



The Institute of Materials, Minerals & Mining

PLASTICS & RUBBER DIVISION

MATERIALS FORESIGHT - POLYMER SECTOR

<u>Business Drivers</u>	<u>Issues</u>	<u>Technology/ Innovation Needs</u>	<u>Implications for Government</u>
*PROFITABILITY	UPSTREAM		
	*Use of North Sea Feedstocks	Development and Management of infrastructure	(1)Competitive tax regime
	*Polymeric Raw materials manufacture		
	(1)Investment in modern world-scale Plant	>Competitive process construction industry	(1)Training and status of engineers (2)Trade apprenticeships
		>Process technology development	(3)R&T incentives
		>Skilled workforce	(4)Education/training of operators
		>Investment in process control	(5)Training of Control Engineers
	(2)Cost of utilities	>Investment in CHP plants	(6)Carbon tax legislation (7)Pricing of electricity
	DOWNSTREAM		
	Demise of Plastics Conversion Industry	>Focus on differentiated products	(1)Support for UK manufacturing (2)Strength of Sterling (3)Patent enforcement
	Lack of Processing Machinery Manufacture in UK	>Improvement of imported equipment via on-/at-line process control and modelling	(1)Investment in Process Engineering/Modelling training (2)Quality of higher education and training (attraction of high calibre students)
	Demise of UK Automotive, aerospace and shipbuilding Industries	>Development of design and manufacturing expertise for differentiated products	(1)Support for embryonic industries (investment incentives)
	Import of finished Goods	>Focus on non-commodities	(1)Import tariffs policy (2)Inward investment (3)Imposition of high standards on precision parts

*SUSTAINABILITY			
	HSE Legislation	>Minimisation of Emissions from process plant	(1)Realistic and competitive standards applied (continuous improvement)
	Recycling/Disposal Directives	>Development of infrastructure based on clean and efficient incineration with energy recovery	(1)Public perception/awareness
		>Decisions based on facts, economics and market demand (eg Life Cycle Analysis)	(1)Adoption of realistic standards (2)Promotion (tax incentives) of use of degradable materials when appropriate
		>Environmental Awareness	(1)Education at National Curriculum level
	Development of New Markets	>Applications development for healthcare; biomedical and electronics applications of polymeric materials	(1)Training in materials engineering
		>Enhanced use of polymers in construction industry	(1)Education of Civil Engineers and Architects
*GLOBALISATION			
	Major UK industries based on imports for assembly here	>Development of a high quality skilled workforce and infrastructure to attract inward investment	(1)Favourable environment for business (2)High quality education system (3)Attractive base for R&D (tax breaks)
	No major UK multi-national for manufacture of speciality polymers following demise of ICI	>Focus on application of new materials in high tech industries	(1)Training and development of applications engineers (2)Strong University technology base (3)Support for embryonic industries using polymers in electronic and biomedical applications (4)Need to exploit UK University inventions (more business management in Universities)
	Development of markets for Advanced materials/composites	>Promotion in aerospace, electronics automotive and bio-medical applications	(1)Government contracts for infrastructure and strategic industries (eg defence) favour UK materials