growth trajectory in 2010 and is expected to grow at the rate of 15 to 16 per cent in 2011. Demographically and economically, India's automotive industry is well-positioned for growth, servicing both domestic demand, and, increasingly export opportunities. The UK automobile industry is regarded as a key innovative manufacturing sector producing world-class brands, it employs a range of hi-tech approaches to manufacturing which are essential to the production of high quality, energy-efficient vehicles, and it is spearheading approaches to the use of non fossil-fuel technologies for power delivery.



Pharmaceuticals

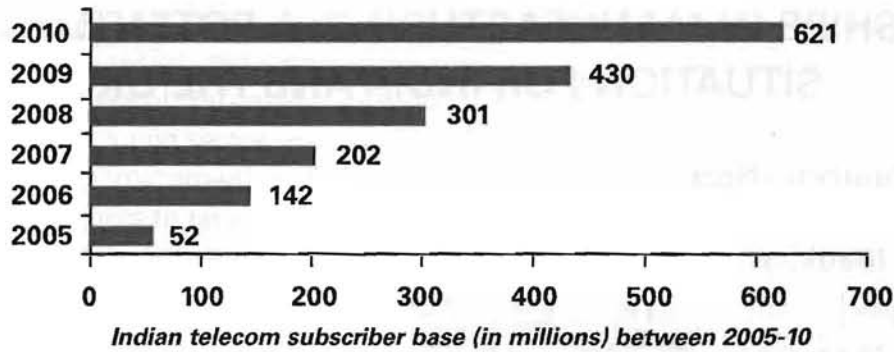
India is one of the fastest-growing and leading 10 pharmaceutical markets in the world with an expectant market poised to reach US\$ 20 billion by 2015, growing at a compound annual growth rate (CAGR) of 11.7 per cent. India is also the third-largest market in the world in terms of volume and fourteenth in terms of value in the pharmaceutical sector. India is also one of the countries with low manufacturing and installation costs as compared to countries like the USA. In the UK, Pharma contributes in excess of £8 billion in gross value added to the economy and many SMEs especially those emerging as spin outs from Universities have pharmaceutical devices and drugs as their primary business.

Defence

Defence is considered to a very significant sector for collaboration. The present FDI allowed in defence is 26 % and is expected to be raised to further. UK companies such as BAE systems have already invested in the Indian defence sector, seeing the immense opportunities for growth there.

ICTE Hardware Manufacturing

This sector in India is growing at a rate of 20% per annum and is expected to reach \$400 billion by 2020 with 40%-50% demand presently being met domestically. Therefore, there is a vast export potential that lies within the sector and India provides an excellent opportunity for foreign investment in all ICTE Hardware manufacturing sector.



The opportunities for the production of next generation network capabilities and for harnessing their power are already being exploited through joint UK-India collaborations involving academia, UK and Indian businesses, and are supported through grants from both governments⁹.

Heavy Engineering - especially Renewable Energy

Another major focus area for manufacturing is developing clean and green technologies. Several Indian and UK companies have adapted to sustainable manufacturing processes and have set up their own R&D facilities either in India or abroad in order to drive innovation in green technologies. Innovative approaches to ensure manufacturing moves towards energy efficiency and reduced carbon production are key requirements and will need input from a variety of stakeholders especially in the innovations hubs located in universities, IITs and SMEs.

Green business opportunities requiring new technology		
Green buildings 	Hybrid 	Sustainable public transport 
Solar energy 	Recyclable energy efficient products 	Wind energy 

THE ROADMAP AHEAD

We believe that the following recommendations will facilitate a step change in the India-UK relationship in manufacturing.

Recommendation 1 : All relevant agencies in India and the UK should engage fully with the desire to maximise opportunities to promote and enhance interactions between manufacturing industries in both countries and to create a conducive economic environment for investment and growth.

Recommendation 2 : The manufacturing sector in India and the UK should maximise its uptake of innovative solutions in both business management and production to ensure global competitiveness.

Recommendation 3 : The UK and Indian Governments should ensure that ample opportunities exist for access to, and utilisation of, the intellectual capital present within universities and Research Institutes.

Recommendation 4 : Universities and Research Institutes should be encouraged and incentivised to work closely with the manufacturing sector to enhance innovative approaches to production.

Recommendation 5 : The governments of both countries should provide a framework that enables growth in manufacturing, especially in manufactured exports, to be maximised through collaborative ventures and partnerships.

Recommendation 6 : The governments of both countries should ensure that the educational systems in place ensure the supply of skilled individuals and multiple levels to enable the manufacturing sector to realise its full potential.

Recommendation 7 : The governments of both countries should ensure that barriers to the migration of skilled workers in the manufacturing sector are minimised to ensure that growth is not compromised.

Recommendation 8 : The governments of both countries should maximise the opportunities for foreign direct investment into manufacturing industries and ensure that the sector remains highly attractive for FDI.

Recommendation 9 : The manufacturing industry in both India and the UK must remain focused on demand and opportunities for new product development and on opening up new markets especially outside their traditional consumer base.

Recommendation 10 : Both India and the UK should work in partnership at multiple levels (government, public and private sector) to ensure that existing manufacturing processes and new enterprises are energy-efficient and sustainable and that their impact on the local and global environment is minimised.

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