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COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

INDUSTRIAL POLICY COMMUNICATION UPDATE
A STRONGER EUROPEAN INDUSTRY FOR GROWTH AND ECONOMIC RECOVERY

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1. INTRODUCTION

In 2010, the Commission adopted the Europe 2020 flagship initiative on "An Integrated Industrial Policy for the Globalisation Era" in the context of our Europe 2020 strategy for smart, sustainable and inclusive growth'. The prolonged aftermath of the financial and economic crisis has brought about new challenges. Instability has spread from financial markets to sovereign debt markets, compromising the sustainability of public finances in several Member States. Economic confidence has deteriorated and business plans have been delayed. As a result recovery of manufacturing has been subdued. There has been a good progress of our flagship with a high rate of implementation of the 70 key actions announced in the flagship.

The communication updating the 2010 industrial Policy aims at accelerating the impacts of the reforms included in the flagship communication by introducing some new actions with effects on the short term and others to remove barriers blocking progress in the implementation of the 70 proposals presented in 2010. It is in this way that industry can make a more substantial contribution to the recovery from the crisis and to smart, inclusive and sustainable growth, our ultimate objectives.

This staff working document has two purposes. First, it presents progress made in the implementation of the policies announced in 2010 as well as the overview of the current developments. However, since most of the actions included in the flagship communication only have a mid- to long-term impact, their effects on the economy are hardly visible at this stage. Therefore, we present here steps taken to date for the implementation of the communication establishing connections with proposals presented in the new communication update.

Secondly, we present evidence on the current situation and performance of the EU industry paying attention to the impact of the crisis as well as to the previous record of our industry in the preceding decade. This evidence is based on studies conducted over the last two years and the permanent monitoring of EU industry conducted by the Commission services. This is helpful to underpin the importance of the four elements proposed as pillars for our industrial policy in the communication: investment in innovation, skills, markets and access to capital.

The new communication relies on these four main ingredients: restoring confidence to kick-start industrial investment in innovations and new technologies that can increase competitiveness at the same time that it reactivates internal demand and job creation; improving skills base necessary for maintaining industrial competitiveness[1]; fostering the development of entrepreneurship and better market conditions for EU firms, both in the Internal Market and in global markets; finally, actions to facilitate access to capital markets – in particular to SMEs – are proposed.

The next section gives account of developments in the implementation of the 2010 flagship communication while the rest of the report presents a quantitative description of the situation of industry putting emphasis on innovation, the Internal Market and globalisation, access to capital and skills.

[1] The analysis of skills supply and demand in industry is not included in the scope of this document, as it has been already covered by a wider policy agenda on skills.

2. STATE OF IMPLEMENTATION OF THE INDUSTRIAL POLICY FLAGSHIP INITIATIVE

In the course of the last two years significant progress has been achieved in the implementation of the flagship communication and a number of actions have been adopted (a detailed overview of the implementation of the 2010 Communication is presented in the annexed table). The 2010 Communication has been successful in articulating different policy initiatives in the pursuit of competitiveness as one of the major objectives of the EU2020 strategy. This emphasis on industrial issues is already visible in the plans for future policy orientations (e.g. Horizon 2020), where deployment of technological innovations has gained in importance. This is also reflected in other areas that were addressed in the 2010 Communication, notably competitiveness proofing, industrial innovation and globalisation of EU industry.

A major development was the publication in January 2012 of an 'Operational guidance for assessing impacts on sectoral Competitiveness within the Commission Impact Assessment System'[2], a Commission Staff Working Document, which builds on best practices inside and outside the EU. It has provided the Commission with an effective tool to deliver more thorough analyses of the impact of new proposals on competitiveness. The Commission now implements **competitiveness proofing** through an in-depth assessment of the impacts on competitiveness and on SMEs of its new policy proposals with significant impacts. This has been the case for some half dozen proposals, including issues such as the ETS State aid Guidelines to address the risk of carbon leakage. It addresses the impacts of a policy proposal on enterprise competitiveness through its effects on the cost of doing business, on the affected sectors' capacity to innovate, and on their international competitiveness. The task now is to streamline its application in the Commission's impact assessment practices and to promote its application at national level. Commission services are continuously developing methods for an efficient application of this instrument, as well as the "fitness checks".

In the area of **industrial innovation**, the High-Level Group on Key Enabling Technologies presented its final report in June 2011 with concrete recommendations on the development and deployment of these technologies[3]. A follow-up Communication with a European strategy for Key Enabling Technologies was adopted in June 2012. These technologies have enormous market potential with annual growth rates estimated between 5% and 16% per year up to 2020 and also provide crucial spill-over effects to key downstream industry sectors in terms of innovation and growth. The strategy will focus EU policies in the next multi-annual financial framework on research and innovation and prioritise EIB lending activities in favour of KETs deployment. It will also ensure coordination of EU and national activities in this area, which is coming ever more into the focus of European policy. The transition towards industrial market application of these technologies is a top priority action line in the update of our industrial policy.

Furthermore, to promote the commercialisation and deployment of key environmental technologies, in December 2011 the Commission adopted the Communication "Innovation for a sustainable Future - The Eco-innovation Action Plan" (EcoAP)[4]. This Action Plan is a follow-up of the Innovation Union Flagship Initiative and a natural evolution of the Environmental Technologies Action Plan (ETAP) launched in 2004, although it also complements other Europe 2020 Flagship Initiatives, i.e. Resource-efficient Europe[5],

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2 SEC(2012) 9.

3 Available at: http://ec.europa.eu/enterprise/sectors/ict/key_technologies/kets_high_level_group_en.htm

4 COM(2011) 899.

5 COM(2011) 21.

Industrial policy for a globalized era[6] and Agenda for new skills and jobs[7]. The EcoAP aims at promoting the market uptake of eco-innovation through concrete actions both on the demand and supply side, on research and industry, and on a policy and financial instruments. The Commission is now working on a Strategic Implementation Plan (SIP) to take further the implementation of the EcoAP.

The Communication foresees promotion and market uptake of eco-innovation through concrete actions in the environmental policy and legislation, including development of new standards, mobilisation of financial instruments and support services for SMEs, and establishing the European Innovation Partnerships foreseen under the Innovation Union.

The 2010 Communication also had a focus on **globalisation** that is maintained in the 2012 update of our flagship. This has led to actions such as impact assessments of trade negotiation agreements and international regulatory co-operation initiatives. Another breakthrough has been the high-level business diplomacy *Missions for Growth* undertaken by Vice-President Tajani. This has so far led to agreements and joint declarations on co-operation with growing economies in Latin America, notably Chile, Brazil, and Mexico. The areas concerned include sectors of strategic industrial importance, such as space policy and radio-navigation by satellite.

In December 2011 the Commission presented an Action Plan to improve **access to finance** for SMEs. It was accompanied by a proposal to facilitate access to venture capital across Europe through an EU passport that will allow venture capital funds to raise capital in all 27 Member States on the basis of a single registration. If successful, this initiative could create up to 315,000 additional jobs and € 100 billion additional GDP. In addition, in 2012 the Commission aims to complete its examination[8] of the tax obstacles to cross-border venture capital investment with a view to presenting solutions in 2013 aimed at eliminating the obstacles while at the same time preventing tax avoidance and evasion. Furthermore, given the deterioration in the conditions of access to capital markets especially for SMEs, more public sector financial support to SMEs and measures to improve access to capital markets to business are presented in the flagship's update.

The Commission also continued its efforts to improve the business environment for SMEs. The **Small Business Act** for Europe was reviewed in February 2011[9] putting emphasis on improved access to finance, more favourable regulation environment and helping SMEs facing globalisation challenges. The latter aspect was further developed in related follow-up actions, like the new strategy to support the internationalisation of SMEs that was adopted in November 2011[10]. The review also recalled the need for Member States to prioritise the business environment through smart regulation, reducing unnecessary regulations and permits, introducing simpler procedures through e-government, and reducing the set-up time for a new business to 3 working days.

An important step towards modernisation of the Single Market was the Commission's proposal, made in June 2011, for a major modernisation of the European **standardisation** system[11] by, amongst others, issuing standards on services and giving more recognition to

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6 COM(2010) 614.

7 COM (2010) 682.

8 To this end the Commission has launched a public consultation inviting all stakeholders to provide factual evidence of the tax problems encountered and suggestions for possible solutions. See: http://ec.europa.eu/taxation_customs/common/consultations/tax/2012_venture_capital_en.htm

9 COM(2011) 78.

10 http://ec.europa.eu/enterprise/policies/sme/market-access/internationalisation/index_en.htm

11 COM(2011) 311 and COM(2011) 315.

ICT industrial specifications. The proposal also announced more transparent cooperation between national standardisation bodies, better planning of the Commission mandates and improved representation of SMEs and societal stakeholders in European standardisation. This is an area of fundamental importance for industry, as it has direct implications for the innovation process. These improvements in standardisation will be put to the test in the implementation of the six priority action lines presented in the 2012 Industrial Policy communication update.

As regards **raw materials**, a new strategy for the sector has been set out in a dedicated Commission Communication[12]. It reinforced the initiative on raw materials initiated in 2008 and put forward an array of measures aimed at promoting fair and sustainable supply of raw materials from international markets, fostering sustainable supply within the EU, and boosting resource efficiency and promoting recycling. It also identified 14 materials which are critical to the EU industry. Furthermore, the Commission aims to launch an innovation partnership on raw materials in 2013 (subject to Council decision in 2012) to foster innovation along the entire raw material value chain. External actions on raw materials are developed further in the 2012 update of our flagship.

As a part of actions aiming at the promotion of industrial modernisation, the Commission adopted in January 2012 a **'Green Paper on restructuring and anticipation of change'**[13] followed by a public consultation. The aim was to identify successful practices and policies in the field. This consultation also helped to select specific restructuring measures that could facilitate European companies improving competitiveness through innovation and a fast, but smooth adaptation to change.

Concerning **skills**, preparations are under way for a Communication on "Re-thinking skills". Its aim is to steer the modernisation of Europe's education and training systems, in order to increase the quantity, quality and relevance of skills supply. The recently adopted communication on reinforcement of the European Research Area[14] proposed linking funding to the implementation of the EU Principles on Innovative Doctoral Training. This will allow Europe to provide better and faster industry-relevant doctoral training, which is instrumental in meeting the demand for expert human capital.

Furthermore, a comprehensive EU Action Plan for the implementation of the renewed EU **Corporate Social Responsibility** Strategy 2011-2014, adopted in October 2011, is being discussed with Member States and the main EU private stakeholders (business and non-business organisations). It outlines actions such as launching, from 2012 onwards, a European award scheme for CSR partnerships between enterprises and other stakeholders, and creating a peer review mechanism with Member States in 2012 for national CSR policies. Multi-stakeholder CSR platforms will be created in 2013 in a number of relevant industrial sectors, for enterprises, their workers and other stakeholders to make public commitments on the CSR issues relevant to each sector and jointly monitor progress.

Notwithstanding these horizontal actions, the Commission has also put forward a range of **sector-specific initiatives**, such as the adoption of a strategy for **space policy**[15] aiming at strengthening the European space sector or the initiative on "Innovating for Sustainable Growth: A Bioeconomy for Europe"[16]. The former will be the subject of a communication on

12 COM(2011) 25.
13 COM(2012) 7.
14 COM (2012) 392.
15 COM(2011) 152.
16 COM(2012) 60.

Industrial Policy exclusively dedicated to the space sector. The latter puts in place conditions to create bio-based markets, one of the priority action lines included in our communication.

Given the major market potential for clean vehicles, the Commission re-launched the **CARS 21** process with an objective to obtain an input to the EU's strategy for clean and energy efficient vehicles. In June 2012, the members of the CARS 21 High Level Group had their final meeting and adopted a final report, thereby setting an industrial policy strategy for the automotive sector towards 2020 with recommendations for rapid progress on important subjects such as electro-mobility, road safety, market access strategy and a review of the CO2 emissions from cars and vans. The report also announced concrete actions to be taken in reaction to the current economic situation. Concretely, the report puts a clear emphasis on providing EU financing for research, on smart regulation, and on improving international market access. These conclusions will find their follow up in the priority action line included in the 2012 Industrial Policy communication update.

In October 2011, the Commission published a Communication[17] on Industrial Policy in Member States highlighting key actions to improve competitiveness at national level. The package included the **second Annual Report on Member States** competitiveness performance and policies[18], which pointed out that there are considerable differences among Member States as concerns for instance the labour productivity in manufacturing, or share of innovating companies. Faced with this scenario, the Commission encouraged Member States to rapidly implement policies to converge to competitive levels coherent with participation in the euro and the Internal Market. In this context, it should be pointed out that several Member States have recently taken concrete steps to formulate and implement national industrial policies, which are largely in line with the 2010 Communication. The complementarities between national and EU interventions in industrial policy are a fundamental condition for the success of European industrial policy

Results

The different tools of the integrated industrial policy adopted in 2010 vary considerably in their scope and depth. They also have different implementation delays and their impacts will not be traceable until some time after they have been implemented. Therefore, it is too early to detect their impact on industry. Furthermore, they also present a mix of actions under Community competence and of actions under Member States' competence. This also means that benchmarks and indicators cannot readily be compared, in particular since many of the measures concern not competitiveness performance as such, but rather competitiveness policies.

When the 2010 Communication was adopted, the focus of policy makers was mainly on long-term structural challenges, in particular maintaining global competitiveness, climate change, energy, skills and knowledge. Given the short time since the 2010 Communication, as well as the nature of the measure proposed therein, it would be unrealistic to expect any measurable results or evidence on such policy variables. It is possible, however, to report on the state of implementation of the Communication.

The implementation table (see Annex) shows that a majority of the actions have been, or are being, implemented. Around 60% of the actions have been fully implemented, and for another 24% implementation has started and is under way. Since some actions consist of constant monitoring or implementation by Member states, implementation has been

[17] COM (2011) 642.
[18] SEC (2011) 1187.

completed or is well ongoing in around 90% of the actions in the 2010 Communication. So in most cases, the work is done, or good progress is being made.

The 2010 Communication focused on the long term as part of the 2020 strategy. This is also illustrated in the implementation table, with most of the measures actually expected to show results on the real economy only in the longer term (over 5 years or more). A glance at the table indicates that only 1 in 7 measures would be expected to have some effect in the short term. A bit more than half of the measures could show some effects in the medium-term (less than 5 years) and the rest of the measures would have effects only in the longer term (see table).

The 2012 Communication has a more streamlined focus. While preserving current efforts on-going implementation of long term initiatives, it focuses on actions that will have a more immediate impact on the real economy.

3. SITUATION OF EU INDUSTRY

Manufacturing - powerhouse of the EU economy

The financial crisis has had a serious impact on the manufacturing sector. Nonetheless, the recent moderation of recovery should not be associated with the poor state of European industry, but rather with the general weak economic situation in Europe.

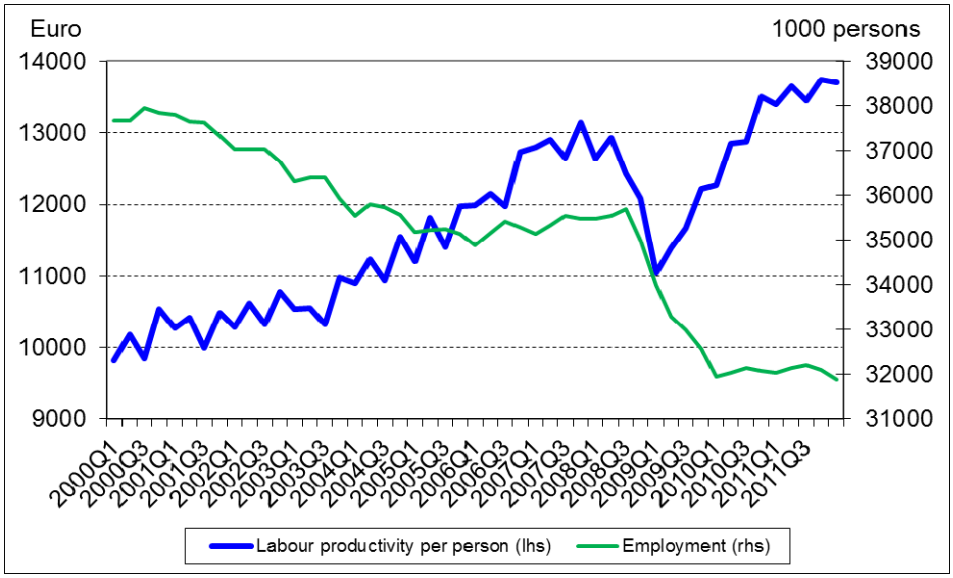
Over the last decade the share of manufacturing in EU value-added and employment has been declining. However, in 2011 it accounted for over 14% of employment and over 15% of total value added, which represented some 23% of employment and 22% of value added in the non-financial business economy. This negative trend has to be put in the context of the change in the business models and the increasingly blurred distinction between manufacturing and services. Consequently, the fall in jobs in manufacturing is accompanied by a rise of employment in business related services This is in part the result of the increasing importance of services for manufacturing goods, but also of outsourcing of service-type jobs to companies outside the manufacturing sector).[19] Roughly speaking, it is estimated that for every job in manufacturing a further complementary job is needed in related business services, such as logistics, marketing or legal advice.

Manufacturing has also been the main driver of productivity growth. From 2000 up to 2007 the average productivity growth stood at around 3%, compared to the average for total economy at 1%. The crisis had a serious impact on productivity in manufacturing, but the subsequent recovery was also relatively fast bringing the productivity growth back to the pre-crisis trend. Industry is clearly a driver of knowledge-based economy, being responsible for some 80% of private R&D.

Furthermore, manufacturing is the most important sector for European international trade accounting for over 90% of overall exports of goods. The fast recovery of exports indicates a strong competitive position of European manufacturing and its ability to compete in foreign markets. This good performance is also confirmed by the high positive trade balance in industrial goods. If we add to the economic importance the fact that industry is a major generator of demand and innovation and contributes to our long-term societal objectives, it is obvious that industry deserves to be in the centre of policy focus.

[19] Daria Ciriaci and Daniela Palma, *To what extent are knowledge-intensive business services contributing to manufacturing? A subsystem analysis.* IPTS Working Paper on Corporate R&D and Innovation - No. 02/2012

Figure 1: Quarterly labour productivity per person and employment in manufacturing in EU27 (at basic prices)



Source: Eurostat

Potential for reindustrialisation

Over the last 20 years manufacturing in Europe and other developed economies like the United States has been under pressure of delocalisation of production facilities. However, it seems that this process might be approaching a reversal point. Much as the unit labour cost still do not favour localisation in Europe, the advantages of cheap labour are gradually diminishing. In recent years wages in industrial areas in China have been growing at a 20% rate per year in industrialised regions (exceeding substantially improvements in productivity) making them less and less cost attractive locations for manufacturing facilities. Indeed, rising labour costs are increasingly perceived by European investors as a significant risk for doing business in China[20].

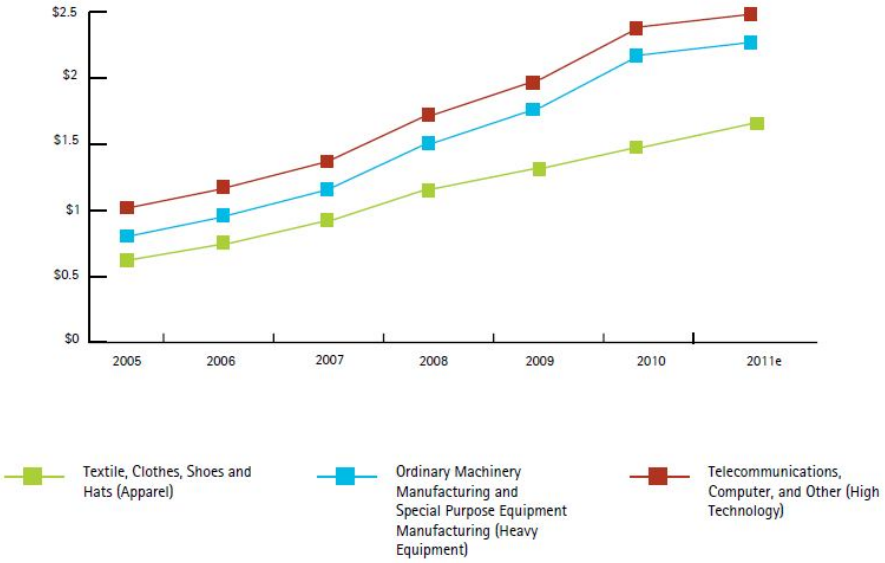
In addition, labour costs seem to be becoming a diminishing part of total production costs. When accounting for logistics, duties, industrial real estate and other costs, the advantages of manufacturing in China could be relatively less important than years ago. While improvements and automation of production in China will lead to higher productivity, they are likely to undermine what has been up to now China's primary attraction, i.e. its low labour costs. This situation increases the importance of raising productivity in Europe.

Furthermore, companies that located their production sites in Asia will to a larger extent serve the increasing local demand for goods. This may encourage companies to bring some of their production capacities serving the European market back to Europe, especially considering increasing risks and costs related to the management of global value chains. Companies would need to balance the diminishing cost benefits with persisting localised risks linked to high density of production in one geographical area. These risks include for instance natural catastrophes, socio-political disruptions and security issues (counterfeiting, sabotage, misappropriation)[21].

[20] European Union Chamber of Commerce in China, *Business Confidence Survey 2012*.

[21] ECORYS, DTI, *Study on internationalisation and fragmentation of value chains and security of supply*, January 2012.

Figure 2: Average hourly wage in China by industry (in US$ per hour)



Source: Accenture[22]

New technologies that are about to appear on the market will open new possibilities to redesign the comparative advantages of nations. The European orientation towards sustainable growth will help in getting a lead in energy and resource savings in production processes. Customised production will gain importance and favour closeness to the customer rather than mass standardised production.

These trends will favour more current European strengths i.e. strong micro-economic environment, high productivity, large, integrated market, and qualified, flexible labour force. One should not forget that Europe is an extremely important market accounting for some 30% of global personal consumption expenditures in 2010, which is more than double than BRICS combined (around 14%). Besides, despite the problems reported by industry of skills mismatch, Europe leads in the number of graduates in natural science and engineering, accounting for 18% and 17% respectively of the world total.

Nonetheless, in order to grasp these opportunities European industry needs also to deal with several challenges. Much as the cost structure in industry changes, cost competitiveness will continue to be the key factor of industrial location that cannot be ignored by policy makers. Emerging economies are moving towards more knowledge-intensive sectors and start to compete not only with lower costs but also with increasingly qualified labour and improved infrastructures. Finally, the protracted consequences of the crisis put European industry in a difficult economic context to carry out the necessary efforts to increase their competitiveness by technological changes and innovations into the European industrial landscape.

Negative macroeconomic conditions hamper industrial recovery

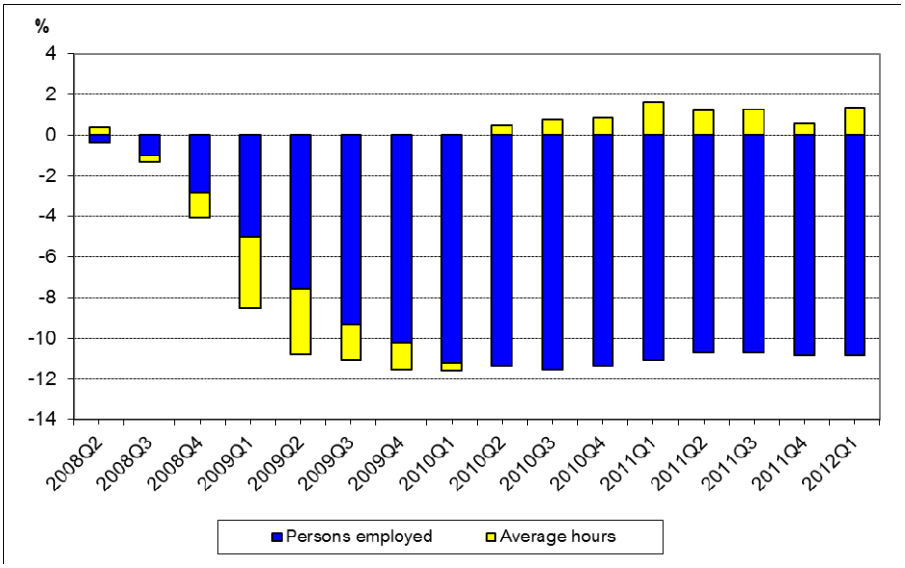
As mentioned earlier, the impact of the crisis on industrial sectors has been quite severe. It has delayed the process of long-term adjustment and created short-term stressful conditions for SMEs that are perfectly competitive in the long-term. The financial crisis has first compromised the stability of public finances and is currently threatening the real economy.

[22] Accenture, *Wage Increases in China: Should Multinationals Rethink their Manufacturing and Sourcing Strategies?*, 2011.

This is the case especially in those countries more seriously touched by the crisis but also of SMEs in general across the EU.

Since the beginning of the crisis, employment in manufacturing has fallen by almost 11%. The initial fall that followed the 2008-2009 shock was somehow mitigated by the use of short-term working schemes, which resulted in a reduction in the number of hours worked and productivity growth. The subsequent recovery in 2010 led to an increase in the average number of hours worked but has not improved significantly employment in industry. This is a first clear indication of the lack of confidence in the demand for industrial products that resulted in a drop in investments of manufacturing companies. Unfortunately, the recent moderation of the recovery has kept employment levels in manufacturing low and the perspectives of a fast rebound remain rather weak.

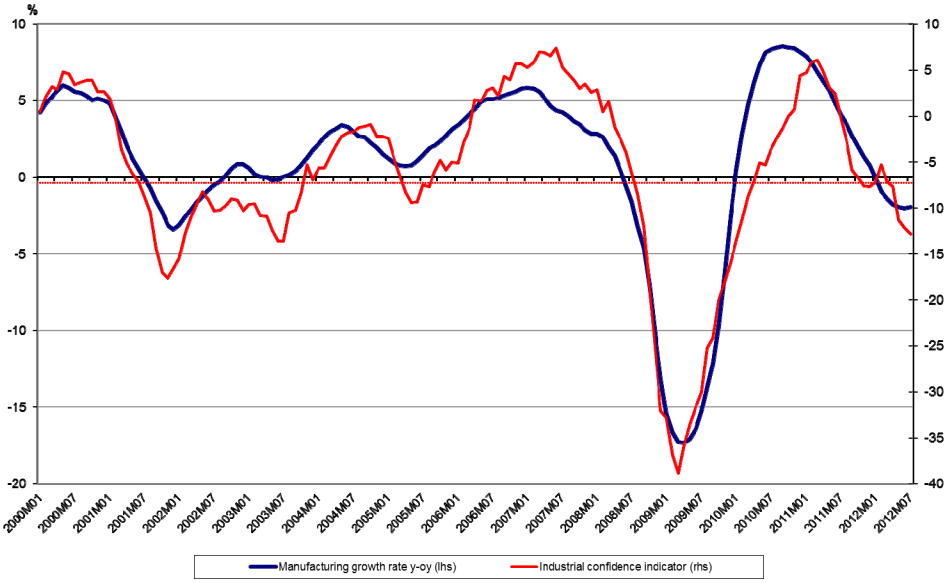
Figure 3: Evolution of employment and average hours worked in manufacturing in EU27 (percentage change compared to Q12008)



Source: Eurostat

The subdued economic conditions in the European economy are a major factor explaining the recent deterioration of Europe's industrial performance. Low internal demand and private consumption keep markets for industrial goods downcast. Uncertainties about the economic outlook, relatively high international raw materials and energy prices and on-going difficulties in access to finance for SMEs continue to weigh down business confidence.

Figure 4: EU27 manufacturing output and industrial confidence (2005=100)

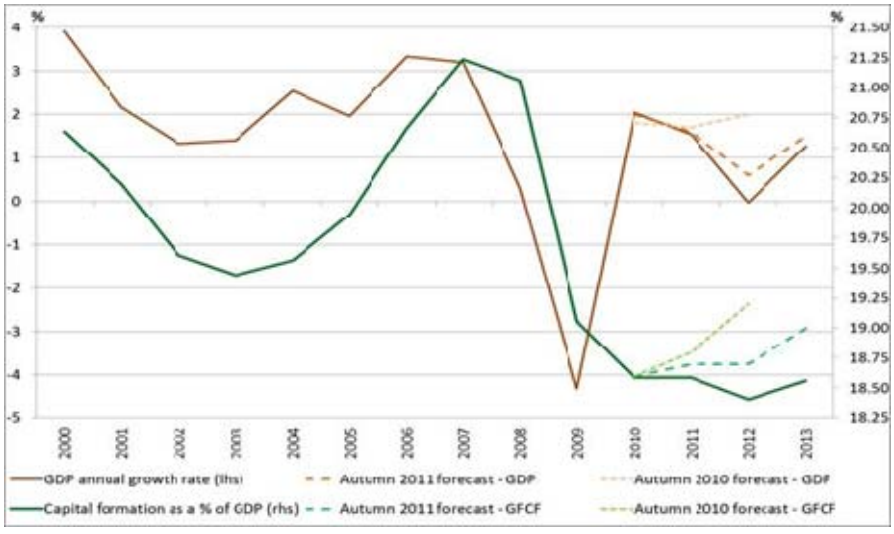


Source: Eurostat, DG ECFIN

Investments do not show recovery since the outbreak of the crisis

Persisting uncertainties have a negative impact on the level of investments. Despite the end of the recession, fragile GDP growth and the overall weak economic situation hold back industrial investment. As a consequence of the crisis, the share of gross fixed capital formation in total GDP has fallen by some 2.5 percentage points, which corresponds to a decline of some € 350 billion compared to the level in 2007 (see figure below). What is more, the subsequent recovery did not increase the level of investment that remains low since 2008 and shows few signs of improvement. Successive Commission forecasts on investment have had to be reviewed downwards since 2010. Without reversing this trend it will be difficult to achieve a sustainable recovery.

Figure 5: Changes in the annual growth rate of GDP compared to the share of gross fixed capital formation in total GDP (EU27, current prices, €)

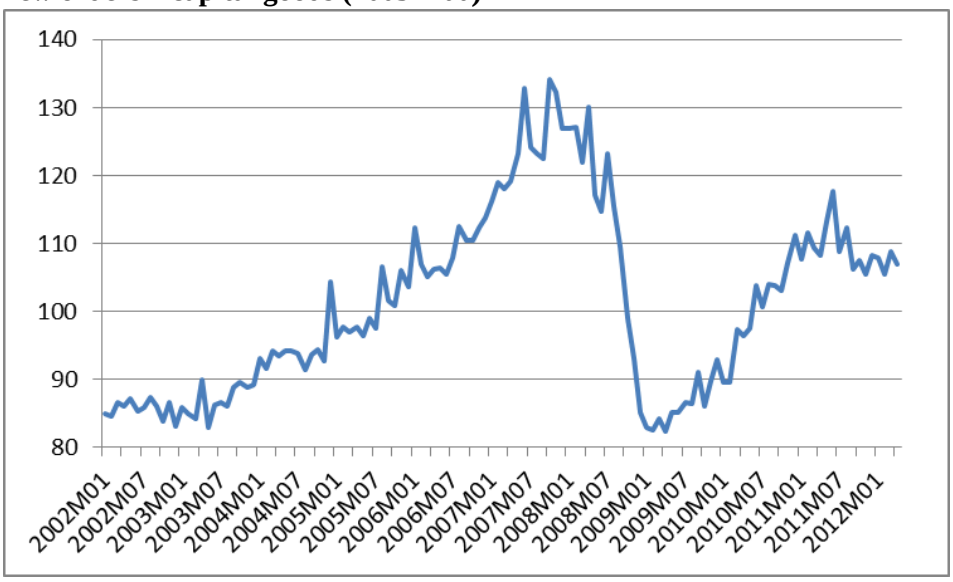


Source: AMECO database, ECFIN economic forecasts

The depressed context for industrial investment in the EU is highlighted by the slow and partial recovery in new orders for capital goods, typically those needed to maintain and

expand production capacity. After having reached a maximum level in late 2007 – early 2008, new orders for capital goods fell by more than 35% during the 2008-2009 recession and have only partly recovered since. This recovery ended in the summer of 2011.

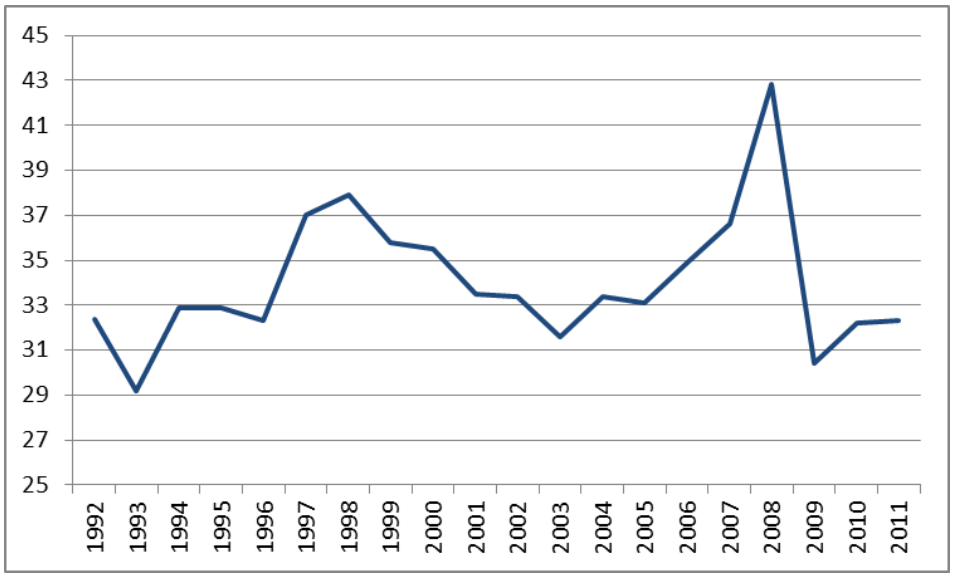
Figure 6: New orders – capital goods (2005=100)



Source: Eurostat

The seriousness of the impact of the current crisis on industry is also reflected by replies to the Commission's investment survey, carried out twice a year among industrial companies, which shows that expectations for investments for the extension of the production capacity are quite low (increase by 4% for the EU). Financial resources and expected profits together with other factors (mainly related to public policies) are perceived as little stimulating for further investments at the moment.[23]

Figure 7: Extension of production capacity (% respondents that choose this category as the most relevant)



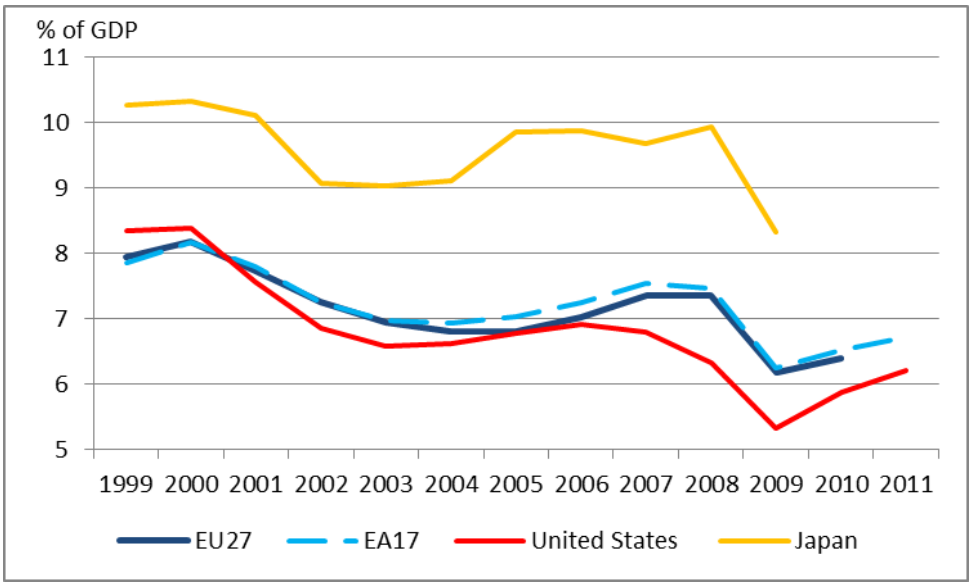
Source: European Commission, Investment survey

[23] DG ECFIN, *Business and Consumer Survey Results*, April 2012.

Figure 8 suggests that in addition to the uncertainties due to the crisis, the lack of new expectations of market expansion is also contributing to hold back investment in the EU. This additional factor seems to have been present since the effects of the creation of the Internal Market in the early 1990s were exhausted towards the end of that decade. Only the "irrational exuberance" of the years previous to the crisis led to a higher increase in production capacity.

Comparing the evolution of investment in equipment in the EU, the USA and Japan it becomes apparent that these three economic areas show a slightly downward trend in investment as a percentage of GDP between 1999 and 2011. Nonetheless, Japan has managed to keep a significantly higher share of investment over GDP than the other two regions. Finally, although this indicator experienced a sharper drop in the USA following the crisis, it seems to be rebounding faster and stronger in the USA than in Europe at present.

Figure 8: Gross fixed capital formation on equipment as a percentage of GDP (current prices, national currencies)



Source: AMECO database

European industry has to overcome its cost competitiveness disadvantage

In addition to the unfavourable investment climate, relatively high input costs add to the challenges that EU industry has to deal with in the medium-term. Energy prices, the evolution of labour costs and exchange rates have not helped to increase our competitiveness.

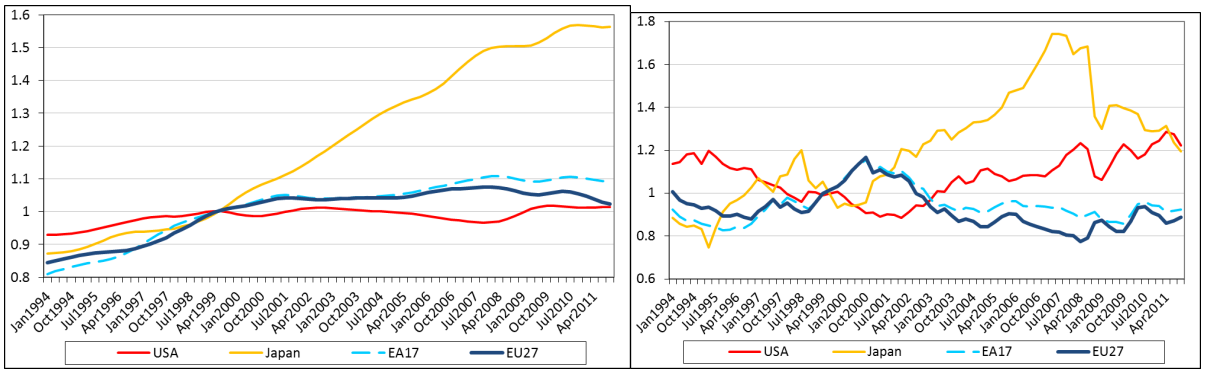
In general terms, nominal unit labour costs have remained stable and this has not contributed to increase productivity in Europe compared to the top 36 industrialised countries (the "IC36" group). Labour costs in the USA have also been rather stable over the last decade, whereas Japan has managed to improve substantially its labour cost performance[24].

The overall cost competitiveness of EU27 has deteriorated due to the impact of exchange rate fluctuations and a relative appreciation of euro. The USA and Japan managed to improve their competitive positions following the relative depreciation of their currencies, but the latter has lost most of its advantage following a strong appreciation of the yen since the beginning of the crisis

[24] Data are not available for China, India and Brazil.

Figure 9: Changes in the competiveness based on the nominal unit labour costs and effective exchange rate (relative to IC36)

NEER/REER*100/REER*



Increase of indicators indicates improvement of the competitive position versus other countries

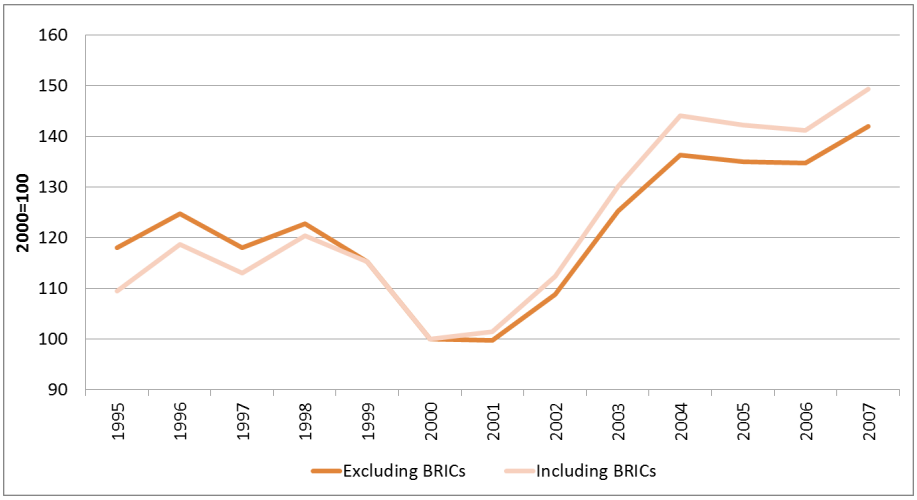
* Real effective exchange rate deflated by nominal unit labour costs

Source: DG ECFIN, Price and Cost Competitiveness database

Box 1: Factors affecting European cost competitiveness

An in depth analysis of the unit labour costs (ULC) covering the BRIC countries[25] shows that the real effective exchange rate calculated for a group of 16 EU Member States[26] (REER) deteriorated substantially over 2000-2007. Moreover, the estimated deterioration in EU unit labour cost competitiveness is markedly worse when BRIC countries are included in the competitors group: a deterioration of nearly 50% compared with just over 40% if they are excluded. Virtually the whole of this impact is due to the inclusion of China. Chinese imports have risen very sharply in some sectors (mainly, but not only in low labour cost sectors such as wearing apparel and textiles).

Figure 10: Manufacturing REER for alternative groups of competitors



EU16: Austria, Belgium, Czech Republic , Denmark, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Slovakia, Slovenia, Spain, Sweden, UK.
Selected competitors: Portugal, Canada, Japan, Norway, South Korea, USA, Estonia, Iceland.

25 ECORYS, *Study on the cost competitiveness of European industry in the globalisation era - empirical evidence on the basis of relative unit labour costs (ULC) at sectoral level*, July 2011

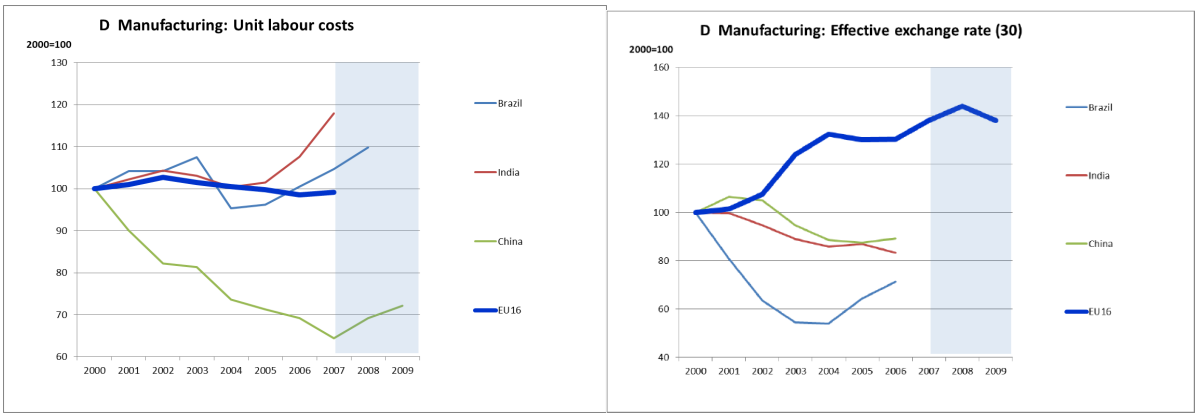
26 Austria, Belgium, Czech Republic , Denmark, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Slovakia, Slovenia, Spain, Sweden, UK

Selected competitors+BIC: Canada, Estonia, Iceland, Japan, Norway, Portugal , South Korea, USA, , Brazil, India, China.

Source: ECORYS

Currency movements (the relative appreciation of the euro) have a strong impact on the relative competitive positions of BRICS. Competitive improvements in REERs of Brazil, India and China have been sustained by the evolution of their exchange rates. This effect was especially substantial for Brazil, and relatively less for China. On the other hand, trends in unit labour costs (ULC) show that, with the exception of China, differences across countries were not substantial and they contributed little to changes in cost competitiveness. Consequently, Brazil's improved cost competitiveness was supported by the massive devaluation of the real. Similarly, in India where the increase of ULC was faster than in the EU16, gains in cost competitiveness were also assisted by currency depreciation. In China, though, the rapid fall in ULCs, which was spurred by improvements in labour productivity, combined with currency depreciation (following the US dollar) gave a sustained improvement in its REER.

Figure 11: Brazil, China and India unit labour costs in manufacturing



Source: ECORYS

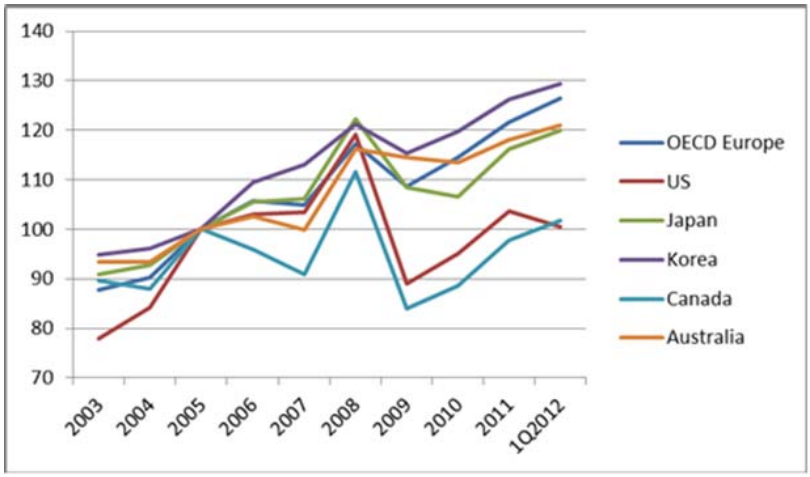
The negative effects of the appreciation of the euro were to some extent reduced by the recent depreciation of euro, but the real ULC has remained broadly unchanged. Still in the longer term the manufacturing sector has to further increase its productivity in order to improve its competitiveness performance.[27]

Affordable and reliable access to energy and raw materials are becoming increasingly important as they account for a significant part of the cost in many industries. Energy prices for European industry went up by 27% in real terms between 2005 and early 2012, which is significantly more than in most other industrialised nations, especially the US.[28]

27 See also: European Commission, European Competitiveness Report 2009, pages: 27-32.

28 IEA, *Energy prices and taxes*, Quarterly Statistics, 2nd quarter 2012

Figure 12: Indices of real energy prices for industry (total energy, 2005 = index 100)

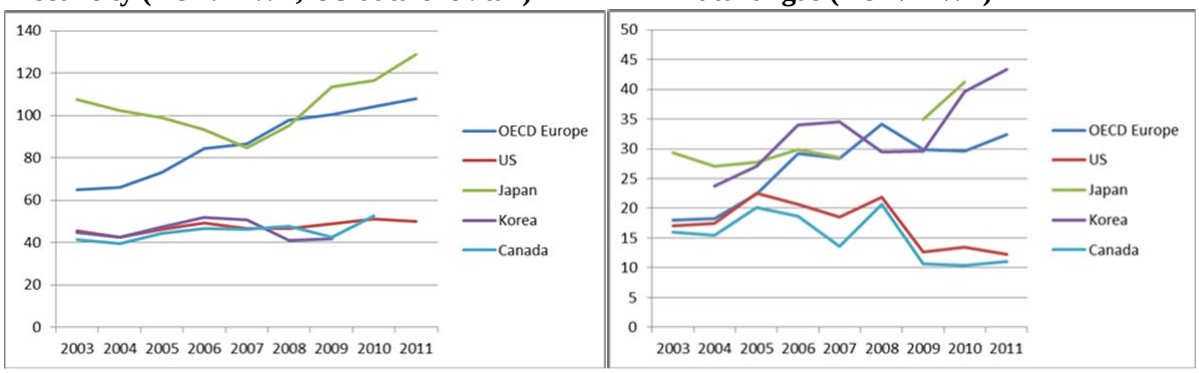


Source: IEA energy prices and statistics

As regards electricity more specifically, European industry is on average facing significantly higher prices than industries in other developed economies such as the US, Canada, Mexico and Korea – and the difference has on most accounts increased drastically over the last decade. The differences in prices are also evident in the gas market, which is in part due to substantial reductions of gas prices in the USA in the last couple of years, thanks to the "shale gas" boom. Consequently, the impacts on the price of energy in Europe must be carefully considered when defining future policies for energy and related areas.

Figure 13: Energy prices for industry

Electricity (EUR/MWh; US data excl. tax) **Natural gas (EUR/MWh)**



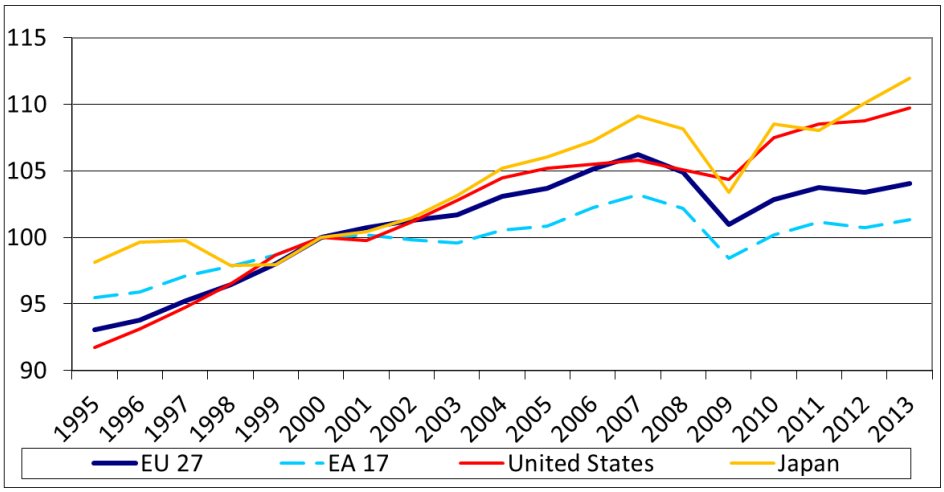
Source: IEA energy prices and statistics

The need to promote innovation as a driver of competitiveness

Our innovative performance has been poor compared to our main trading partners. The evolution of Total Factor Productivity (TFP) does not provide very optimistic results for the EU27 and euro area. Since 2000, the TFP has remained broadly flat for the euro area while the improvement for the entire EU27 was relatively small and lagged behind that of the USA and Japan. This indicates that the EU is not only losing its cost competitiveness, but is also performing worse than its competitors in terms of exploiting new technological developments or improving efficiency. The relatively better performance of the EU27 than euro area might point to some catching up effect of the Member States that joined the Union after 2004 (EU12), but the overall pace of TFP improvement for the EU27 has been slower than in the USA or Japan.

This situation reflects the relatively slow evolution of competitiveness in the EU last decade compared to emerging countries and the USA. The distribution of manufacturing value-added among high-tech, medium-tech and low-tech industries is basically the same as in 1979. In contrast, in the USA there has been a significant shift in industrial structure towards more high-tech and knowledge intensive manufacturing and service sectors. The industrial structure of Europe is relatively more focused on medium and medium-high tech sectors and relatively less on high-tech sectors. These trends were also visible in the recent years. In the period between 2006 and 2009 high-tech industries were losing their importance in favour of medium-tech industries, whilst in the USA exactly the opposite happened. Despite the importance and contribution of the medium-tech sectors to GDP, this lack of structural shift in Europe suggests that the European economy has been less dynamic and less competitive in exploiting the opportunities from new technologies.[29]

Figure 14: Total factor productivity: total economy (2000=100)



Source: AMECO

Table 1: Technology specialisation of manufacturing industry

	Manufacturing value added by type of industry (% of total)			
	2006		2009	
	EU	USA	EU	USA
High-tech	12	18	10	21
Medium-high-tech	32	25	33	22
Medium-low-tech	26	23	27	23
Low-tech	30	34	30	34
Total manufacturing	100	100	100	100

Notes: *High-tech: office machinery and computers (30), radio, television and communication equipment and apparatus (32), medical, precision and optical instruments, watches and clocks (33), aircraft and spacecraft (35.3), pharmaceuticals, medicinal chemicals and botanical products (24.4).

* Medium-high-tech: machinery and equipment (29), electrical machinery and apparatus (31), motor vehicles, trailers and semi-trailers (34), other transport equipment (35) excluding building and repairing of ships and boats (35.1) and excluding aircraft and spacecraft (35.3), chemicals and chemical products (24) excluding pharmaceuticals, medicinal chemicals and botanical products (24.4).

[29] See also:European Commission, European Competitiveness Report 2011, pages: 45-49.

* Medium-low-tech: coke, refined petroleum products and nuclear fuel (23), rubber and plastic products (25), non-metallic mineral products (26), basic metals (27), fabricated metal products (28), building and repairing of ships and boats (35.1).

* Low-tech: food products and beverages (15), tobacco products (16), textiles (17), wearing apparel; dressing and dyeing of fur (18), tanning and dressing of leather, manufacture of luggage, handbags, saddlery and harness (19), wood and products of wood and cork, except furniture (20), pulp, paper and paper products (21), publishing, printing and recorded media (22), furniture and other manufacturing (36), recycling (37).

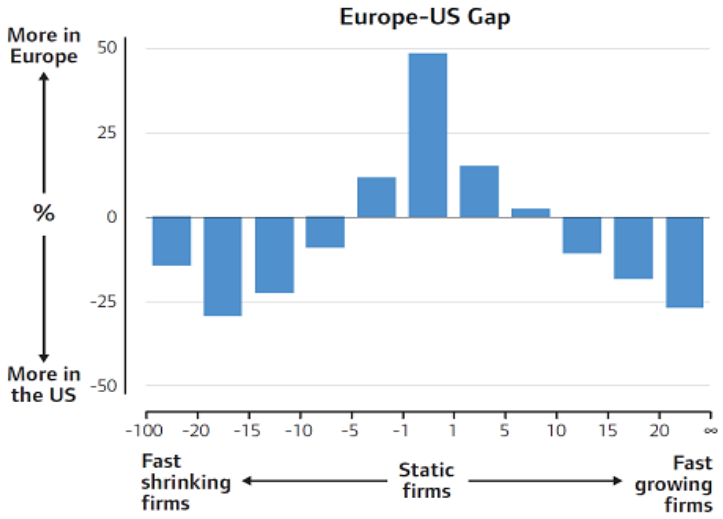
Source: Eurostat, OECD, own estimations

The differences in firm demographics between the USA and Europe illustrate the point further. Data on the firm growth rates indicate that a significantly higher proportion of European firms experience only modest or zero growth compared to the USA, and that there is a significantly larger proportion of both contracting and expanding firms in the USA[30]. An examination of data at sectoral level shows a similar picture, suggesting that the difference is systemic and not limited to the manufacturing sector.

An analysis of data from the R&D investment scoreboard[31] confirms this conclusion for high-tech firms. In particular, it shows that a larger proportion of the USA scoreboard companies are young companies and that these USA companies are also comparatively more R&D intensive.[32] In other words, in Europe fewer newly founded firms grow to become large companies (i.e. fewer "Google's" or "Microsofts") and large European companies are more often older compared to the USA.

The increasing difference between the USA and Europe in the adoption of new technologies can also be explained by data on manufacturing R&D intensity a few years ago, which is an indicator of the level of technological innovation. These data show that there was a lower level of R&D in Europe compared to the USA. It is well-documented that this overall "R&D gap" between Europe and the USA is, to a large extent, explained by a higher proportion of high-tech industries in combination with a higher R&D intensity of those industries in the USA. This gap seems to have been growing over time.

Figure 15: Europe-USA gap in firms distribution by type of company



Source: Bravo-Biosca, 2011

30 Albert Bravo-Biosca, *A look at business growth and contraction in Europe*, October 2011

31 Joint Research Centre, European Commission, *The 2011 EU Industrial R&D Investment Scoreboard*, Technical Report EUR-24977-EN, http://iri.jrc.es/research/scoreboard_2011.htm

32 Moncada-Paternò-Castello, P.; Ciupagea, C., Smith, K. and Tübke, A., *Does Europe perform too little R&D? A comparison of EU and non-EU corporate R&D performance*, Research Policy, 39, 2010, pp.523-536

These data also show that the European R&D intensity tends to be lower also in the more mature low-tech and medium-high tech sectors. While R&D is an integral part of the business strategy of firms in high-tech industries, which are characterised by a more rapid technological development, all sectors are today confronted with the need to face up to the challenges and opportunities from technological developments.

Therefore, it is important to increase the share of high-tech sector over value added in Europe, because these sectors display the highest levels of R&D and innovation. However, exploiting the potential for innovation is crucial for the competitiveness also of mature industries, and in terms of growth of jobs this may be economically as important as R&D in high-tech industries.

Table 2: R&D by type of industry

	Manufacturing BERD as % of manufacturing value added by type of industry (2006)	
	EU	USA
High-tech	24.1	38.4
Medium-high-tech	8.5	9.2
Medium-low-tech	1.8	1.7
Low-tech	1.0	1.6
Total manufacturing	6.5	10.1

Notes: * EU does not include BG, EE, IE, EL, CY, LV, LT, MT, PT, RO and SK. The 15 member states included in the EU aggregate account for more than 90% of total manufacturing value added and manufacturing BERD in the EU

* USA building and repairing of ships and boats was classified as medium-high-tech rather than medium-low-tech

* The manufacturing BERD data for BE, FR, FI, SE, UK were classified by product field; the data for all other countries were classified by main activity

Source: DG RTD, Eurostat, OECD

Notwithstanding this relative innovation underperformance, Europe has strong competitive positions in a number of industries and it has many world class-companies. Among the dominant market players the European firms account for the highest share in the total worldwide investments in R&D in sectors such as automotive, chemicals, aerospace or industrial engineering.[33] However, globalisation is putting the traditionally strong positions of European industry that are being threatened by the BRICs rapidly catching up across all sectors increasingly under pressure. Thus, in order to remain competitive it is necessary to improve innovation performance in all manufacturing and service sectors of the economy.

4. ANALYSIS OF PRIORITY AREAS

4.1. Industrial innovation

Despite the economic slowdown, Europe needs to continue to make major investments in new technologies and promote their adoption and diffusion in the economy. This is essential not only to maintain the competitiveness of industry, but also to facilitate the achievement of our wider social and environmental objectives. In this context, Europe should strengthen its industrial base through ensuring the timely commercialisation and deployment of the key enabling technologies and the development of the market framework for new products such as electric and hybrid vehicles. It is also crucial to make a step change in the transition to an

[33] European Commission, JRC/DG RTD, *The 2011 EU Industrial R&D Investment Scoreboard*

energy- and resource-efficient economy of our industry and to increase the degree of recycling and reuse. This requires upgrading our electricity infrastructure and smart grids to accommodate the massive roll out of renewable energies in tune with our 2050 decarbonisation targets, and ensuring a major improvement in the energy-efficiency of residential and office buildings.

Box 2: The potential of the new industrial revolution for manufacturing competitiveness and addressing societal challenges

A variety of radical new industrial technologies are emerging in the course of a "new industrial revolution" that will lead to the formation of **new goods, services, and business models** that will reshape EU industry. Some prominent examples include:

- The development of "**intelligent products that do the job**" including clean, safe and intelligent vehicles that combine electric power trains that reduce emissions with new safety and comfort features such as auto-piloting that improve security and performance and allow the more intensive and efficient use of infrastructure. The development of such products will improve assisted living and will be essential to allow elderly and disabled people maintain an active and healthy lifestyle.

- The deployment of advanced manufacturing technologies that allow **customised production** in much smaller quantities than is currently economically feasible. So-called 3D printing technologies are increasingly used to make plastic and metal production parts by carmakers, aerospace firms and consumer-products companies. These “printers” use very thin layers of powdered materials fused by lasers or electron beams enabling the production of precision products whilst saving energy and raw materials[34]. The wide availability of low cost small production runs will increase opportunities for innovative SMEs to develop new niche products and business models.

- The development of **key enabling technologies** such as advanced materials and nanotechnology may result in a reversal of the current tendencies for basic production and processing in heavy industries to be outsourced to third countries. Advanced materials with special properties such as heat-resistant or high-strength steel for aircraft and intelligent nano-materials such as corrosion-resistant steel for bridges are being developed in Europe. This provides the opportunity for Europe to become a competitive location once more for the upstream part of the steel value chain.

- New business models are emerging that link manufacturing closer to services. The development of **new services and business models** is enabled by technological innovation. The development of smart phones that bundle internet services with equipment is a clear example. The development of RFID (Radio frequency identification) that has resulted in a vast increase in timely information availability allowing the closer integration of market research, logistics, and manufacturing businesses, resulting in faster responsiveness to market demands and increased energy-efficiency of the transport sector is another good example[35]. These developments also affect more traditional services such as cleaning (ultrasonic cleaning) and chemicals leasing, rather than outright sale, when this is feasible.

Technologies developed by industry will also be indispensable to find solutions to the major **societal challenges** facing the EU and the world. Over the next five to ten years, EU industry will:

[34] Economist, 10 February 2011 http://www.economist.com/node/18114221

[35] Services Innovation Expert Panel: Case Studies, 2011.

- Contribute significantly to the reduction of the "**environmental footprint**" of mankind (climate change, air, water and soil protection and waste management). In particular, the environmental challenges triggered by the aspiration of a growing number of emerging market economies to EU-levels of living standards will increase enormously the demand and opportunities for eco-technologies and services. EU industry is in a strong position to supply such demands.

- Deliver **clean production** and a sustainable resource footprint for the economy (resource and energy efficiency, use of renewable forms of energy, recycling, management of depleting raw materials). For example, heavy investment in energy- and resource-efficiency will lead to the development of the clean factory that maximises energy and resource efficiency and produces zero waste and near zero emissions. Such factories would employ energy and material efficient processes and machinery, utilise renewable power sources, and employ smart energy management with extensive recovery of heat and dissipated energy[36].

- Provide solutions for a **healthily aging society**. For example, the exploitation of the potential of the life sciences will enable the development of new medicines based on biotech and genomics providing more targeted interventions, blurring the distinction between therapeutic and diagnostic interventions and leading to the availability of new treatments as well as the prevention of certain conditions such as asthma and diabetes[37].

- Contribute to providing **global security** in the face of natural disasters and terrorist threats. For example, once operational GMES services will provide the monitoring and forecasting of the Earth's subsystems, including climate change. GMES will also address emergency response e.g. in case of natural disaster, technological accidents or humanitarian crises, and security-related issues such as maritime surveillance, border control.

Despite a strong research base, Europe has traditionally been slow at translating its research strength into the deployment and commercialisation of new products, processes and services. The results of the Lead Market initiatives[38], Key Enabling Technologies Communication[39] and subsequent High-Level Group[40] drew attention to the need for a more ambitious industrial innovation policy that addresses the reasons for the failure of the EU to take sufficient and timely commercial advantage of its excellent research base:

- The fragmentation of the EU Internal Market reduces the market for new goods and services developed from new technologies. There is a need to improve the framework conditions for developing and implementing new technologies, goods, services and business models, including an earlier provision of regulation and standards needed to create the Internal Market for new products and services and appropriate widespread development and usage of innovative public procurement.

- The technology policies of the EU and Member States are insufficiently co-ordinated and lack integration. This leads to delays and wasteful duplication relative to practices in the USA and Asia. It also importantly reduces the scope for economies of scale and synergies in innovation: in particular, it is often necessary to integrate together different technologies to be able to create highly innovative goods and services.

- The successful development and commercialisation of technologies into goods and services requires the undertaking of high-cost and high-risk demonstration and proof-of–concept

36 Factories for the Future Roadmap

37 E.g. the Imidia and U-biopred initiatives of the Innovative medicines initiative.

38 http://ec.europa.eu/enterprise/policies/innovation/policy/lead-market-initiative/#h2-1

39 COM(2009) 512.

40 http://ec.europa.eu/enterprise/sectors/ict/files/kets/hlg_report_final_en.pdf

projects. The costs of such "experimental development" activities are considerably greater than the costs of R&D, resulting in what the HLG on Key Enabling Technologies called a "valley of death" in the development of new products. In particular there is the need to develop risk- and cost-sharing facilities to ensure the timely carrying out of such projects.

- There is a relative shortage in the EU of technology entrepreneurs and skilled labour capable of handling the highly multi-disciplinary nature of technological development. There is a need to improve the EU's skills base, increasing the number of science, technology, engineering and mathematics (STEM) graduates, fostering inter-disciplinarily in education, promoting entrepreneurship education and training.

- There is also a major shortage of risk and venture capital in the EU compared for example to the USA market. Priorities are improving the financing of innovation and risk capital especially for young innovative SMEs, including through improved venture capital, risk sharing facilities, and project bonds.

4.1.1. Priority areas for intervention in industrial innovation

Successful delivery of key investments in technologies and innovation will require substantial co-ordination between private and public sectors. Proactive intervention of the Commission requires setting out flanking measures such as targets and timetables for the development of the legislation (especially Internal Market legislation), technical standards and other necessary steps to create an appropriate and predictable legal environment for the development of the market, as well as further R&D measures.

The focus of policies should be on a limited number of new markets where ready to adopt innovations are already available. At the same time, the policies need to enable exploiting the potential of the emerging technologies resulting from the new industrial revolution. Thus, considering their market potential and possible role in meeting the societal challenges following markets and sectors have been identified as areas where policy intervention could have the highest impact.

Advanced manufacturing technologies for clean production

Markets for clean production technologies are expected to grow strongly with the world market almost doubling up to 2020 from some € 380 billion in 2007 to € 765 billion in 2020. The most important parts of this market are in production technologies. Europe already has a 35% plus share in production machinery. The world markets for electric motors and control devices are expected to double from 370 billion in 2007 to € 730 billion in 2020. Smaller markets such as that for water efficiency are expected to grow at even faster rates, by some 10% p.a. Very fast growth is also expected in automatic waste separation, a sector where Europe has dominant market share: the world market is expected to growth by a factor of five by 2020.

Table 3: World markets for clean production technologies (2010-20, € billion p.a.)

Sector	2007	2020 forecast	Annualised growth rate
Measurement and control	250	470	5%
Electric motors for production	120	260	6%
Water efficiency in production	9	33	10%
Automatic waste separation	0.3	1.5	15%
TOTAL	380	765	5.5%

Source: Roland Berger "GreenTech Made in Germany" 2009 (updated 2012)[41]

Amongst the principal technological opportunities for advanced manufacturing are[42]:

- Developing new manufacturing processes such as 3-D printing, photonics-based processing technologies and innovative physico-chemical processes;
- Developing smarter manufacturing through advanced control and monitoring technologies to generate high-value in terms of quality and productivity whilst consuming less energy and generating less waste;
- Developing better collaboration, security, and mobile information processing through deployment of ICT, facilitating e.g. the sale of products as services;
- Developing modelling, simulation and forecasting methods to enable the optimisation of processing systems and improved product design and management;
- Developing and integrating new sustainable materials and waste as industrial feedstocks;
- Using novel advanced energy systems and industrial symbiosis to radically reduce energy usage;
- Developing waste into resources through separation, extraction, sorting and harvesting of gaseous, liquid and solid waste streams.

Amongst the key challenges:

- Ensuring a stable and predictable legal environment that would set clear targets and minimum requirements;
- Developing incentives that would mobilise economically attractive investments in clean technologies;
- Stimulating market through investment plans in public infrastructure and buildings;
- Enabling the financing of risky and costly demonstration projects;
- Ensuring the availability of appropriately skilled workers and engineers.

Sustainable construction and industrial products

The construction industry accounts for over 6% of GDP and provides around 15.5 million direct jobs, mainly in micro and small enterprises (data for 2011). This economic importance of the sector, however, is accompanied by its substantial impact on the environment. The manufacturing and transport of construction products are responsible for about 10% of final energy consumption and about 50% of all materials extracted from earth. Besides, buildings account for the largest share of the total EU final energy consumption (42%) and produce about 35% of all greenhouse emissions.[43]

The construction sector has been seriously affected by the current crisis leading to a loss of some 2 million jobs. Consequently, supporting sustainable construction is a not only important for employment and economic growth, but also a major element of the EU

41 http://www.bmu.de/files/english/pdf/application/pdf/greentech2009_en.pdf, updated in 2012 http://www.rolandberger.com/media/pdf/Roland_Berger_Umbau_Energiesystem_20120208.pdf

42 Factories of the Future Roadmap 2020 Consultation Document (2012) and SPIRE R&I Roadmap for the European Process Industry (July 2012).

43 SWD(2012) 236.

sustainable development strategy. According to the Commission assessments, the contribution of the buildings sector to the overall EU's long-term 80-95% greenhouse gas emission reduction objective is high, with low-cost and short-term opportunities to reduce emissions of around 40 to 50% in 2030 and around 90% in 2050[44]. Higher energy efficiency in new and existing buildings is also crucial for the transformation of the EU's energy system.

To achieve these potentials, appropriate policies to promote demand and encourage investment are needed. These investments would also contribute substantially to the competitiveness of the European construction sector and job creation[45]. The areas concerned are quite wide and cover both residential and non-residential buildings as well as infrastructure construction and modernisation. They also involve different aspects of business activity, from the use of ecologically sound building materials to assessing the environmental impact of urban development strategies.

Moreover, sustainable construction and industry is tightly linked with development of markets for sustainable products. Encouraging the supply and the demand for sustainable construction products enables manufacturers and suppliers to compete on parameters other than price, i.e. energy and environmental performance. This requires better reflecting the key environmental impacts of a product over its life cycle, both for highlighting improvement and cost saving opportunities, and providing the possibility to differentiate the product on the market.

Sustainable construction markets have an important local element as construction markets are mainly local. Thus, the use of recycled or reused materials depends on the local infrastructures and the distance that recovered materials need to be transported. Nonetheless, development of a more efficient Internal Market for waste and in particular for recycling would greatly contribute to a further reduction of waste going to disposal as well as consumption of natural resources and to additional improvements in energy efficiency. The EU has around 50% of world share of the waste and recycling industries and its recycling sector has a turnover of € 24 billion, employing about 500 000 persons. Given the fact that the European industry is facing increasing price volatility on commodity markets and difficulties in accessing certain critical materials, addressing the challenges in the recycling industry is fundamental to achieving sustainable materials management by European companies.

Key challenges are:

- Overcoming the mismatch of building regulations at the EU and national levels which leads to considerable administrative burdens and fragmentation of sustainable construction market;
- Better value-chain integration leading to an increase in innovation spill-over effects and spreading of good practices;
- Providing right investment conditions, funding and incentives for innovative energy-efficient solutions in buildings renovations and infrastructure maintenance as well as an enhanced up-take of renewable energy technologies;
- Adapting the market and preparing of the labour-force for the introduction of Nearly Zero Energy Buildings;

[44] COM(2011) 112.

[45] It is estimated that 275 000 new jobs could be created in the sector by 2020. CEDEFOP 'Skills, Demand and Supply' 2010, p. 96 - http://www.cedefop.europa.eu/en/Files/3052_en.pdf .

- Developing European market for eco-products by combining various instruments such as public procurement, standardisation, advisory services, technology support and regulation to boost demand and attract companies to invest in eco-products;
- Facilitating further use of waste as a resource for industry.

(a) Clean vehicles and vessels

The European automotive industry is a key sector for the European economy, providing over 12 million jobs and a positive contribution to the trade balance of around € 90 billion (in 2011), which is essential for continued European prosperity. The global car fleet is predicted to grow from 800 million to 1.6 billion vehicles by 2030[46].

In order to meet the EU's climate change goals and to reduce oil dependency, a variety of alternative fuels need to be developed, including renewable electricity, biofuels, methane, hydrogen and LPG. The market penetration of these fuels requires the development of appropriate standards and regulations, the development of infrastructure, and support for initial R&D and demonstration projects.

The Renewable Energy Directive (2009/28/EC) established a 10% share of renewables in transport by 2020. Biofuels are expected to play a major role in fulfilling these targets, according to the National Renewable Energy Plans. There is a need to further harmonise these fuels across the Single Market. The challenge is to make the transition from first-generation biofuels to more sustainable second generation biofuels, including from waste and other residues or sustainable energy plants.

Electric vehicles are a niche market at present, but sales are then expected to expand as battery technologies improve, reducing costs and increasing vehicle ranges. Initially plug-in hybrid vehicles are likely to dominate the market first, and from 2020 onwards, battery electric vehicles will gain in importance, with full-cell electric vehicles developing later. An industry study projects fuel cell vehicles becoming competitive with battery electric vehicles by 2025[47]. A recent study predicts that in 2020 about 7% of the European new vehicle will be electric vehicles (5% for Plug-In Hybrids and about 2% for Battery Electric Vehicles and Range Extender). Additionally, about 9% of the EU new vehicle registrations will be represented by Full Hybrids. In 2030 approximately 31% of the EU vehicle registrations will be Electric Vehicles.[48] Which of these forecasts is closer to the truth will depend to large extent on the policy support.

Despite the increasing globalisation and outsourcing, the European value added is expected to decrease only slightly as a result of the transition to electromobility. Consequently, employment in automotive sector should also not change substantially. In case of services, it is predicted that field maintenance and repair sectors might experience some decline, because electric vehicles will not require as much servicing as vehicles with internal combustion engines. However, it is also expected that new services linked to electromobility will emerge in the long term (e.g. charging, recycling).

The construction of charging stations for electric vehicles will require investments in the grid upstream to accommodate the additional demand for electricity. Investments in reinforcing

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46 United Nations Economic Commission for Europe - World Forum for Harmonization of Vehicle Regulations (UNECE-WP.29): Informal document GRPE-58-02.

47 McKinsey&Company, *A portfolio of power-trains for Europe: a fact-based analysis. The Role of Battery Electric Vehicles, Plug-in Hybrids and Fuel Cell Electric Vehicles*, 2010.

48 Universitaet Duisburg-Essen, Competitiveness of the EU automotive industry in electric vehicles, 2012 (initial findings).

the grid are part of the regulated activity, and do not bear high financial risk for the Distribution System Operator (DSO) as long as the regulator approves the investments. However, investments in the charging stations can be done either by the DSO as part of the regulated activity, or they can be operated as a commercial activity.

It is important to assure that public charging points are 'smart' i.e. control of charging and communication is possible between wholesale electricity providers, management of the distribution grid and charging stations. This should ensure that the choice of electricity supplier at the public charging point is possible, while billing is adequate and the impact of vehicle charging on the grid is manageable and can contribute to the grid's flexibility. This should allow for business models where electricity (including the flexibility that controlled charging enables) is sold together with an electric vehicle.

For investments in charging points for electric vehicles in households, the EU smart meter policy (Annex I.2 of Directive 2009/72/EC) needs to be taken into account. This means that the Member States policies on separate charging points for private locations should be consistent with smart meter roll-out plans i.e. when smart meters are planned to be installed they need to ensure that the electric vehicle charging benefits from it. Vice-versa, smart meters may become also more cost-beneficial for owners of electric vehicles.

Currently, there is no overall European policy framework for electric vehicles, although policy will play a major role in accelerating the transition to electric mobility. It is essential to support automotive industry by introducing economically efficient policy measures.

(b) Bio-based products

The bio-based products cover a broad range of intermediate products, product components, and ready-made products, e.g. bio-based plastics, bio-lubricants, bio-fibres for textiles, composite materials for construction and automotive, chemical and pharmaceutical building blocks, organic acids, amino acids, and enzymes. The total market or markets for bio-based products globally and within the European Union (EU) are difficult to estimate. Generally there is a strong tendency to focus on markets where bio-based products can substitute for products based on other raw materials and the possibilities to estimate the extent of markets for these new bio-based products are limited. Thus, since the sector is expected to change over time as bio-based products evolve, it is extremely difficult to make an exhaustive definition or a list of bio-based products and to identify corresponding data.[49]

Nonetheless, in 2009 the market of bio-based was estimated at some 57 billion euros and accounted for over 300 000 work places.

Table 4: Market size of bio-based industries

Sector	Annual turnover (billion €)	Employment (thousands)	Data source
Bio-chemicals and plastics	50 (estimation*)	150 (estimation*)	USDA, Arthur D Little, Festel, McKinsey, CEFIC
Enzymes	0.8 (estimation*)	5 (estimation*)	Amfep, Novozymes, Danisco/Genencor, DSM
Biofuels	6**	150	EBB, eBio

[49] CSES, *Final* Evaluation of *the Lead Market Initiative*, June 2011

*Estimation for Europe for 2009, **Estimation based on a production of 2.2 million tonnes bioethanol and 7.7 million tonnes of biodiesel at average market price in Europe

Key challenges:

- More coherent policy framework including more consistent standardisation, labelling and certification to encourage the diffusion of innovative practices;
- Increasing investment in research, innovation and skills;
- Development of bio-based markets e.g. through unambiguous European and international standards, binding targets or specific labels;
- Stronger policy coordination and better communication with the public.

(c) Key enabling technologies

Key enabling technologies (KETs) include micro-/nanoelectronics, nanotechnology, photonics, advanced materials, industrial biotechnology and advanced manufacturing systems. Market potential for these technologies is difficult to estimate, as they represent technologies and products which are often at a pre-commercial or even conceptual stage. Future demand is largely unknown and, as past experience shows, many of the most important application areas of new technologies are difficult to envisage at the early stages of technological development. In any case, the market volume was roughly estimated at some $ 830-970 billion in 2008 and was projected to grow to $ 1.3-4.4 trillion around 2015.[50] However, key enabling technologies should be also considered as enablers of entirely new applications in many fields of manufacturing that will help establish new markets which cannot be measured by current market volumes.

Table 5: Estimated global market potentials of key enabling technologies

	Current market size (around 2006/08; $)	Expected size in 2015 (around 2012/15; $)	Expected compound annual growth rate
Nanotechnology	80bn	1500 *bn	30%
Micro and nanoelectronics	250 bn	325 bn	9%
Industrial biotechnology	90 bn	135 bn	8%
Photonics	230 bn	480 bn	8%
Adv. materials	100 bn	150 bn	6%
Adv. manufacturing techn.	150 bn	200 bn	5%

** Average estimation with high variance*

Source: ECR 2010; Confindustria (2009)

It may also be noted that communication network and service platforms represent critical enabling technologies with huge downstream market potential, as 2015 global market figures indicate:

(a) Communication network equipment: € 360 bn

(b) Communication network services: € 1270 bn

(c) IT equipment: € 390 bn

(d) IT services: € 890 bn

[50] European Commission, European Competitieness Report 2010, European Competitiveness in Key Enabling Technologies, 2010

As European industry represents more than 25% in several of these sectors, their inclusion as part of an enlarged set of KET's will be considered. Existing platforms, like the Future Internet PPP[51] and a possible successor PPP in Horizon 2020, could provide the mechanisms to articulate the sector actors in these sectors.

Key challenges include:

- Industrial deployment and commercialisation of solutions from KETs research base;
- Exploiting the synergies between KETs;
- Assuring sufficient funds for industrial research and experimental development activities;
- Pooling resources for European industrial projects;
- Ensuring non-discriminatory and transparent environment for KETs development;
- Assuring sufficiently skilled labour and entrepreneurs.

(e) Smart grids

There is an urgent need to upgrade the EU's energy network to a smart energy grid. Smart grids would allow the two-way communication between suppliers and consumers, improve the efficiency and flexibility of the grids, enhance the control of energy transmission and distribution, and allow consumers to control their energy consumption through intelligent metering and monitoring systems. They would also enable the mass integration of intermittent energy renewable energy sources into the EU energy system, including consumer own-generated power, and they will be essential to facilitate the wide-scale use of electric and plug-in hybrid vehicles.

Conservative market projections show investment spending on smart grids is likely to increase very fast from just over € 1 billion per year at present to over 4 or 5 billion by 2015[52]. The estimated cumulative investment cost of upgrading and modernising the European electricity grid network is a steep acceleration from € 5.5 bn today to € 56 billion by 2020. The IEA estimates cumulative investment expenditure to rise to some € 480 billion by 2035. The number of smart meters installed in the EU will rise from some 45 million at present to at least 240 million by 2020.

The benefits from smart metering are likely to be considerable – between 2 to 10% or more improvement in household energy efficiency. Some € 3 billion, more than half of the cumulative investment up to present, has been spent on the deployment of some 45 million smart meters. Other applications of smart grids include:

- Consumer applications: from in-home displays to home-area networks (feedback controls);
- Demand response: empowering the consumer and providing higher grid flexibility;
- Advanced metering infrastructure: communication of smart meters with utility, suppliers and aggregators;
- Grid applications: monitoring and diagnostics, Volt-VAR optimisation, fault detection and restoral, wide area measurement to improve grid reliability;
- Storage and smart network balancing.

[51] http://www.fi-ppp.eu/

[52] Pike Research, *Smart Grid Technologies*, 2011

Table 6: Cumulative EU investment in Smart Grids

	2010	2020	2035
Cumulative investment	€5.5 bn	€ 56 bn	€ 480 billion
Installed smart meters	45 million	240 million	n.a.
Source	JRC Smart Grid Projects in Europe 2011	Pike Research "Smart Grids in Europe"2011	IEA World Energy Outlook 2010

The Commission Communication COM(2011) 202 *Smart Grids: from innovation to deployment*, adopted in April 2011, sets policy directions to drive forward the deployment of future European electricity networks. The Commission proposes to focus on the following challenges:

- Developing technical standards;
- Ensuring data protection for consumers;
- Establishing a regulatory framework to provide incentives for Smart Grid deployment;
- Guaranteeing an open and competitive retail market in the interest of consumers;
- Providing continued support to innovation for technology and systems

Actions already launched by the Commission are: the Commission's Mandate M/490 to European Standard Organisations for Smart Grid standards; the Commission Recommendation [C/2012/1342] of 9 March on the preparation for roll-out of smart metering systems which includes guidance for Member States with respect to data protection and security requirements; and the Commission proposal for a Regulation for Energy Infrastructure COM(2011) 658, published on 19 October 2011, which includes the identification of Smart Grid Projects of European Interest and means to leverage their financing. Furthermore, the Commission have also launched two related industrial initiatives: the European Grids and the Smart Cities and Communities.

Key challenges ahead for the development of these markets include:

- Regulating other aspects of smart grids than smart metering (privacy and security, home area networks and grid applications, demand response);
- Identifying the ways of financing of smart grids: Member States, consumers, network operators or electricity retailers, aggregators and energy service companies;
- Fill the gaps of EU-wide technical standards: different countries adopting different technology standards for smart grids and smart metering systems;
- Lack of clarity about future deployment of some of the technologies for which smart grids will be needed such as electric vehicles;
- Lack of consumer demand: short-term costs to consumers vs. long-term benefits, low awareness of potential benefits of smart grids.

4.1.2. Future workplaces and design for innovation

The advent of a new industrial economy is likely to generate readjustments and restructuring in labour markets. The digitalisation of manufacturing leads to higher demand for multidisciplinary skills and high-skilled engineers who can combine mechanical and software engineering. The retraining of workers for new skills will also be important in fields such as bio-based products or the automotive sector. An anticipative adaptation of the manufacturing workforce to new skill requirements is required, although this is particularly difficult for small companies to manage. Stronger governmental support and government-academia-industry cooperation could reduce cost and improve vocational training provision.

Labour mobility is a key adjustment variable in these processes of industrial change. The crisis has made apparent severe imbalances in the supply of skilled labour across the EU. The smooth operation of the Internal Market for labour will eliminate considerable delays in the adoption of new technologies and innovations. New working practices will help companies to employ an aging workforce and attract skilled people to manufacturing.[53] Novel technologies change the mix of jobs and change the mix of tasks inside jobs. So, an environment should be created that stimulates transformation of workplaces, that promotes new forms of 'active jobs'[54] and encourages the development of new skills (including innovation and entrepreneurial skills).

Another key driver of innovation and productivity is the mainstreaming of design as a strategic company asset. Strategic design is understood to go beyond purely aesthetical considerations and represents a tool for solving complex problems in modern business

As announced in the Commission's Innovation Union flagship initiative, a European Design Leadership Board has developed proposals for enhancing the role of design in innovation across Europe. Grouped into six strategic design actions, they include the need to differentiate European design on the global stage, to strengthen design competencies, and to position design within the European research and innovation system. The Commission will implement these recommendations through a comprehensive plan of targeted actions in this field.

4.1.3. Demand side innovation

A well-functioning market for innovations will attract a new generation of competitive manufacturing and services, and help respond to societal challenges. Private and business consumers may need initial incentives to buy innovative products and services. High uncertainty[55] and low levels of demand in many innovation markets hold back investment in innovation, product design and prototypes.

Realising this potential will require a significant shift in the policy interventions to spur European innovations to the European and global marketplace. Europe has a tradition in investing public and private money in research and innovation by grants, loans and tax incentives. However, we also need to create market pull for innovations, thereby cutting the long and arduous journey to market. For example, more innovation inside the public sector[56]

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53 See report: http://ec.europa.eu/enterprise/policies/innovation/policy/social-innovation/index_en.htm

54 Jobs in which workers have sufficient autonomy to control their work demands coupled to more discretionary capacity for learning and problem-solving (see Dortmund/Brussels Position Paper on Workplace Innovation, 26 June 2012, http://ec.europa.eu/enterprise/policies/innovation/files/dortmund-brussels-position-paper-workplace-innovation_en.pdf)

55 The 2010 survey amongst Finnish companies found that uncertain demand for innovative goods or services was the critical factor that prevented firms from innovating.

56 Innobarometer: public procurement is responsible for 40% of innovations in public sector organisations

leads to better and more efficient services for civil society and for business, and it brings about amplification of impact of public spending on R&D with the public sector acting as 'lead users'. Company surveys show that companies benefit from a first government customer as much as from public research grants. At the same time, a more balanced approach[57] (use of demand- and supply-side tools) could in many cases increase the impact, compared to a situation that demand- and supply side tools are used separately. It is currently quite rare that demand-side and supply-side (research) measures are combined towards the same goal.

Europe has some initial experience in demand-side policies[58] through the Lead Market Initiative[59] (LMI) that was launched in 2007. This piloted holistic roadmaps of demand-side tools tailored to sector/market needs and their innovation dynamics. The final evaluation of the LMI concluded that there was added value in coordinating the use of these tools in most of the pilot sectors. Furthermore, it indicated that engagement with users and supply chains from the private sector brings additional value to the initiative. In the last 5 years, policy makers have focused on piloting these distinct demand-side policy interventions for pulling particular solutions to end-users; pre-commercial public procurement of e-health; low-energy public buildings or zero-emission buses.

The identification process of the sectors in the LMI was done in a top-down manner in 2007. Although this sped up the LMI's time-to-launch, it led to lower engagement by potential stakeholders during the implementation phase. Learning from this experience, the services of the European Commission ran a public consultation on "demand-side policies to spur European industrial innovations in a global market"[60] that gauged the interest in including new sectors in the LMI's successor amongst European business and policy makers, This results of this consultation and discussions with policy makers, industry and other stakeholders will contribute to defining sectors for demand-side actions, that complement the six priority action lines that have been identified in the Communication.

The Commission will plan, in close cooperation with Member States, industry, civil society and other stakeholders over the period 2012 to approximately 2018 a horizontal action plan to boost sales of European products on global markets. This action plan consists of the following three subsequent phases:

i) A set of markets (sectors), which would benefit from demand-driven growth models will be identified. In due course, other sectors could be added.

ii) Following the identification of a number of candidate markets, strategic roadmaps for demand-side measures for specific sectors (e.g. 5 to 8) will be developed and implemented (possibly four years). These sectors may be identified from (sub-) sectors of the six priority action lines, by outcome of public consultation and economic studies, or suggested bottom-up by industry and policy makers. These roadmaps can plan the demand-side actions in larger initiatives, such as European Innovation Partnerships, in public-private partnerships in Horizon 2020 and in programmes at national and regional levels.

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57 L. Georghiou, *Demanding Innovation*, NESTA Provocation 2, 2008.

58 http://www.proinno-europe.eu/inno-policy-trendchart/page/thematic-papers

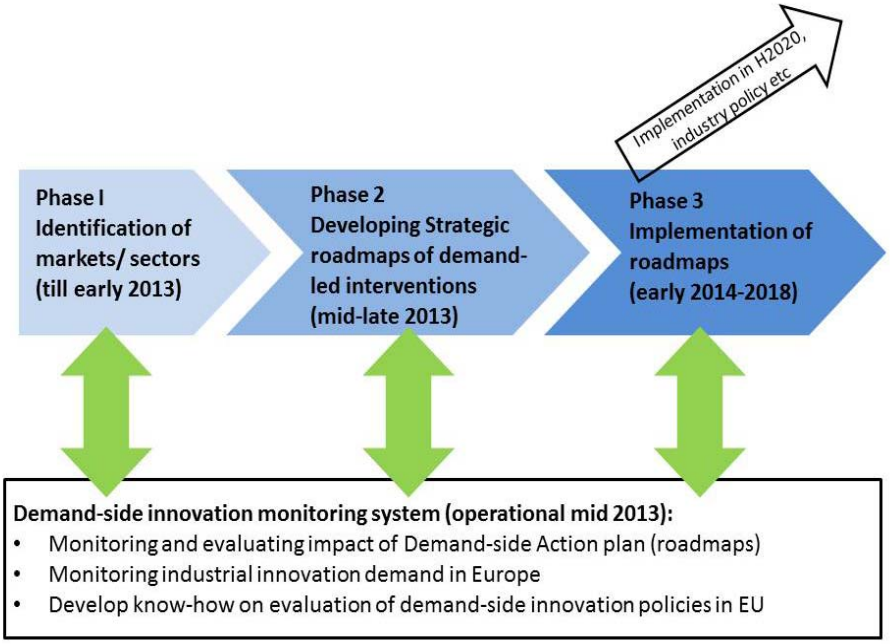
59 ENTR successfully piloted the Lead Market Initiative in 2008-2011.

60 See: http://ec.europa.eu/enterprise/newsroom/cf/itemdetail.cfm?item_id=5967&lang=en&title=Public%2Dconsultation%2Don%2Ddemand%2Dside%2Dpolicies%2Dto%2Dspur%2DEuropean%2Dindustrial%2Dinnovations%2Din%2Da%2Dglobal%2Dmarket

iii) The actions form the roadmaps will be executed in the candidate markets selected in the second phase.

In addition, a new monitoring system will be set up to measure the impact of the implementation of the strategic roadmaps. This system will also act as a platform to exchange best practices in defining, implementing and evaluating actions at any operational level. The Enterprise Policy Group (and its sub-group on innovation) will continue to play a major role in this policy area.

Figure 16: Structure of the action plan to boost sales of European products on global markets



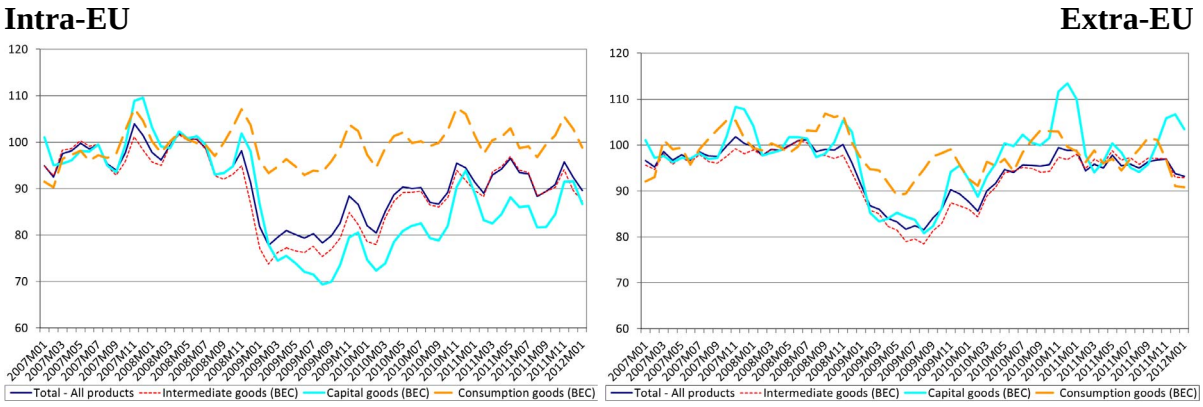
4.2. Internal Market

Companies in the European Union benefit from easy access to the European Internal Market and its nearly 500 million consumers thanks to common procedures, standards and rules between the countries. The Internal Market continues to be the main destination and origin of goods sold in the EU. The share of intra-EU trade in total EU trade in goods in 2010 was almost 64%. Before 2007 imports from other Member States were rising in all EU27 countries, with the fastest growth rate of imports registered in the new Member States. The recent crisis, though, led to a substantial drop in trade in goods, both of imports from outside and inside of the EU. Interestingly, despite the generally subdued internal demand, the former experienced a more pronounced subsequent recovery exceeding their pre-crisis levels. This could indicate some substitution of internal imports with imports from foreign markets.[61]

Looking at the structure of EU imports following the impact of the crisis, it turns out that while the trends follow similar patterns, the magnitudes of changes in imports of consumer, intermediate and capital goods differ somehow. In particular imports of capital goods from foreign markets seem to have been relatively less affected by the crisis than imports within the Internal Market, which are still more than 10% below the levels from the first half of 2008 and are lagging the recovery in other sectors.

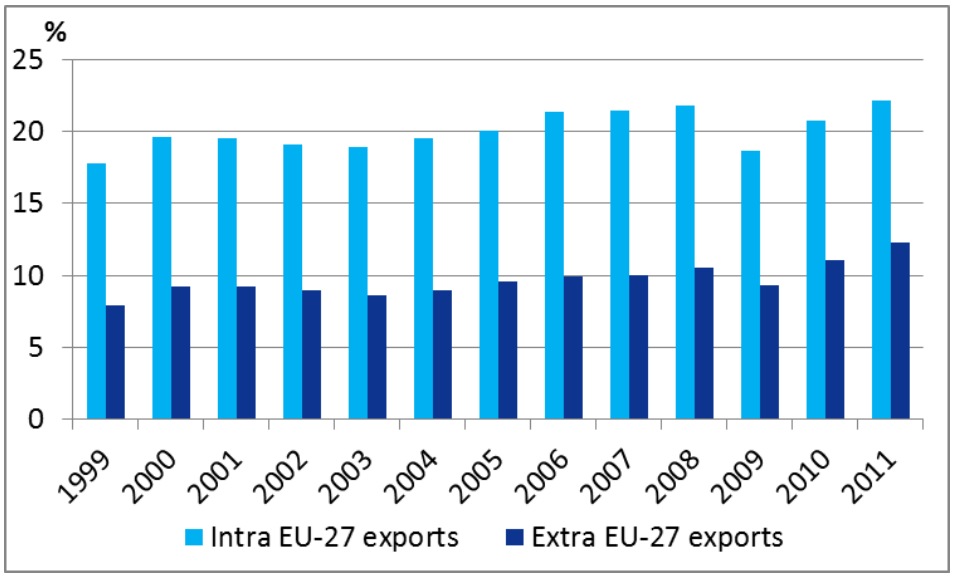
[61] Eurostat, *Intra EU share of EU-27 trade in goods, services and foreign direct investments remains more than 50% in 2010*, Statistics in Focus 3/2012.

Figure 17: EU imports in volumes in selected sectors (BEC), three month moving average (H12008=100)



Source: Eurostat

Figure 18: Value of intra- and extra-EU exports as a share of the EU GDP *large, integrated market*



Source: Eurostat

4.2.1. Internal Market for goods in non-harmonised sector

Looking at the importance of trade for the economy it turns out that the share of intra-EU trade in the GDP has not increased much in the last decade and in 2011 its value was equal to some 22% of the EU27 gross domestic product. On the other hand, the growth of extra-EU exports was much more dynamic, but its value equals only some 12% of the EU GDP. This indicates that the Internal Market is still of huge importance for European companies and that there is some space for improvement in order to stimulate growth of the intra-EU trade. However, the Internal Market regulations should also help boosting extra-EU trade, given the high growth potential of external markets.

Some aspects of the Internal Market are still governed by non-harmonised national provisions. Approximately half of the trade in goods within the EU is covered by harmonised regulations, while the other half is accounted for by the "non-harmonised" sector, which is either regulated by national technical regulations or not specifically regulated at all. National technical regulations must be notified at the draft stage to the Commission and the other

member states under directive 98/34 (the so-called "transparency directive") which verify, during a standstill period of three months, whether they comply with the free movement of goods (and Information Society services) rules. In the last 10 years (1 January 2002- 1 January 2012) Member States notified 6882 technical regulations on which the Commission and the other Members States reacted by delivering 1230 detailed opinions which prevented several obstacles to the free movement of goods from arising.[62]

These are lower-risk sectors that have in general not been the subject of legislation on a European level. Trade in this "non-harmonised" segment of the market normally relies on the "mutual recognition" principle, under which products legally manufactured or marketed in one Member State should in principle be able to move freely throughout the EU.

Nonetheless, national rules often create unnecessary administrative burdens/costs and have the effect of shielding national markets/products from foreign competition. That is why the principle of mutual recognition has been re-emphasised and strengthened in Regulation 764/2008. In addition, the Commission regularly updates a non-exhaustive list of products not subject to Community harmonisation legislation to facilitate the exchange of information between economic operators, Product Contact Points and/or the competent authorities of the Member States[63].

In the First Report on the application of the Regulation N° 764/2008 it is concluded that the Regulation works by and large in a satisfactory way and that there is no need for amendments at present.[64] However, it also shows that there are certain specific categories of products, such as foodstuffs, food additives and medicines, energy drinks, electrical equipment and precious metals, where the difficulties in the application of the Regulation and notifications on marketing restrictions seem to concentrate. Because of differences in national legislation, which may affect the free movement of goods, further harmonisation in foodstuffs, food additives and medicines has been recommended. Moreover, the application of the Mutual Recognition Regulation will require continued monitoring and may be subject to further clarification, as regards:

- Difficulties to demonstrate that a product has been lawfully marketed in another Member State;
- Difficulties in identifying which legal provisions apply and which are the relevant national authorities in charge;
- Different testing methods relied upon by the Member States and their possible compatibility through mutual recognition;
- The role of prior authorisation procedures.

Market surveillance

According to recent assessments, capital goods manufactured by the European machinery industry are exposed to shortcomings in the Internal Market in terms of weak market surveillance.[65] The presence of non-compliant machines in the European market has contributed to losses in sales, unfair competition, loss of competitiveness and jobs, compromised safety and sustainability. Strengthening market surveillance is vitally important

62 Source TRIS (Technical Regulation Information System) database.

63 The Commission list of products not subject to EU harmonisation is available at http://ec.europa.eu/enterprise/intsub/a12/index.cfm?fuseaction=a12.menuproducts

64 COM(2012) 292

65 DG ENTR conference on Market Surveillance and Machinery, 24 November 2011: http://ec.europa.eu/enterprise/sectors/mechanical/machinery/market-surveillance/index_en.htm

for maintaining level playing field, keeping Europe as a strategic manufacturing location and ultimately ensuring the effectiveness of the rules that protect health and safety of workers and the environment.

The Commission is therefore elaborating a Product Safety and Market surveillance Package, which will benefit all parties, including national authorities, business and consumers. The Package will include four elements: (a) the new General Product Safety Directive; (b) the new Single Market Surveillance Framework; (c) a communication on a multi annual market surveillance plan and (d) a report on the implementation of the current regulation 765/2008 on market surveillance. The new Market Surveillance Framework under this initiative will cover both harmonised and non-harmonised consumer products and also harmonised professional/non-consumer products, while non-harmonised professional/non-consumer products will be considered at a later stage.

4.2.2. The EU Defence industry

The defence industry is a hi-tech research-intensive sector of the EU economy that makes a major contribution to EU exports. It has a turnover of some € 94 billion and provides over 200,000 highly skilled jobs in the naval and military sectors and a high proportion of the half a million jobs in aerospace. However, the industry is currently confronted with the impact of cuts to national defence budgets that affect new and existing programmes and will lead to a substantial reduction in R&D. This will erode the industry's ability to compete in the longer term in the international market.

The sector is still characterised by a focus on national markets and industries which prevents the industry from benefiting from economies of scale that operation at EU level can provide. Actions are underway already to further integrate the sector at EU scale with the transposition of two directives[66] on intra-EU transfers of defence-related products and on defence and security procurement. These internal market measures will help to generate a genuine European defence market to support the development of an industry to give Member States with the most cost effective options for their defence needs and to provide the framework for Europe's most competitive and innovative defence companies to thrive.

However, these measures by themselves will not provide the transformation of the sector needed to face the challenges ahead and prevent the erosion of the industry. Support for research and innovation are fundamental inputs for the high-tech segment of the sector and the industry, especially SMEs, needs support to adapt to the changes to the defence industrial landscape in Europe. The Commission has established a Task Force on Defence to examine ways the Commission can use the tools at its disposal, and within its own competence, to support the competitiveness of the industry, strengthen the internal market, increase Member State co-operation, and maximise the synergies between European security and defence research.

4.2.3. Services sector

The services sector is a significant driver of growth in the EU as it represents more than 65% of EU GDP and employment. However, while the Internal Market for goods has been functioning reasonably well, the Single Market for services is not equally integrated. The Services Directive 2006/123/EC is the most important measure to remedy that.[67]

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66 2009/43/EC and 2009/81/EC respectively.

67 The Services Directive covers an extremely broad range of activities, representing about 45% of EU GDP. The sectors covered by the Services Directive include: business services (share of EU GDP: 11.7%), real estate (share of EU GDP: 11.8%), wholesale and retail distribution (share of EU GDP:

The Directive was adopted in 2006 and its implementation deadline was set for December 2009. The transposition was completed by all Member States by the end of 2011. The Directive does not oblige Member States to remove all market obstacles and allows maintaining some level of national regulation. As some Member States have been more ambitious than others and some heterogeneity in the implementation of the Directive is inevitable.

As a recent report on the implementation of the Directive shows[68], many barriers to the Single Market for services have been removed. The Directive facilitated the establishment of service providers in another Member State. In contrast, the cross-border provision of services seems to have been less affected and continues to face obstacles. Besides, implementation is still not complete in all Member States. In some cases problems arise because of inconsistent or incorrect application of other EU instruments such as the Directive on Recognition of Professional Qualifications or the E-Commerce Directive.

According to the most recent economic assessment of the implementation of the Services Directive[69], implementation will generate an additional 0.8% of EU GDP over the 5–10 years following its adoption. But this figure could be increased to 2.6% if Member States would open up their services markets covered by the Directive more ambitiously. Furthermore, better transposition and implementation of EU legislation could reduce administrative burdens for businesses by a third, leading to an overall saving of nearly 40 billion euro.[70]

Currently only about 8 per cent of European SMEs do business in other Member States. Barriers of trade within the Internal Market have a serious negative effect on the cost and quality of services. Small and medium sized enterprises, in particular, are disproportionately affected by complex administrative and legal requirements due to lack of resources and staff to deal with burdensome red tape and formalities. Consequently, SMEs are more likely than larger firms to turn down cross-border opportunities. Less-regulated services would provide more competition in the sector and boost economic growth and jobs.

Business services

The business services sector has been one of the fastest growing sectors of advanced economies in the past decade. It accounts for an increasing share of the EU economy corresponding to some 12% of GDP (2009). The sector was growing at an average annual growth rate of 2.4% in the period of 1999-2009, which is clearly above the 1.1% growth rate for all the sectors of the EU economy. It consists of many different activities, for example, professional business services (such as legal services), consultancy services (such as management consultancy), technical services (such as engineering consultancy), marketing services (such as advertising or market research), design and facility management.

11.1%), construction (share of EU GDP: 6.3%), tourism (share of EU GDP: 4.4%) and entertainment (share of EU GDP: 2%). Several services are excluded from its scope, notably financial services, transport, telecommunications network services, gambling, health and certain social services.

68 Commission Staff Working Paper "On the process of mutual evaluation of the Services Directive" (SWD (2012)148 final) accompanying the Communication "Towards a better functioning Single Market for services – building on the results of the mutual evaluation process of the Services Directive" (COM(2011) 20).

69 Josefa Monteagudo, Aleksander Rutkowski and Dimitri Lorenzani, European Commission, *The economic impact of the Services Directive: A first assessment following implementation*, Economic Papers 456, June 2012.
http://ec.europa.eu/economy_finance/publications/economic_paper/2012/pdf/ecp_456_en.pdf

70 SWD(2012) 147 final.

72 EU Industrial Structure 2011, DG Enterprise and Industry.

Given the trend towards building up services together with physical goods ("convergence of manufacturing and services"), business services and in particular those relying on professional knowledge i.e. knowledge intensive business services (KIBS) are becoming more and more important for industrial competitiveness. In major manufacturing industries with global outreach, such as the aerospace, automotive, high-tech and telecom equipment sectors, the service output of manufacturing firms is now related in various ways to research, development and innovation. Business services are of particular importance for the competitiveness of SMEs which rely more on purchasing services from the market (outsourcing) compared to large companies' in-house service provision.

In addition, the manufacturing sector is not only a purchaser, but also increasingly a producer of knowledge intensive business services. During 1995-2005 the share of services in total manufacturing output increased in all but three EU27 countries (Poland, Czech Republic, and Hungary). The largest shares are found in the Finnish and Dutch manufacturing industries, where services constitute around 8% of total manufacturing output.[72]

The linkage between services and manufacturing activity offers an additional opportunity for the European manufacturing sector to innovate by opening up new markets, exploit economies of scale, and finding new sources of revenue around their products. However cross-border trade in the business services sector remains modest and lags behind trade in the manufacturing sector. Industrial users of external services are confronted with a European market that is fragmented, non-transparent, and often lacking well-defined quality benchmarks.

The recent performance check of the Services Directive[73] points out to outstanding barriers and restrictions in many Member States as regards corporate structures available for professional services and possibilities to attract outside capital. Limitations on the available legal forms can be the cause of difficulties for companies or professionals wanting to establish in another Member State as they restrict their choice of the most appropriate corporate vehicle. Similarly, requirements relating to capital ownership may result in reduced options for the acquisition of financing and in limitations on available business models.[74] The Services Directive established thar Member States must ensure that these requirements comply with the principles of non-discrimination, necessity and proportionality. However, Member States have often opted for preserving the status quo in this exercise. Companies in the business services sector are thus obliged to adapt their structure when they establish in other Member States or sometimes even when they wish to provide cross-border services.

This lack of dynamism not only hampers choice for consumers, but also prevents small and innovative businesses to grow, develop their activities and become more competitive. A properly functioning Internal Market for services would, therefore, increase the competitiveness of manufacturing firms by decreasing costs of cross-border trade and promoting innovation through new offerings of packages of services and goods.

Apart from the business services sector's direct contribution to employment and wealth creation, it has a key role to play in promoting the competitiveness and growth prospects of other sectors, thereby also contributing indirectly to job and wealth creation across a broad range of economic activities. For these reasons, promotion of the business services sector has become an increasingly important aim of the EU. Business services have been identified as a service sector where the level of productivity could be significantly improved. The

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73 SWD(2012) 147.

74 Performance checks, State of play of the Internal Market in the business sector, Background note, Expert Group Meeting, 28th February 2012

Commission, as announced in the Single Market Act[75] and "the Industrial Policy for the Globalisation Era" Communication[76], is setting up a High-Level Group on Business-Related Services to study the shortcomings of this particular sector. This Group will focus on four specific business services sectors: (i) marketing and advertising; (ii) facility management; (iii) technical and engineering services; and (iv) design. A special emphasis will be placed on the links between EU business services and manufacturing.

4.2.4. Entrepreneurship in the Internal Market: Digital Single Market

The wide application of the Internet in business activities of companies has a huge potential to increase productivity growth. It can significantly reduce the cost of many transactions necessary to produce and distribute goods and services. It can also increase management efficiency, especially by enabling firms to manage their supply chains more effectively and communicate more easily both within the firm and with customers and suppliers. Thanks to the Internet, competition is increased, prices are more transparent and markets for buyers and sellers are broadened. Businesses that fail to get digitally connected will be simply excluded from the global market. Some figures capture the emerging trends: more than 75% of the value added created by the Internet is in traditional industries. For every job destroyed by the emergence of the Internet, 2.6 new jobs were created. SMEs grow two-three times faster when they embrace the Internet. However, even in the most digitally advanced industries, the vast majority of smaller enterprises remain out of the digital arena. Moreover, in OECD countries, only 35% of businesses with 10 or more employees used the Internet for purchasing and 18% for selling goods or services[77].

Despite a double digit growth rate before 2010, e-commerce accounts only for some 3-4% of Europe's goods and services sold through the Internet. In order to promote a “highly competitive market economy”, the Commission has placed the need for a more efficient use of digital technologies and innovation at the heart of its concerns, under the Europe 2020 strategy, the flagship initiatives “The Digital Agenda”, “The Innovation Union”, "Small Business Act" for Europe, the “Single Market Act” and the “Industrial policy for the globalization era” itself. All these initiatives pursue, among others, the goal of enabling Europe to reap the full potential of the Internet economy. As underlined by a recent OECD Digital Economy Paper[78], measuring the Internet and its economic impact presents a number of significant data challenges due to the inadequacy of traditional metrics and to the increasingly indistinguishable nature of the Internet economy in relation to the overall economy.

However, a recent report[79] estimates that in the G20 nations the Internet economy will grow by more than ten per cent a year between now and 2016. And it will be developing markets leading the way, with Argentina growing at 24% per annum and India seeing an annual growth of 23 %. In 2016 it is predicted that the online economy will contribute some $4.2 trillion to the total GDP of the G20.

The biggest driver will come from the increase in the Internet users worldwide, from 1.9 billion in 2010 to 3 billion in 2016. Increased use of mobile devices, notably smartphones,

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75 COM(2011) 206.

76 COM(2010) 614.

77 *The future of the Internet Economy. A Statistical Profile*. OECD, June 2011 update. Available at http://www.oecd.org/dataoecd/24/5/48255770.pdf

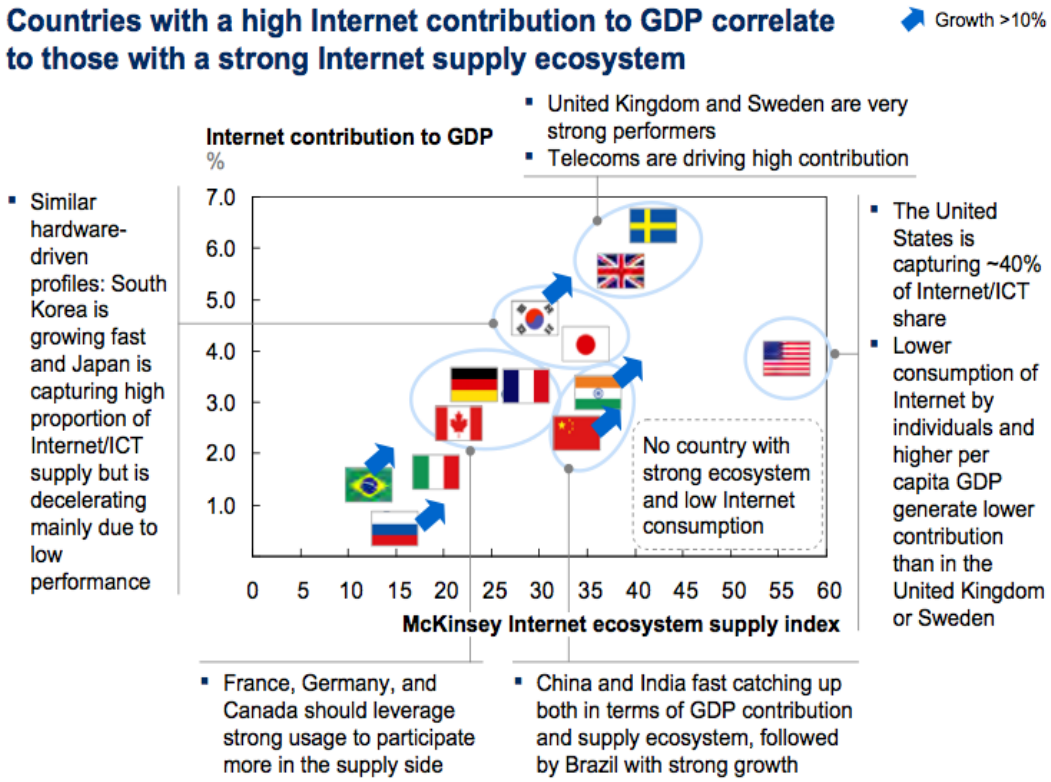
78 Lehr, W. (2012), *Measuring the Internet: The Data Challenge*, OECD Digital Economy Papers, No. 194, OECD Publishing. Available at http://dx.doi.org/10.1787/5k9bhk5fzvzx-en

79 Boston Consulting Group, *The Internet Economy in the G-20. The $4.2 Trillion Growth Opportunity*, March 2012.

and the growth of social media are among the other factors. The falling costs of smartphones will result in about 80% of all Internet users accessing the web by mobile phone in 2016. Online product search before the offline purchase will be worth $1.3 trillion of goods or 2.7% of GDP in G-20 countries, representing at least $3,000 per connected household.

It may also be noted that some reports[80] clearly indicate that Internet economic performance is directly correlated with mastering of a strong supply ecosystem (see figure below). From that perspective, it is of high importance for European industry to maintain and develop its position as a supplier of underlying Internet technologies and services (see above 4.1.1. iv).

Figure 19. Relation between internet supply and its contribution to GDP



SOURCE: McKinsey analysis

Another important driver is cloud computing, which has a potential to slash users' IT expenditure and to enable many new services to be developed. Using the cloud, even the smallest firms can reach out to larger markets while governments can make their services more attractive and efficient.

The industry recommendations presented to the European Commission in December 2011[81] are corroborated by a recently published report, funded by the European Parliament's Economic Policy Department, which identifies key barriers to the digital single market in cloud computing:[82]

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80 McKinsey Global Institute, *Internet matters. The Net's sweeping impact on growth, jobs, and prosperity*, May 2011

81 See Industry Recommendations To Vice President Neelie Kroes On The Orientation Of A European Cloud Computing Strategy http://ec.europa.eu/information_society/activities/cloudcomputing/docs/industryrecommendations-ccstrategy-nov2011.pdf

82 European Parliament (2012) Cloud Computing Study for Policy Department, economic and scientific policy,

- Fragmentation of the digital single market due to differing national or regional legal frameworks – the report points to limited level of harmonisation in the digital content and electronic communications. Rights and responsibilities in the cloud are still not clear due to lack of transparency, difficulties in finding information, problems with contracts and complexities of multiple jurisdictions.
- Lack of standardised contracts, with specific requirements regarding safety, security and reliability – cloud provider contracts sometimes disclaim liability, contain inappropriate or illegal clauses, and lack certain key pieces of information, such as location of data centres. In particular, service contracts offered to SMEs are rigid, with little room for negotiation.

The report also indicates that, according to the stakeholders, the EU's main actions should concern clarification of the applicable law and jurisdiction, where relevant, harmonisation of the national legal frameworks – and to some degree – standardisation and certification of cloud and cloud services.[83]

In the case barriers to cloud computing are resolved, the "policy driven" scenario from a recent Commission study[84] indicates that:

- Public cloud spending would grow at a 38.3% compound annual growth rate reaching to nearly € 80 billion in 2020 against € 35 billion in the "no intervention" scenario;
- Growth rates would strengthen across all vertical markets, and in particular in the government sector;
- SMEs (especially companies with 100-249 employees) would increasingly rely on cloud solutions and their share of total public cloud spending would increase to 25% in 2020. In particular, cloud would help EU SMEs gaining efficiency and help their competitive position on the global market;
- Moreover, IDC estimates that the public cloud would generate some € 250 billion GDP in 2020 in the policy driven scenario against € 88 billion in the no intervention scenario, leading to extra cumulative impacts of € 600 billion as against the "business as usual" scenario.

4.2.5. Intellectual Property Rights

Improving the functioning of the innovation system based on Industrial Property: Accounting of intellectual property assets

The market for trading intellectual property (IP) in the Union is not yet fully developed in spite of the progress made in the legal framework conditions. The unitary patent creates the necessary conditions for improvement to this legal framework. The major outstanding barriers, especially for SMEs, are unnecessarily high transaction costs that have multiple causes, including an unsatisfactory transparency in market information. [85] This barrier must

http://www.europarl.europa.eu/committees/en/studiesdownload.html?languageDocument=EN&file=73411.

83 Ibid.

84 IDC (2012) Quantitative Estimates of the Demand for Cloud Computing in Europe and the Likely Barriers to Take-up.

85 http://ec.europa.eu/enterprise/policies/innovation/files/options-eu-instrument-patent-valorisation_en.pdf

be lowered for SMEs to benefit more from the patent system and from the technology transfer[86].

As indicated in the Report on Options for an EU instrument for patent valorisation,[87] there are a number of opportunities to facilitate the trading of patents: The development of the IP market is hindered, among other factors, by a lack of clear and generally accepted valuation methods which would reduce transactions costs. In addition, companies could better seize opportunities related to patents if services for patent valorisation and related training were further developed.

Finally, the time has come to give to intellectual property assets their full value. The potential market value of patents in the EU is estimated at about € 100 bn.[88] In the USA, since more than a decade business investment in knowledge based capital (KBC) is more significant than in tangible capital (see Figure 20)[89]. The GDP shares of intangible investment in all EU15 Member States increased from 1995 to 2007 while the rate of tangible investment fell or remained more or less flat.

Figure 20: Business investment in KBC and tangible capital, United States, % GDP (1947-2009)

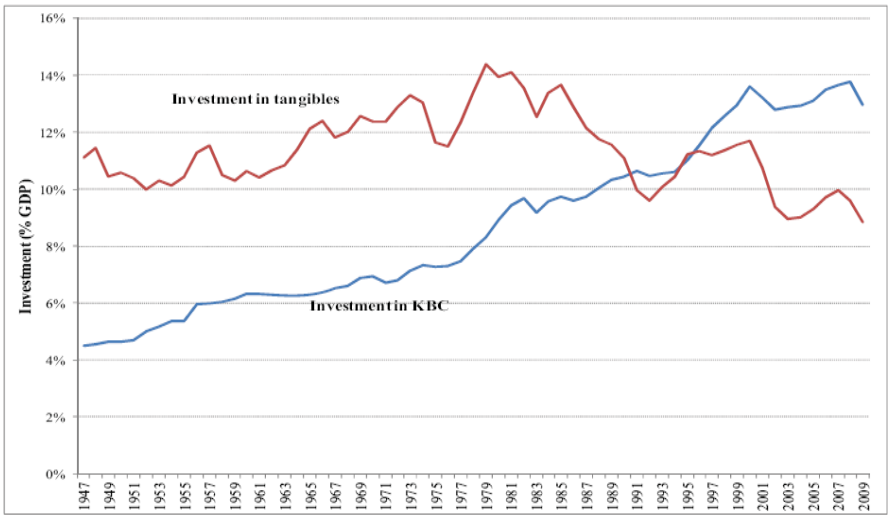


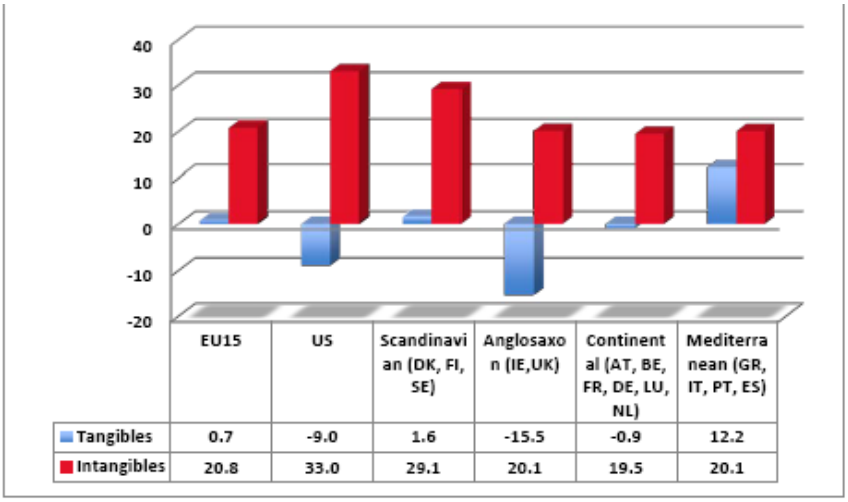
Figure 21: Tangible vs Intangible GDP shares: 1995-2007 (percentage changes)

86 Regarding licencing behaviour of companies in R&D intensive sectors refer to: http://iri.jrc.es/research/docs/survey/2012/Survey2012.pdf

87 http://ec.europa.eu/enterprise/policies/innovation/files/options-eu-instrument-patent-valorisation_en.pdf

88 http://ec.europa.eu/enterprise/policies/innovation/files/creating-financial-market-for-ipr-in-europe_en.pdf

89 OECD: New Sources of Growth: Knowledge-Based Capital - Interim Project Findings http://www.oecd.org/general/50452962.pdf; cf: www.intan-invest.net



	EU15	US	Scandinavian (DK, FI, SE)	Anglosaxon (IE,UK)	Continental (AT, BE, FR, DE, LU, NL)	Mediterranean (GR, IT, PT, ES)
Tangibles	0.7	-9.0	1.6	-15.5	-0.9	12.2
Intangibles	20.8	33.0	29.1	20.1	19.5	20.1

Source: Intangible Capital and Growth in Advanced Economies: Measurement Methods and Comparative Results.[90]

This increasing significance of intangible assets is not reflected in the business environment for investments.[91] The different treatment given to physical and immaterial assets in financial markets introduces a considerable bias in favour of physical assets.[92]

In particular, intellectual property is seldom accepted as collateral in financial market operations, even if it has contractual relationships (e.g. licencing contracts) guaranteeing a flow of income (royalties). In contrast, physical assets do not present that problem. This bias discourages innovation since it has a negative impact on the investment choices of firms that will always see an extra financial value in the use of material assets that can be used as collateral. As a result, high-tech companies with a large portfolio of IPR assets will be at a disadvantage when looking for capital in financial markets vis-à-vis other firms with material assets.

A changing patent landscape and its impact on industrial innovation and standardization

An increasing part of the value of companies is now contained in intangible assets. Together with technological progress this has significantly changed the way companies approach patenting. This presents new challenges to the patent system and also to the standardization system, where ever more standards include patented technologies.

Since the 1990s the number of patents applied for and granted has increased massively, with annual grants in Europe alone tripling from 24,756 in 1990 to 60,754 in 2010. With 4 million patent applications awaiting to be processed in the world's major patent offices, there is no end in sight for this upward trend[93]. This *massive increase in patent filing numbers*, as positive as it otherwise is, presents a huge challenge for patent office to maintain quality, to

90 Carol Corrado, The Conference Board, New York, Jonathan Haskel, Imperial College Business School, CEPR and IZA, Cecilia Jona-Lasinio°, ISTAT and LLEE, Rome, Massimiliano Iommi°, ISTAT and LLEE, Rome. Cf. to www.intan-invest.net

91 New Sources of Growth. Knowledge-based capital driving investment and productivity in the 21st century. Interim project findings. http://www.oecd.org/dataoecd/62/20/50498841.pdf

92 Roya Ghafele, *Getting a Grip on Accounting and Intellectual Property*,, WIPO – www.wipo.int/sme/en/documents/ip_accounting.html

93 Cf. to http://www.wipo.int/export/sites/www/freepublications/en/intproperty/941/wipo_pub_941_2011.pdf and http://www.ipo.gov.uk/pro-types/pro-patent/p-policy/p-policy-backlog.htm.

process applications in due time and for manufacturing companies to navigate the most patent-rich technological areas.

In Europe, a major push to reduce the complexity consists in the introduction of a unitary patent and a unified patent litigation system. This effective one stop registration for European patents with unitary effect will also reduce registration and translation costs for companies seeking patent protection in Europe by 80%. In addition, a cost free automatic translation tool which is being introduced step by step[94], will make the technical information contained in patent applications and patents easily accessible for the benefit of subsequent inventions.

Patent applicants can use a number of tools available for accelerated patent applications. For example under the Patent Prosecution Highway, consisting of a number of bilateral agreements signed between patent offices, applicants can request a fast-track examination procedure during which the work products from the other offices can be used.

Increasing technological complexity and denser patenting has given rise to the phenomenon of *patent thickets*[95]. Such thickets have been identified in crucial areas such as communication technology, semiconductors, optics, electrical machinery and medical technology[96]. Patent thickets lead to high transaction costs for those wanting to market products, entail the risk of market failure in the form of royalty stacking and are prone to result in hold-up and patent war problems.[97]

Cross licensing and *patent pools* are market driven solutions to the problems of patent thickets. Pro-competitive cross licencing and patent pools reduce transaction costs (including total litigation costs), ensure that the sum of royalty rates is not inefficiently high and create a level playing field for the patent users. Their success depends however on the regulatory regime[98] and they are neither cheap nor easy to set up. Setting up a patent pool requires a significant outlay of pre-financing and can take two years or more, as a recent example of a patent pool for optical disc technology shows[99].

Patent thickets are furthermore particularly fertile ground for *patent wars*, such as those raging in the smartphone sector, which have dominated the headlines of the business press. Patent litigation, driven by patent number explosion, by more aggressive types of patent holders (such as *patent trolls*) and by reduced patent transparency, has cost enterprises a staggering $ 80 billion per year in the USA alone[100]. The patent wars have furthermore

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94 See "Patent Translate", http://www.epo.org/searching/free/patent-translate.html.

95 A patent thicket is commonly defined as an overlapping set of patent rights requiring that those seeking to commercialize new technology obtain licences potentially from multiple patentees; cf. for example to Carl Shapiro, Navigating the Patent Thicket: Cross Licences, Patent Pools, and Standard Setting, 2000.

96 Cf. to "Georg von Graevenitz, Stefan Wagner and Dietmar Harhoff – Incidence and growth of patent thickets: the impact of technological opportunities and complexity – CEPR discussion paper, 2008" for an empirical analysis of the prevalence of patent thickets; Cf to http://www.nytimes.com/2012/04/10/technology/microsoft-to-buy-aol-patents-for-more-than-1-billion.html?_r=1&pagewanted=all for an estimate of the number of patent *claims* bearing on a modern smartphone (one patent usually comprises several patent claims).

97 Cf. to : European Commission, European Competitiveness Report 2011, page: 52.

98 Cf. to Richard Gilbert – Ties that bind: Policies to promote (Good) Patent Pools – 2009" for a discussion of the effects of regulatory policy on patent pools

99 http://www.one-blue.com/data/downloadables/4/5/iam-magazine_september-october-2011_article-oneblue.pdf

100 Cf. to "James Bessen, Jennifer Ford, Michael J. Meurer – The private and social costs of patent trolls – BU working paper 11-45, 2011"

resulted in defensive patent portfolio acquisitions in the tune of $ 18 billion in 2011/2012 alone[101].

The changing patenting landscape has also a significant impact on the *standardization process*. In the areas where interoperability is of particular importance, such as information and communication technologies, it is more and more common for standards to include reference to patented technologies. For example, different generations of the main standards for mobile telecommunication have incorporated an increasing number of patented technologies. While the GSM standard (2G) relied on 140 patent families, the subsequent UMTS standard (3G) relied on 1,227 patent families[102]. Thus, if a standard referring to specific technologies becomes a successful lock-in, it can give a very strong market power to the holders of the relevant patents. This can lead to an abusive behaviour (e.g. limitations or costly licencing), which could destroy much of the societal benefits that standardization normally brings.

The standardization system has devised safeguards to deal with the issues resulting from the inclusion of IPR into standards, such as the obligation to declare patents before the standard is adopted or the commitment of patent holders to licence their essential patents covered by the standard on fair, reasonable and non-discriminatory (*FRAND*) terms. These safeguards are also relevant where legislation refers to patented technology. The changed patent landscape, however, puts these safeguards under increasing pressure. The decrease in transparency of the patent situation, for example, allows for the so-called *patent ambushes*, where a participant in a standardization process discloses its ownership of essential patents only after the lock-in into the standard has occurred.

There is an increasing trade in patents, which leads to situations where a current holder of a patent is not the one who agreed to a FRAND commitment. The existing patent thickets and the very fast product cycles in some industries make the threat of patent-related injunctions against marketing of the latest generation of products particularly potent, and could lead to anti-competitive outcomes. Where standards are adopted in areas of patent thickets, the additional thorny problem arises of how it can be assured that the sum of the individual royalty rates for a standard or a stack of standards meets the FRAND criterion as well.

Trade secrecy

As a complementary solution to patents, trade secrets protection is an integral and important part of the overall system of intellectual property protections available to EU firms. Trade secrecy is important to both product and process inventions, and in a variety of innovation environments, including market conditions where technology evolves quickly, where inventions may (and do) occur simultaneously, where innovations occur in a cumulative manner, where combinations of trade secrets, patents, and other forms of intellectual property are embedded in “complex” products, or in circumstances where patent rights are considered as weak. The perceived higher cost of patent ownership and the material impact that disclosure may have on SME firm value and performance encourage use of secrecy as a protection mechanism. In the Member States, differences exist on the means of redress and respective remedies and some of them have no specific provisions on trade secret protection.

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101 Among these transactions were the $ 12.5 billion acquisition by Google of Motorola Mobility, including physical assets but mainly driven by its pool of 17,000 patents, the earlier $ 4.5 billion purchase of Nortel Networks' portfolio of 6,000 patents and, finally, the $ 1.1 billion purchase of 925 AOL patents by Microsoft.

102 Cf. to "Knut Blind et al. – Study on the Interplay between Standards and Intellectual Property Rights – 2011"

It needs to be analysed to what extent these differences influence the effective level of protection of trade secrets.

4.3. International markets

Internationalization drives the growth of EU industry

Trade has been a key driver for the global economic recovery following the 2008-2009 recession. After an unprecedented drop in world trade in 2009 (-10.5%), there was a spectacular rebound in 2010 (+12.9%). Trade growth has lost momentum in 2011 but still registered a significant increase (+5.8%). A further slowdown is foreseen this year (+4.0%).

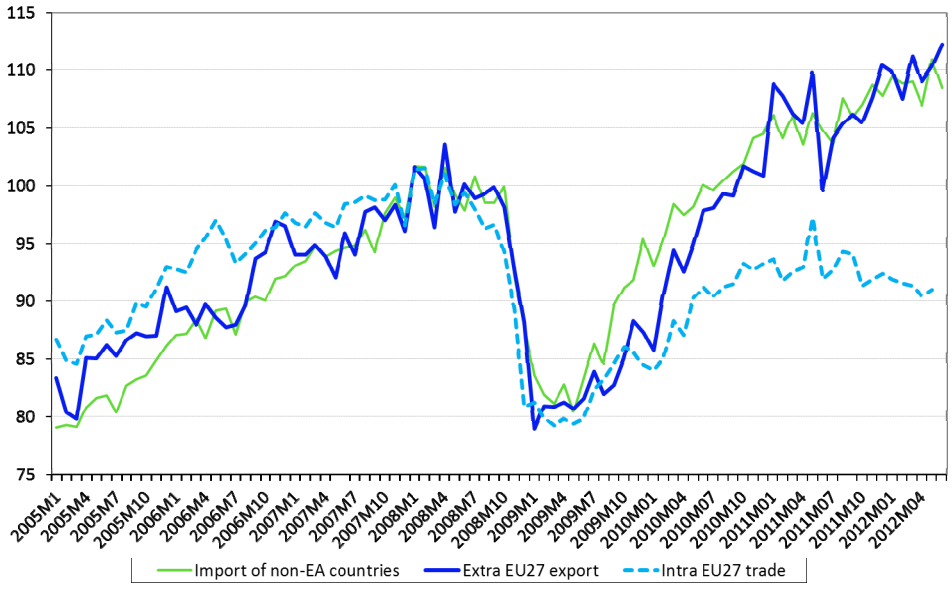
In general, the trade rebound has been more marked in emerging and developing economies (+8.8% in imports for 2011, compared to +4.3% for advanced economies).

Looking at the EU economy, exports have been by far the most dynamic component of the recovery, increasing by nearly 11% in 2010 and by more than 6% in 2011. This is largely a consequence of expansion of trade with extra EU countries (exports grew by 22.9% in 2010 and by 13.4% in 2011) rather than trade within the Single Market.

The United States remain the EU's largest trade partner, but China, already our main import partner for a number of years, is catching up fast. China is now the EU's second main export destination, with export volumes nearly doubling between 2007 and 2011 (they did not decrease even in exceptionally negative 2009).

Besides, the EU turns out to be the main trade partner for China, representing 20% of its exports and 13% of its imports in 2010, as well as Russia, India and Brazil. Overall, BRIC economies represented in 2011 nearly 28% of total EU external trade, compared to 17% for NAFTA and 11% for EFTA.

Figure 22: World trade (imports of non-EA countries), extra-EU exports and intra-EU trade *(index in volumes, seasonally adjusted, H1/2008=100)*



Source: CPB, Eurostat

Looking at the bilateral trade balances, the EU presents trade surpluses with the United States (€ 76.3 bn. in 2011), Switzerland (30.5 bn.) and Turkey (25.1bn) and trade deficits with China (155.9 bn.), Russia (89.9 bn.) Norway (46.9 bn.) and Japan (18.5 bn.).

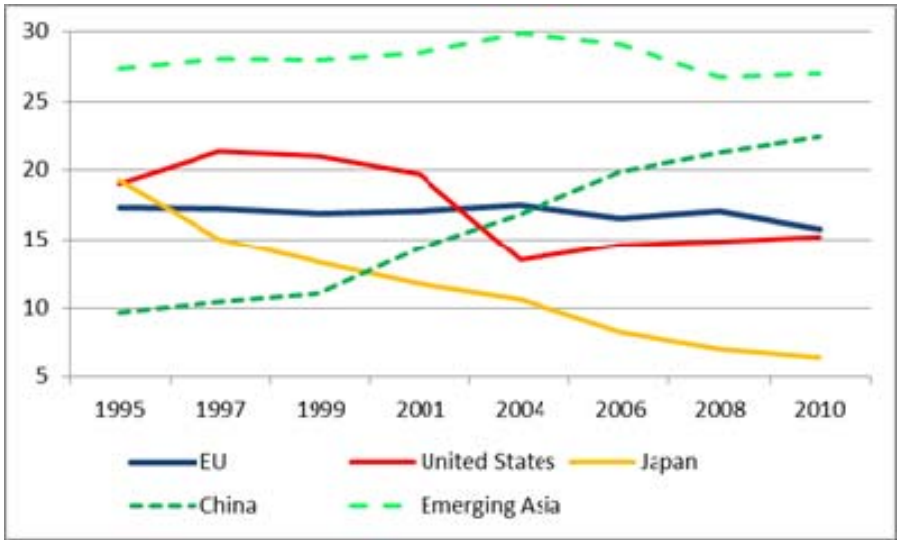
Overall, the EU has a trade deficit with the rest of the world (€ 154 bn. in 2011), largely related to the deficit in primary products and especially energy (€ 387.7 bn.). At the same time, there is a significant trade surplus in manufactured goods with the rest of the world (€ 264.8 bn.),but not with China (€ 162 bn. deficit in 2011).

Technology specialisation and leading export sectors

The increasing role of China in world trade clearly appears in high technology manufactured goods[103] where its share in global exports has more than doubled between 1995 and 2010. The share of Japan has fallen sharply from 19 to 6.5%. The share of the EU is slightly diminishing (from 17.3% in 1995 to 15.7% in 2010) while the United States has recently regained ground. Although the EU is performing very well in the pharmaceutics, scientific instruments and aircraft sectors, it has a low share in communication, semiconductors and computers (sectors dominated by emerging Asia exports).

In medium high technology sectors, the EU remains by far the main trade actor, although it has lost some ground (23.1% of world exports in 2010 compared to 25.9% in 1995), while the United States' share has been relatively stable, Japan is declining and China is growing fast (from only 3.8% in 1995 to 14.3% in 2010, a year where it surpassed both the USA and Japan).

Figure 23: Share (%) of global exports of high-tech manufactured goods



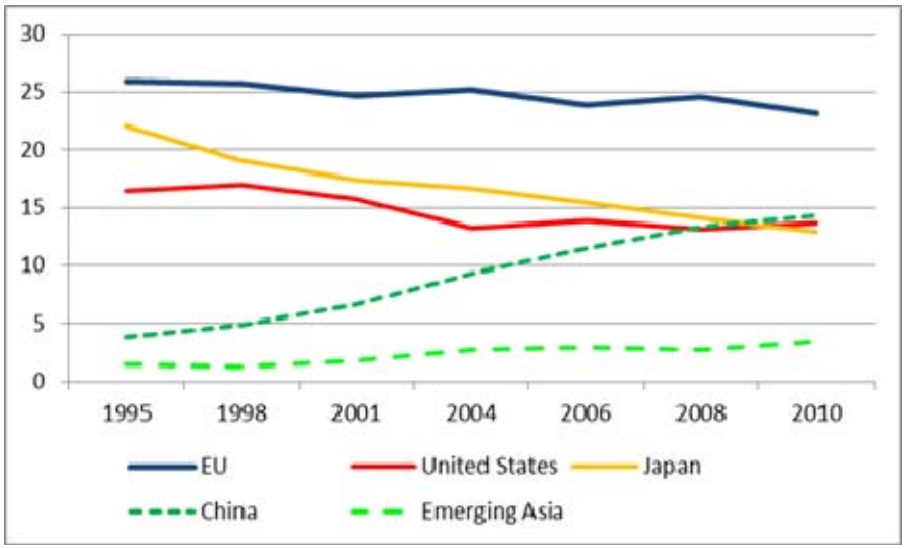
Source: National Science Foundation, "Science and Engineering Indicators 2012" [104]

The EU has a higher comparative advantage in this technology category, which includes some of its larger industrial sectors such as machinery, chemicals and motor vehicles. In terms of comparative advantage, it is interesting to note that China appears to be highly competitive both in high technology and in low technology sectors, whereas in the medium high tech category the EU is behind the United States and, most significantly, Japan.

[103] High tech manufacturing sectors include pharmaceuticals, office machinery and computers, communication equipment, aircraft and spacecraft.

[104] Excludes intra-EU trade. "Emerging Asia" includes India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan and Thailand. China includes Hong Kong.

Figure 24: Share (%) of global exports of medium-high tech manufactured goods



Source: National Science Foundation, "Science and Engineering Indicators 2012"

Table 7: Revealed comparative advantage (RCA) by technology category, 2009

	High tech	Medium high tech	Medium low tech	Low tech
EU	0.84	1.14	0.89	1.03
United States	0.93	1.25	0.89	0.68
Japan	0.81	1.49	0.97	0.18
China	1.49	0.67	0.88	1.30

Source: EU Industrial Structure 2011, DG Enterprise and Industry

When looking at the export performance of sectors, it becomes evident that chemicals, machinery and equipment, and motor vehicles industries account for over 40% of total extra-EU exports. Although the majority of sectors managed to recover from the drop of extra-EU exports as a consequence of the crisis the differences are also visible here. Among large sectors, food, chemical, motor vehicle and basic metals industries grew by over 25% in the period 2009-2011, with an average for manufacturing total of 18%.

Figure 25: Extra-EU exports in value for manufacturing sectors

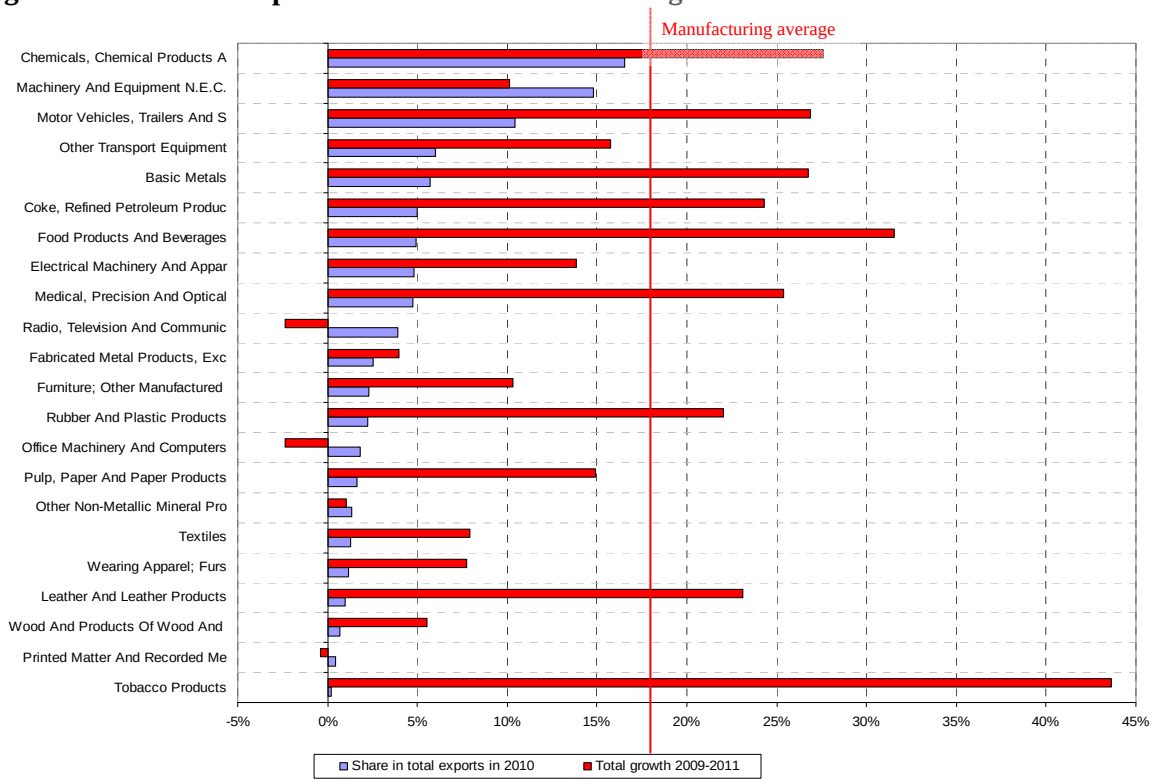


Table 8: Share of EU and main trade partners in world markets by sectors in 2009

Nace	Commodity description	EU-27	EU-27 without intra trade	Japan	USA	BRIC	Brazil	China	Russia	India
C10	Food	46.8	14.8	0.5	8.2	12.7	5.5	4.7	0.8	1.7
C11	Beverages	69.0	48.4	0.3	6.0	1.9	0.1	1.2	0.5	0.2
C12	Tobacco	68.3	30.3	0.4	2.6	5.5	0.7	1.9	2.1	0.8
C13	Textiles	29.5	11.4	2.7	4.8	37.2	0.5	32.0	0.1	4.6
C14	Clothing	32.5	10.3	0.1	1.4	39.3	0.1	35.2	0.0	4.0
C15	Leather & footwear	38.6	16.2	0.2	1.9	37.0	2.1	32.5	0.1	2.2
C16	Wood & wood products	50.1	21.4	0.1	5.2	19.4	2.2	12.1	4.8	0.2
C17	Paper	57.2	25.1	1.5	10.7	9.3	3.0	4.7	1.4	0.3
C18	Printing	76.0	49.4	1.1	6.1	4.0	0.3	1.9	0.1	1.7
C19	Refined petroleum	32.8	14.8	2.4	9.4	20.6	0.7	3.3	11.4	5.2
C20	Chemicals	49.5	24.8	5.7	13.1	9.9	1.1	5.6	1.7	1.5
C21	Pharmaceuticals	65.5	41.9	1.0	10.1	4.3	0.3	2.6	0.1	1.4
C22	Rubber & plastics	50.2	19.2	6.1	9.3	13.6	0.8	11.5	0.4	0.9
C23	Non-metallic mineral products	50.2	24.0	5.3	6.3	20.7	1.2	17.4	0.8	1.3
C24	Basic metals	35.0	14.2	7.1	6.4	14.6	2.1	5.8	4.9	1.8
C25	Metal products	49.3	23.3	3.8	8.2	18.9	0.9	16.2	0.5	1.3
C26	Computers, electronic & optical	24.3	9.7	6.7	9.3	24.5	0.2	23.8	0.1	0.4
C27	Electrical equipment	41.7	21.3	6.4	8.0	19.6	0.6	18.0	0.3	0.7
C28	Machinery n.e.c.	50.3	32.9	9.4	12.3	10.9	0.7	9.1	0.3	0.7
C29	Motor vehicles	55.5	24.8	12.1	8.7	4.5	1.0	2.8	0.2	0.6
C30	Other transport eq.	49.0	34.8	8.6	4.5	13.4	1.5	9.6	0.7	1.6
C31	Furniture	50.9	21.5	0.8	4.2	27.0	0.8	25.5	0.3	0.5
C32	Other manufacturing	32.0	16.3	2.6	14.3	23.9	0.2	14.1	0.1	9.5

Source: EU Industrial Structure 2011, DG Enterprise and Industry

The EU remains the dominant trade actor in a wide number of industrial sectors such as printing, pharmaceuticals, transport equipment and machinery. China has clearly taken the lead in textiles, clothing and footwear as well as in furniture and computers and electronics.

Growing interdependence with foreign markets

External markets are not only a destination for European goods but also a source of inputs for products manufactured in Europe. Actually, it is estimated that two thirds of European imports are not of final products but of intermediate goods and raw materials.

More generally, European industry is increasingly internationalised and its value chains have become more complex and fragmented.

It should be stressed that Europe is still predominantly dependent on inputs coming from the Internal Market and less on imports from outside of the EU. Over 85% of the value of EU-15 exports is produced internally, while for the EU-12 group of new Member States this share is 70%, with the additional 15% coming from the EU-15.

However, in the period between 1995 and 2007, the share of extra-EU inputs in the value of EU exports has grown (this has been partly reversed in 2009, which is however an exceptional year with an unprecedented drop in world trade) and about 13% of exports are directly dependent on external inputs.

Looking at the source of the foreign contents of exports, an increasing importance of China – basically inexistent in 1995 – is also becoming apparent. Indeed, China has managed to increase its share in the value of European exports also in the exceptionally difficult 2009.

Table 9: Content of total exports, by partner

Country	EU-12					EU-15				
	1995	2000	2005	2007	2009	1995	2000	2005	2007	2009
BRII	3.1	2.8	2.6	2.6	2.1	0.8	0.9	1.3	1.5	1.3
Canada	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3
China	0.2	0.8	2.1	3.4	4.8	0.4	0.8	1.3	2.0	2.8
EU-12	79.0	70.2	68.4	66.4	70.1	0.6	0.9	1.3	1.6	1.6
EU-15	13.1	18.4	18.6	18.6	15.7	92.0	88.8	87.8	86.0	86.8
Japan	0.5	1.1	1.1	1.2	0.9	1.0	1.1	0.8	0.8	0.7
Korea	0.3	0.5	0.7	0.9	0.8	0.3	0.4	0.5	0.4	0.4
Mexico	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1
USA	1.1	1.9	1.4	1.4	1.3	1.8	2.5	1.8	1.9	1.8
Rest of world	2.4	4.0	4.7	5.1	4.0	2.8	4.1	4.6	5.2	4.3

Note: BRII comprises Brazil, Russia, India and Indonesia.

Source: WIOD; authors' calculations.

Furthermore, a recent study of the Commission suggests that value chains are becoming increasingly fragmented with manufacturers increasingly outsourcing or off-shoring parts of their activities. This is the case of products moving to mature stages (semiconductors, electronic goods) once the technologies and manufacturing processes are more standardised and price competition becomes more important. However, in some markets there is also a tendency of vertical integration where manufacturers prefer to maintain full control over the value chain (e.g. smart phones, electric vehicles).

Despite the initial collapse of trade, the recent crisis does not seem to have caused a 'deglobalisation ' of production patterns. The tendency of consolidation of supply chains in some sectors started already before the crisis and it could only be accelerated in some cases by the global downturn. The consequent sharp fall in demand for consumer durable and investment goods, which are produced in globally integrated sectors, together with difficulties in access to credit could lead to a further breakdown of some supply chains. However, a strong rebound of world imports of intermediate goods already in 2009 indicates a quick re-establishment of production chains.[105]

The high level of specialisation and mutual dependence of European industry on external suppliers is not a problem in itself as long as it is mutual, balanced and transparent. The concerns arise when the level playing field is not maintained and European companies might lose their position in the value chain due to risks related to national industrial policies favouring domestic firms, breach of IPR, limitations in access to certain technologies, components or raw materials, incompatibility of standards.[106]

Notwithstanding the inherent risks of internationalisation, it is clear that integration with the global economy is positive for European industry. Outward Foreign Direct Investments (FDI) do not only allow grasping the opportunities of the new markets, but also lead to increased productivity and higher employment in the long-run.[107] Besides, integration in international value chains help companies to lower their costs, get access to new technologies, improve their quality or lower the dependence on local supplier base. Consequently, it is not surprising that strong position of European manufacturing is accompanied by relatively high share of import content in exports (around 40% and with an increasing trend).

Concerning FDI, it should be noted that EU flows to the rest of the world reached € 370 billion in 2011, returning to levels comparable to pre-crisis ones after a sharp reduction in 2010 (146 billion). FDI into the EU27 from the rest of the world were at 225 billion in 2011, rebounding from much lower level of 104 billion in 2010.

Main partners, in both inflows and outflows of FDI, are the United States and Switzerland. Some emerging economies play a significant role for outflows, notably Brazil. Inflows from BRIC economies remain relatively marginal, but are growing, for example in the case of China.

Most FDI is concentrated in services sectors, notably finance and real estate. Manufacturing is also targeted and in particular energy-intensive sectors.

Box 3: Industrial policies in emerging economies

Emerging economies have put in place industrial policies aimed at structurally changing their production patterns and affecting their international specialisation. These industrial policies sometimes include trade-restrictive measures or discriminatory practices. Local content requirements, often in connection with investment and government procurement, appear to be one of the most used kinds of trade-distortive instruments in the context of industrialisation[108].

China's 12th Five Year Plan adopted in March 2011 puts an emphasis on quality upgrading with an overall objective of moving up the value chain of manufacturing and making China's

105 European Commission, DG ECFIN, *Quarterly report on the euro area*, Volume 1 No 2 (2012).

106 ECORYS, DTI, *Study on internationalisation and fragmentation of value chains and security of supply*, January 2012

107 Copenhagen Economics, *Impacts of EU outward FDI*, May 2010

108 COM(2012)70, "Trade and Investment barriers Report 2012".

growth more sustainable. In this framework, China has selected "strategic emerging industries" (e.g. clean energy, electrical vehicles, ICT and broadband, pharmaceuticals industries), which might be supported by a range of measures including through steering investment (often in the form of mandatory requirements for technology transfer), subsidies and export financing.

India's National Manufacturing Policy (NMP) intends to increase the share of manufacturing in GDP from 16% to 25% by 2022, with a focus on indigenous production. The plan combines elements of preference for domestic products in government procurement and local content requirements in purchases of private operators, with tax concessions and government subsidies benefitting the development of indigenous technologies.

In Brazil, the "Plano Brasil Maior" adopted in August 2011 foresees such instruments as indirect subsidization or fiscal exemptions benefitting specific manufacturing sectors (e.g. textile and footwear, mobile and software industry, among others).

Argentina's trade policy has been characterised over the last years by moves towards "managed trade" and import substitution policies, including through measures affecting import and export.

4.4. Access to finance

Europe's economic success and recovery depend on enterprises having adequate access to the various types of financing. The financial market crisis and difficult situation of the banking sector has led to a substantial reduction of availability of finance to companies. While bigger companies have some alternative possibilities to overcoming shortage of credits, SMEs face increasing difficulties in obtaining finance for their operation and investments. Problems are in particular acute for young firms needing venture capital.

Bank lending remains subdued

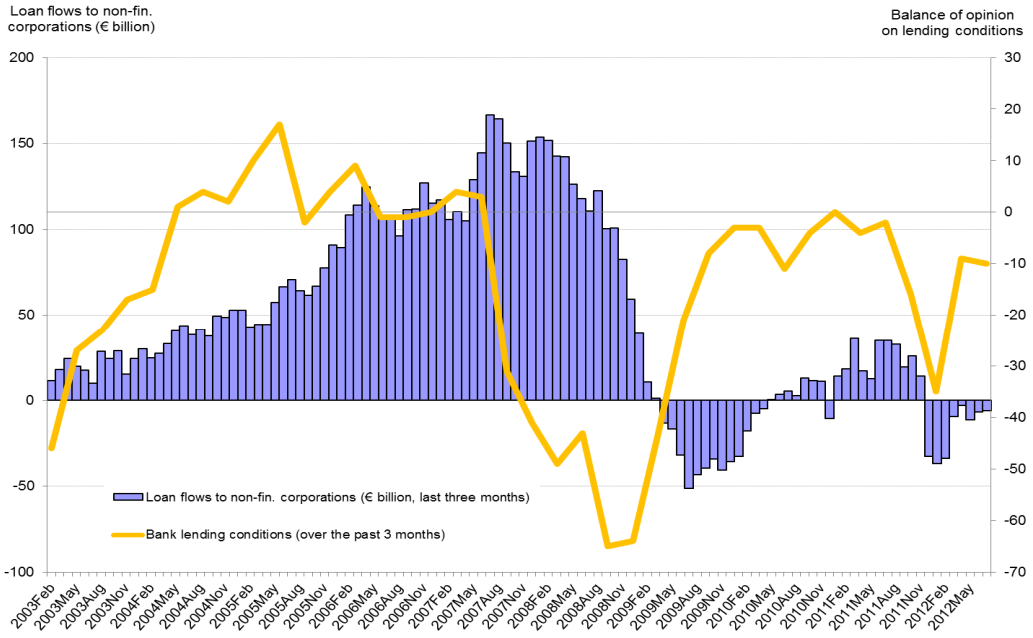
Following the bankruptcy of Lehman Brothers in 2007 the lending to non-financial corporations declined substantially. Due to heavy reliance of European companies on bank loans, the instability and deleveraging of the banking sector had an immediate impact on the financing of the real economy. Credit restraints and reduced demand had a negative impact on those sectors requiring restructuring, which even before the crisis had difficulties in access to finance. The recovery in 2009-2010 led to some small improvements but did not resolve the structural problems with access to finance.

The negative trend for loan flows is visible again since the end of 2011, with the main outflow observed for short-term loans.

The persistently weak lending of monetary and financial institutions (MFI) to the non-financial private sector is likely, to a substantial degree, to reflect **subdued credit demand**, given the current stage of the business cycle and prevailing high uncertainty. Moreover, the need to adjust for the excessive loan growth of the past is weighing on both supply and demand for loans. On the demand side, this is visible in the high leverage ratios prevailing in the corporate sector. On the supply side, the impact of excessive loan growth in the past has resulted in increased bank capital needs to cover potential losses. This, together with the higher capital ratio requirements arising from the Basel III regulation, is likely to have reduced the availability of loans to the economy. All these effects are having an uneven impact across the euro area, which explains why cross-country heterogeneity in loan dynamics remains sizeable[109].

[109] Ibid.

Figure 26: Loans to non-financial corporations in the euro area (€ billion, last three months)

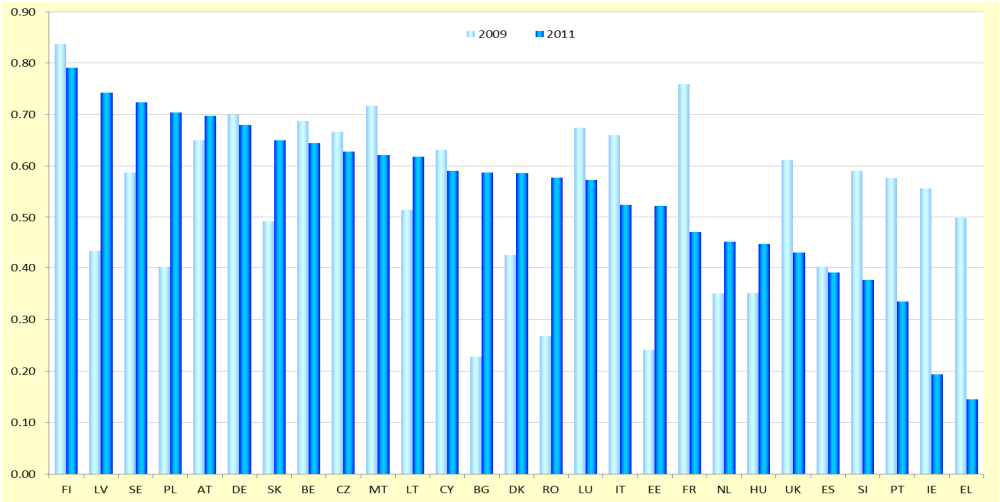


Note: Negative flows indicate that more loans are repaid than granted

Source: ECB

Supply side factors are also behind the lending cuts. Net **lending conditions** have been constantly deteriorating since the second half of 2007. After a short-lived recovery in 2009, banks again tightened substantially their requirements for loans in the second half of 2011. Although the first quarter of 2012 brought some moderation of this negative trend, the European Central Bank's Bank Lending Survey for the second quarter of 2012 indicates no further improvements in credit conditions for bank loans. Hence, in the second quarter a net 10% of the surveyed euro area banks tightened their credit standards to non-financial corporations. Given the soft patch the European economy is going through, survey respondents expect a further decline in the net tightening.[110]

Figure 27: Access to bank lending for SMEs*



110 ECB, *The Euro Area Bank Lending Survey*, July 2012.

* A composite indicator of SME access to bank lending, ranging from zero (worst possible situation) to 1 (best possible situation).

Source: Survey on the access to finance of SMEs in the euro area October 2011 to March 2012, April 2012, ECB.

According to the results of the ECB SME Access to Finance Survey, euro area SMEs external financing needs increased between October 2011 and March 2012. At the same time, the survey results show that access to bank loans continued to deteriorate. On balance, SMEs reported a worsening in the availability of bank loans (20%, up from 14% in the previous survey round). Moreover, the survey results point to a higher rejection rates when applying for a loan (13%, up from 10%). This is the highest percentage since the peak of 18% in the second half of 2009, thus reflecting SMEs' constraints in their access to bank loans. In particular micro firms reported a substantial rejection rate (20%, up from 15% from the previous period). Meanwhile, the percentage of respondents reporting access to finance as their main problem remained broadly unchanged (17%, compared with 16%). [111]

As regards new credit volumes the picture remains rather negative. ECB figures for the year-to-year percentage change of new credit under € 1,000,000 indicate that since October 2008 this category has followed a declining trend on a continuous basis. A similar picture emerges for new credit under € 250,000 with year-to-year changes in the negative.

SMEs face difficulties in accessing bond market

Large listed corporations with direct access to the financial market can issue corporate bonds relatively easily. In contrast small and medium-sized enterprises rely mainly on bank loans. In the first three months of 2012 many large non-financial corporations issued significant amounts of marketable debt in an environment of strong demand for corporate securities, thus reducing their need for bank loans.[112]

As regards securitisation of SME loans, following a fast development since the beginning of this century, the market reached its peak in 2008 at more than € 700 billion and then collapsed to the level of approximately 2005.[113] The latest data indicate that the market (excluding pure ECB-related transactions) is slowly restarting in the parts of Europe (UK, Germany, Benelux, Italy) that have more experience in it.[114]

The issuance of bonds is a viable option only for larger companies with an external rating. The overwhelming majority of SMEs and midcaps do not have an external rating and in any case look for smaller tickets of financing which are potentially more difficult to place with investors. In addition SMEs' 'internal' rating with their banks is often not comparable across banks. Consequently, the ongoing deleveraging of bank balance sheets and the tightened regulatory environment might affect the European banking sector as the main source of finance to the real economy that it was before the crisis. Lending to businesses might be further hampered, if the securitisation markets for small business loans will not take off in the near future.

Box 4: Creating bonds market for medium-sized companies

Boerse Stuttgart is Germany's leading player in the area of intermediary-based stock exchange trading. In 2010 it launched a Bond Trading Scheme for medium-sized companies

111 Survey on the access to finance of SMEs in the euro area October 2011 to March 2012, April 2012, ECB.

112 ECB Monthly Bulletin, April 2012.

113 AFME, *Securitisation Date Report Q4:2011*

114 European Small Business Outlook, 2/2011, EIF.

(BondM) – a regulated unofficial market supervised by the public law. It was aimed at industrial and industry-related middle class companies (German Mittelstand), offering a possibility of a direct bond issuance in a volume of approximately 50 (in some cases 25) up to 150 millions of euro.

Thanks to a high level of transparency, issuer rating, general simplicity and auxiliary services, such as coaching for potential issuers and BondM Index, after two years of its functioning BondM has become a market leader in the SME bond segment with 22 issues and 1.6bn euro subscription volume. The simple platform offered by Boerse Stuttgart seems to properly respond to the needs of the market. A survey conducted by Boerse Stuttgart in September 2011 showed that almost one in four of middle-sized companies was planning to issue bonds. It also pointed out that corporate bonds should gain in importance in the future, as they give companies more independence from banks, greater financing security and a more balanced investor structure.

Venture capital is stagnating

European venture capital funds continue to be largely nationally oriented, too small and often unable to secure a deal flow. Venture capital fund managers can rarely benefit from the passport that has been introduced in the Directive on Alternative Investment Fund Managers (AIFM), because its threshold of € 500 million is higher than the size of most EU venture capital funds.

The deteriorating economic outlook and the sovereign debt crisis have taken their toll on the availability of venture capital as well. Many venture capital funds are nursing their portfolio of companies and are shunning new deals. Venture exits have decreased by 25%, amounting to € 1 billion. Venture performance has remained weak, apart from those in the top quartile, emphasising the importance of careful selection by investors.[115]

Of the about € 4 billion that EU venture capital firms managed to raise in 2011—half of the 2007 total—around 40% came from government agencies. That is a big increase from pre-crisis days, when government funds provided 10% of new capital; and a lot more than European private-equity firms, which drew 8% of their funding from public sources in 2011.[116]

European early-stage investing is now unquestionably in a protracted slump. With limited LP interest in the segment due to historically poor returns and a volatile climate exacerbating the risks of investing in young businesses, the venture capital sector has seen activity dwindle further from the already low levels witnessed through 2011. In the first quarter of 2012, the deal volume registered its third successive decline and plummeted from 43 transactions to just 22, while aggregated value dropped by around 33% from € 263m to a little less than € 177m.[117]

Box 5: Market failures negatively affect SMEs

On average, SMEs are likely to suffer more from market failures than large companies. The most prominent market failures faced by SMEs are considered to be capital market imperfections and asymmetric information. Both of these market failures are likely to restrain SMEs' access to finance.

115 EIF, *European Small Business Outlook*, 2/2011.

116 Economist, 19 April 2012. http://www.economist.com/node/21552936

117 Arle, unquote, *Private Equity Barometer*, Q1 2012

The market failures relating to the **capital market imperfections** result from the mismatch between the demand and the supply of the different types of financial instruments for SMEs. Distinction can be made between debt financing, one hand, and equity financing, on the other hand. In general terms, equity financing plays a more crucial role in the star-up and emerging growth phase, whereas debt financing instruments (credits and loans) are more used during the emerging growth and development phases and later stages.[118]

With respect to credits and loans, which are the most significant type of external financing currently relied upon by SMEs, an increasingly risk sensitive banking sector is asking for more collateral and higher risk premium, which makes the financing more costly for SMEs and is likely to result in insufficient finance and missed business and employment opportunities. Riskier business projects like start-ups and innovation-intensive SMEs are likely to be especially vulnerable. Young companies are also particularly exposed to this problem because of their lack of material assets that could be used as loan collateral. The pertinence of this problem is illustrated in the recent European Central Bank's survey on SME's access to finance: Between April and September 2011, the percentage of SMEs perceiving deterioration in the availability of bank loans increased to 14% from 9% in 2010.[119] Furthermore, 54% of SMEs reported increases in interest rates (compared to 44% in 2010) and almost half of SMEs had also experienced an increase in other costs of financing.

As to the market failures linked to equity financing, one of the main issues having a negative effect on SMEs' access to finance is the underdevelopment of venture capital markets. In particular, European venture capital market lacks critical mass.[120] For example, it is estimated that venture capitalists are active nationally with a budget of approximately € 15m and a portfolio of 10 companies (INNO-Partnering Forum, Task Force 'Risk Capital', 2011). Thus, in general, funds operating in Europe are deemed to be too small, which even sometimes leads to difficulties in obtaining support from the existing EU funding programmes.(The European Venture Fund Investors Network, 2011). Furthermore, another issue hampering the development of the European venture capital market is its fragmented nature. This is mainly due to the varying national regulatory regimes and the lack of coherence between the 27 tax systems in the EU , which makes cross-border venture capital investments difficult. In addition to the structural challenges in this market, the financial crisis also constrained venture capital investments. The figures for 2009-2010 indicate that the annual amount invested by European venture capital funds in SMEs was significantly decreased in comparison to the pre-crisis period (€ 3-4 million compared to € 6-7 million). The effects of the credit crunch on the venture capital investments has also been proven by the study showing that the degree of cyclicality of venture capital finance is indeed by far the largest compared to other types of SME finance.[121]

As to the market **failure of information asymmetries**, SMEs are likely to suffer more from this problem due to the lack of credible company information (e.g. credit-rating) that they could transmit to banks and other investors with whom they are negotiating their financing. [122] This may make the costs of customer acquisition and subsequent due diligence so high for the lenders that they would not obtain any profits on smaller sized loans. As a result, banks could lend profitably only to existing small business customers about whom they had decent prior knowledge (NESTA, 2011b). Also the lack of performance measurement data ("track

118 Feasibility Study, p.38.
119 ECB Study, p. 4
120 Feasibility Study, p.38.
121 (EIM Business & Policy Research, 2009
122 Study http://ec.europa.eu/dgs/competition/economist/esac.pdf

records") on investment in SME growth capital is likely to make investors more risk averse and can result in a higher level of required return for an investment or lower levels of investments being committed at all. Such information gaps naturally impact negatively innovative new companies.[123]

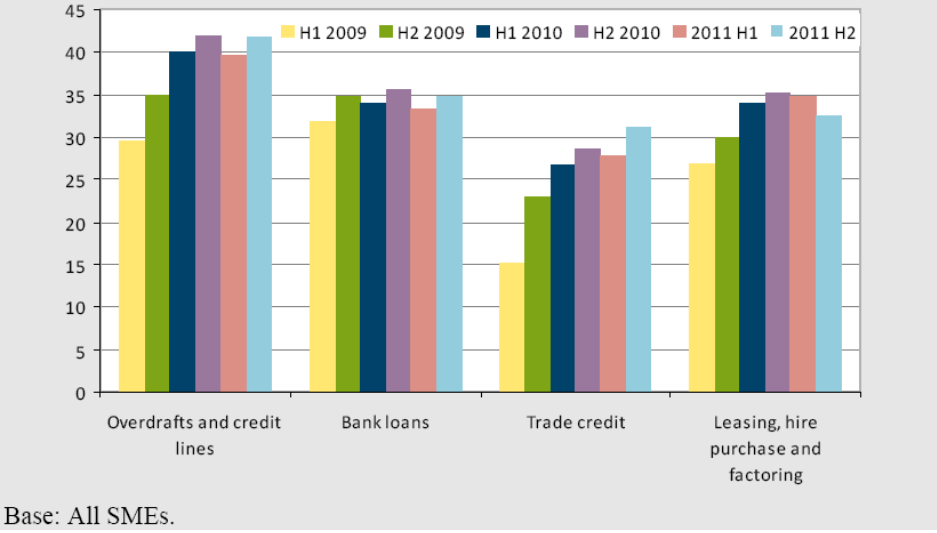
In addition to imperfect information identified on the supply-side, there are information failures also on the demand-side. These include, among others, lack of "investment readiness" by entrepreneurs (e.g. poor business plans or inadequate management skills) and lack of knowledge among SMEs on the nature and availability of financing and related support measures. There is also some evidence that owners of SMEs are not always willing to concede a stake in their business in return for equity investment, and may also in general perceive that debt finance is the most suitable type of financing for their business. Furthermore, it is also likely that complexity of support measures and related procedures may discourage entrepreneurs from applying them.

Alternative forms of financing and new financial products need to be developed

The latest ECB SME Access to Finance Survey[124] indicates that the composition of SMEs' sources of external financing changed little between October 2011 and March 2012 compared with the previous survey round. The percentage of euro area SMEs using bank loans (35%, up from 33%) and bank overdrafts or credit lines (42%, up from 40%) increased somewhat, confirming that bank financing remains their most important source of external financing. The use of trade credits was reported to be increasing gradually, while leasing, hire purchase and factoring moderated slightly in April 2012 compared with the previous survey round in October 2011.

Figure 28: Sources of external financing of euro area SMEs

(Over the preceding six months; percentage of respondents)



Source: Survey on the access to finance of SMEs in the euro area October 2011 to March 2012, April 2012, ECB.

The upcoming restructuring of the banking sector and regulatory reforms in financial markets might lead to wider diversification of financing choices to non-financial companies and in particular to SMEs and midcaps. Trade credit is increasingly an important source of financing

123 Feasibility study page 40.

124 ECB, *Survey on the access to finance of SMEs in the euro area October 2011 to March 2012*, April 2012.

for SMEs which are unable to obtain bank loans because it is too costly for a bank to monitor them. Consequently, trade credit payable serves to some extent as a substitute for unavailable (bank or other) external financing. It also can play a buffer role in the downturn. A closer analysis of the evolution of credit during the latest crisis shows that the decline in the annual growth of trade credit payable between non-financial corporations has been less pronounced than that in nominal GDP growth. What is more, trade credit payable started to recover well before, and faster than, short-term loans. This confirms that firms which were unable to obtain financing from banks have turned to their suppliers for credit.[125]

Asset based finance products enable companies to obtain finance against the value of their assets. This source of finance can be used by start-up firms as well as companies with a good trading history. It is relatively flexible as the available finance can increase with the expansion of companies' order books. Typical products include factoring and invoice discounting.

The total turnover of the factoring and commercial finance industry in the EU in 2010 amounted to € 986 billion, an increase of 17% on the 2009 figure. This growth has taken place in an environment of low economic growth and highlights the importance of factoring as an alternative source of financing to SMEs. In 2010 the four largest factoring markets in Europe (UK, Germany, France and Italy) served more than 100,000 customers, mostly SMEs.[126] This shows that there is still ample room for growth in the segment and that factoring can also contribute to reducing the financing gap caused by banks' more conservative lending practices.

Another important source of financing for SMEs is leasing. Around 17% of total SME investment was financed by leasing in 2010 (around € 100 bn). SMEs use leasing to finance a greater portion of their investments than larger businesses. In a sample of SMEs, 40% used leasing in 2010 and the figure was expected to rise by 43% in 2011. According to this estimate, leasing would allow to approximately 6 million of SMEs gaining access to another source of financing. An even greater uptake of leasing by European companies would boost economic growth and fill in some of the gap left by the dearth in bank financing. One estimate suggests that a greater uptake would add an extra 0.9% to 1.5% to the level of GDP by 2020.[127]

Consequently, in order to meet short-term liquidity needs, European firms need to diversify their access channels to capital markets. The right framework conditions are necessary in order to ensure operate that these markets are competitive and open to new entrants. In particular, ICT-enhanced supply chain financing is an area where appropriate conditions still need to be developed.

4.5. The crucial role of human capital

Challenges faced by industry

Internationalisation, specialisation, rising climate concerns, ICT and new technological possibilities lead to a need for continuous up-skilling of the labour force in all economic sectors. These challenges are more important when we consider the forecast of a shrinking labour supply due to the ageing of the European population.[128] Despite current high level of

125 ECB, *Monthly Bulletin*, April 2011

126 EU Federation for the Factoring and Commercial Finance Industry, Reply to the Public Consultation on the European Commission's document "Small Business, Big World", July 2011.

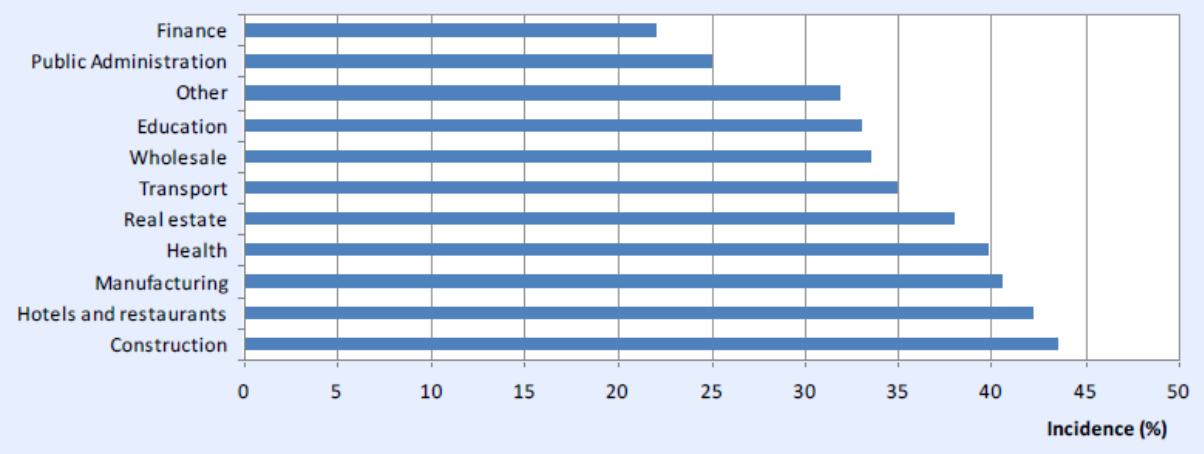
127 The use of leasing amongst European SMEs, Leaseurope, November 2011.

128 Oxford Research, Transversal Analysis on the Evolution of Skills Needs in 19 Economic Sectors, January 2010

unemployment, industry continues to have difficulties in finding staff with the right skills and qualifications. These are wide spread concerns because without a qualified labour force, European industry might face serious difficulties in incorporating innovation and advanced technologies necessary to compete with companies from the emerging economies.

According to the 2010 report of the Group of Experts on New Skills[129] nearly one third of Europe's population aged 25-64 – around 77 million people – did not have or had low formal qualifications and only one quarter have high level qualifications. Besides, those with low qualifications are much less likely to upgrade their skills and follow lifelong learning. Another challenge is to ensure that people have the right skills. Labour market mismatches still exist and create the painful and wasteful situation of both skill shortages and skill gaps co-existing with unemployment, also among graduates of universities.

Figure 29: Difficulties in recruiting staff for skilled jobs by NACE sector (EU-27; 2009)



NB: Establishment weights used.

Source: ECS; Eurofound.

The CEDEFOP's forecast indicates that although further economic troubles will affect the projected number of job opportunities, the major trends, including a shift to more skill-intensive jobs and more jobs in services, will continue. CEDEFOP points out to skills shortages in particular in occupations requiring highly specific qualifications such as life science engineering and health associate professionals and teaching-associate professionals. But there are also pointers to shortages in sales, services and some elementary occupations.[130]

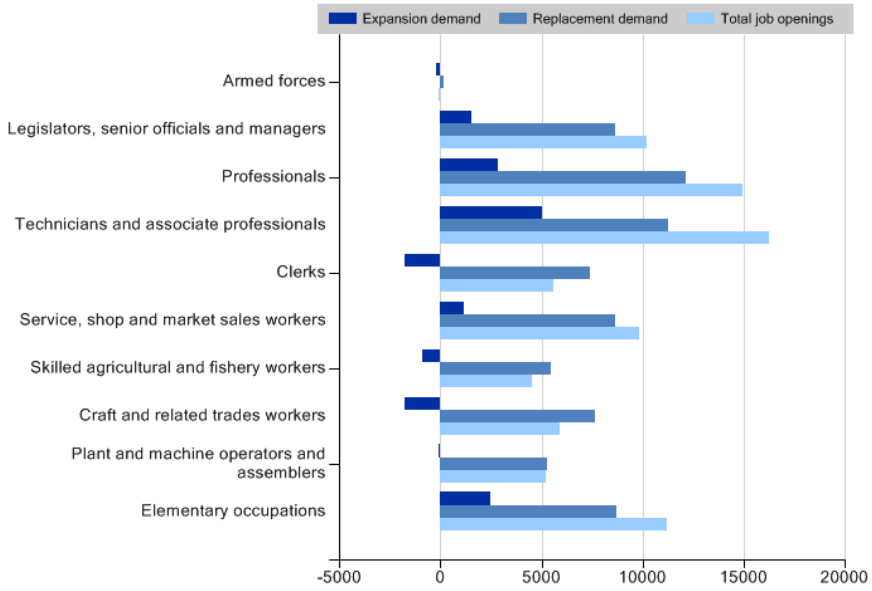
The Commission analysis on the evolution of skills needs in selected sectors[131] also confirms the increasing polarization of the demand for skills and competencies. The development of new technologies and increasing competition will drive a strong demand for high skilled professionals, but at the same time the growth of service industries will increase demand for both high skilled and low skilled workers. At the same time off-shoring of production activities is lowering the number of skilled jobs in Europe.

129 New Skills for New Jobs: Action Now. A report by the Expert Group on New Skills for New Jobs prepared for the European Commission, February 2010 available at http://ec.europa.eu/social/main.jsp?catId=568&langId=en

130 Ibid.

131 Oxford Research, Transversal Analysis on the Evolution of Skills Needs in 19 Economic Sectors, January 2010.

Figure 30: Skills forecast for the period until 2020: Job openings by occupation (in 000), EU27+



Source: CEDEFOP, Skills forecast 2012

Industrial representatives are in particular concerned that deficit of qualified Science, Technology, Engineering and Mathematics (STEM) graduates might have negative impact on European industry competitiveness and slow down the recovery. According to recent estimates Asian countries train twice as many scientists compared to European member states, and three times as many engineers.[132] Even if Europe has experienced a large increase in the absolute number of tertiary level STEM graduates in recent years, this has been mainly a result of considerable increases in access to education. Removing the impact of demography and educational attainment on the figures by assessing the choice of MST subjects in relation to the total student population reveals a 10.8% proportional decrease in MST graduates from 1998 to 2006. What is worse, the academic achievement of European graduates falls well behind that of their Asian counterparts according to PISA statistics.[133]

At the same time, demand for STEM graduates is likely to increase, creating a workforce deficit. Negative attitudes to education and work in science and technology amongst young Europeans further underline the problem.[134]

Similar findings could be found in the 2010 version of the VDMA (German Engineering Federation) engineer survey. The survey is carried out every third year, and in the last version companies were asked whether they expect a shortage of qualified applicants in the various fields of activity of engineers. It reports serious concerns of shortages of skilled job candidates with an engineering background. Almost two thirds of the companies that will be in search of engineers for R&D/design or sales positions think that they will encounter difficulties to adequately fill these positions[135].

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132 inGenious, No European scientists left by 2020?, December 2011, http://www.ert.eu/sites/default/files/14Dec_ECB-inGenious%20Press%20Conference%20-%20Press%20Release.pdf

133 European Round Table of Industrialists, *Mathematics, Science & Technology Education Report*, http://www.ert.eu/sites/default/files/MST%20Report%20FINAL.pdf

134 Ibid.

135 VDMA, *Ingenieure in Maschinen- und Anlagenbau, Ergebnisse der VDMA Ingenieurerhebung 2010* , Oktober 2010,

In addition, reports from specific industrial sectors such as the chemical industry[136] or electrical/electronics industries[137] point out that skills shortage is a major concern. Several measures to increase the supply of engineering and science graduates are proposed, such as increased attractiveness of the education, improved equivalence of all technical degrees across the EU, the creation of engineering apprenticeships, improved business skills for scientists etc.

Concerning the specific skills areas, IT skills are of particular importance for the industry. Given the fast progress and wide application of IT technologies, IT literacy is not only becoming a prerequisite for employment, but also requires continuous up-skilling, so that companies could fully benefit from the latest IT solutions. For instance, in the UK 77% of the total workforce use IT in their jobs (with a rising trend) and 92% of advertised vacancies require applicants to have basic IT skills. However, 1 out of 10 businesses report gaps in IT user skills.[138] Thus, ensuring the right level of IT literacy of the employed labour force will be necessary at all stages of education and training.

The respondents to the stakeholder consultation are also concerned about the existing labour-market mismatches and insufficient number of students with STEM skills. They emphasised that highly skilled and educated workforce underpinned sustainable economic growth. Consequently, they considered modern education and training systems reflecting needs of the labour market as prerequisites for innovation and effective transition to a knowledge-based economy.[139]

Job potential of green economy

The green economy offers number of new job opportunities. For instance, new investments and regulation in the energy sector will result in higher employment and increasing demand for skilled workers in the renewable energy sector. The construction sector, on the other hand, will benefit directly from investments in climate adaptation measures, which shall lead to new employment opportunities in such activities as extending coastal defences, reinforcing buildings and infrastructures, water management and relocation of exposed settlements.

It should be noted however that the job potential of the new rising green sectors is to a large extent dependent on the public support needed to stimulate the markets in their initial stage of development. In times of economic crisis, this is a particular challenge for small green sectors whose growth is slowed down by lack of necessary investments. Consequently, dedicated investment plans are needed to un-tap the job creation potential and to overcome the shortage of funds for new emerging and rising sectors. For instance, leveraging private investments by mobilisation of the EU funding could play an important role in this respect.

Moreover, it is to be noted that young people are not very keen on taking up green jobs, because they lack attractiveness and are often perceived as a low-pay, 'dirty' manual work. Poor working conditions already result in skills/labour shortages in buildings or renewable energy sectors. Also many jobs in waste management, recycling and agriculture, all of which are sectors with employment potential in a greener economy, are characterised by extremely poor working conditions (low pay, unsocial working hours, hazardous health and safety

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http://www.vdma.org/wps/wcm/connect/e6ef0300447d57d4933db79c93f511f4/Ingenieurerhebung_2010_Publikation.pdf?MOD=AJPERES&CACHEID=e6ef0300447d57d4933db79c93f511f4

136 Available at: http://www.cefic.org/Documents/PolicyCentre/Skills-for-Innovation-in-the-European-Chemical-Industry.pdf

137 Available at: http://ec.europa.eu/enterprise/sectors/electrical/files/electrareport_en.pdf

138 E-skills UK, *Technology Insights 2011: Summary report*, 2011

139 European Commission, *Public Consultation Report. Public consultation on the Industrial Policy Communication 2012.*

conditions, employment contracts). Thus, in order to prevent labour shortages, efforts to upgrade skills must be accompanied by the improvement of working conditions.

Investment in skills and training

Europe has to be able to count on a skilled workforce, capable of contributing and adjusting to technological change and new patterns of work organisation. Ensuring that workers have right skills will be a challenging task as it will require mapping employers' fast evolving needs in nascent fields and delivering adequate training. It is crucial that requalification and skills upgrade of the current workforce goes in hand with the up-take of new technologies in the sectors they work in, so that the lack of relevant skills does not hamper the transition to green economy or result in business failures.

Multiple entry routes, varied levels of qualification and insufficient recognition of skills acquired through non-formal or informal learning often limits the mobility of workers, also into low carbon occupations. Moreover, a lack of qualified professional coaches/trainers enabling the delivery of new skills to workers may also slowdown the process of equipping the workforce with the skills sought by employers.

When it comes to tapping on the job potential of a green economy, special attention should be paid to SMEs and their needs, as they could benefit in particular from external support in upgrading skills of their workforce. SMEs are often not aware of training schemes offered by public employment services and/or are sceptical about such programs because of the disruption it may cause to their business. However, SMEs are open to in-house informal training (e.g. tutorship, mentorship, apprenticeship) as a preferential way of recruiting proven workers. That is why policies must take into account the specificities and needs of this particular group of companies. Normally SMEs are at a disadvantage when recruiting high-skilled or intermediary-skilled workers, as SMEs cannot match the wages and non-financial arrangements offered by larger companies. Also, it has to be noted that SMEs have more difficulties to train their workforce in-house as compared to larger companies.

Estimates concerning the overall scale of a transition to a green economy show that while yearly labour market turnover in the EU is estimated at 22-25%, the "total" churn linked to the shift to a green economy is expected to be in the region of 2-3% of the overall estimate of around 48 million labour market churn. Some sectors are already experiencing strong employment dynamics. Solar, wind and biomass are the technologies progressing most rapidly and the renewables sector in Europe has seen an increase of 300,000 employees within only five years (2005-2009).

5. ANNEX

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Theme	Sub-theme	Nr	Action	Deliverables	Date of implementation	State of implementation A = Done or Well underway B = starting C = Not started D = Regular monitoring/MS impl.	Time-range for impact on industry or general economy S = Short-term (1-2- yrs) M = Medium-term (3-4 yrs) L = Long-term (5-10 yrs)
1. IMPROVING FRAMEWORK CONDITIONS FOR INDUSTRY [chapter 3]*	**1.1 Competitiveness-proofing and implementing smart regulation [3.1]**	1.1.1	carry out **competitiveness proofing** within the impact assessment process to ensure a reinforced analysis of the impacts on industrial competitiveness for important new policy proposals	Implementation ongoing * **Commission SWD "Operational guidance for assessing impacts on sectoral Competitiveness within the Commission impact assessment System.** **A "Competitiveness Proofing" Toolkit for use in Impact Assessments" - SEC(2012) 91 - 27.1.2012** * initial identification of relevant policy initiatives where competitiveness at Commissioners group on industrial policy (January 2011) * growing number of policy initiatives undergoing competitiveness proofing e.g. - the amendments to the toy safety directive - policy on security industry - working time directive - roadmap for a low-carbon economy * operational guidelines have been developed and are under testing * competitiveness proofing helpdesk and coaching in place	2011 onwards	A	L
		1.1.2	**ex-post evaluations** and **'fitness checks'** to screen existing EU legislation should include a focus on industrial competitiveness issues	In 2010 pilot exercises have started in four policy areas: environment, transport, employment and social policy and industrial policy. The results will be presented in 2012. * **Alignment of ten directives to the New Legislative Framework (Decision 768/2008) – July 2011** * Report on the results of the Fitness Check for the Food chain – 2012 * Fitness check on the automotive sector (type approval system for motor vehicles) * Evaluation of chemical market after REACH – June 2012	2011 onwards	A	L

		1.1.3	review the **Small Business Act** in order to continue to improve the business environment for SMEs	**IMPLEMENTED** ***Communication Review of the Small Business Act for Europe COM(2011) 78 - 23.02.2011** *** Report Minimizing regulatory burden for SMEs COM(2011) 803 – 23.11.2011**	2011	A	M
		1.1.4	Member States should ensure an assessment of the impacts on industrial competitiveness along with economic, social and environmental impacts of major policy proposals and implement 'fitness checks' of their existing legislation	Monitored through annual Article 173 Review	2011 onwards	D	M
		1.1.5	Member States should implement the Small Business Act, make further improvements in the business environment, and 'think small first'	Monitored through annual Article 173 Review	2011 onwards	D	M
	1.2 Improving access to finance for businesses [3.2]	1.2.1	initiate appropriate legislation to make **financial markets** more resilient and efficient, whilst ensuring the financing needs of businesses and SMEs	**IMPLEMENTED** **New legislation:** *** Single Market Act COM(2011) 206/4 – adopted 13.4.2011** *** Revision of Capital Requirements Directives ("CRD IV") – Commission Proposal 20.07 2011** *** Regulation on European Venture Capital Funds – Commission Proposal COM(2011) 860/2 – 7.12.2011** *** Action Plan for improving SMEs access to capital markets COM(2011)870/2 – 7.12.2011**	2010 onwards	A	M
		1.2.2	refocus **European financial instruments** to help overcome market failures in financing small businesses and innovation post-2013	**IMPLEMENTED** * Proposal for the MFF 2014-2020 – 29.6.2011 - Substantial increase of funds for financing SMEs and innovation was proposed in the Horizon 2020 and COSME financial programmes.	2011-12	A	L
		1.2.3	develop and share best practices on **Member State schemes for access to finance**	* Report on the results of a study on best practices on schemes for access to finance in Member States - 2012	2011 -12	B	M

2. STRENGTHENING THE SINGLE MARKET [chapter 4]	**2.1 Developing the Single Market and enforcing intellectual property rights [4.1]**	2.1.1	ensure the timely implementation of the **Single Market Act**	**IMPLEMENTED** *** Single Market Act COM(2011) 206/4 – adopted 13.4.2011** * Stocktaking of the progress - end of 2012	2011-2012	A	M
		2.1.2	* draw up a EU action plan to **develop EU market surveillance**. * develop guidelines for **customs controls for product safety** with national customs and market surveillance authorities	* Revision of the General Product Safety Directive (GPSD) and of the Regulation 765/2008 on Market Surveillance * New horizontal single legislative proposal on market surveillance – December 2012 * Commission Decision on a multiannual plan for Market Surveillance (Report of the expert group on Market Surveillance) - Q4 2012 * Draft roadmap is under preparation * Guidelines on import controls for product safety and compliance	2011 onwards	B	M
		2.1.3	screen EU legislation, including the **free movement of goods,** to identify **further harmonisation** to significantly reduce the costs of doing business across borders	*** Action plan for European e-invoicing with European Forum to monitor progress - Communication and decision adopted on 2.12.2010 COM(2010)712** * As part of the REACH evaluation and review, examine the harmonization of REACH risk management requirements on the intra-EU chemicals trade and eliminate potential overlaps/conflicts with other EU legislation – 2012 * Communication on regulatory aspects of nanomaterials – September 2012	2011 onwards	B	L
		2.1.4	set up a **High Level Group on Business Services** to examine market gaps, standards, innovation and internal market issues in (i) marketing and advertising; (ii) facility management; (iii) technical and engineering services; and (iv) design	* HLG will be launched by the end of 2012	2012-14	C	L
		2.1.5	enhance **enforcement of intellectual property rights**, including strengthening the European Observatory on Counterfeiting and Piracy	*** Communication on a Single Market for intellectual property rights adopted 24.5.2011**	Spring 2011	D	S
		2.1.6	urgent adoption of the proposals for an **EU unitary patent protection and the applicable translation arrangements, and creation of a unified patent litigation system** to allow the first European patents with unitary effect to be issued in 2014	Commission proposals for regulations implementing enhanced cooperation in the area of the creation of unitary patent protection and with regard to the applicable translation arrangements – by 2012	2011 - 12	A	S
		2.1.7	develop and share best practices and materials relating to **market surveillance, customs, and general business suppor**t to improve the enforcement of intellectual property rights	* Best practice 2 on IPR enforcement support to SMEs, the group will make recommendation to further improve IPR enforcement support to EU SMEs by end 2012 * Customs expert group on e-counterfeiting : identify problems and solutions and share best practices on the customs handling of small parcels resulting from internet sales	2011	B	S

	2.2 Improving infrastructure [4.3]	2.2.1	develop an efficient **Internal Market in road, air, rail and waterborne transport and overcome transport bottlenecks** through the upcoming revision of the TEN-T guidelines	**IMPLEMENTED** *** White Paper: Roadmap to a Single European Transport Area adopted 28.03.2011** * SWD on the new TEN-T Policy SEC(2011) 101 – January 2011 * Revision of TEN-T guidelines: Proposal for a regulation on Union guidelines for the development of the trans-European transport network – 19.10.2011	2011	A	M
		2.2.2	adopt an energy infrastructure package to support the development of an **internal energy market** addressing missing infrastructure links of European significance	**IMPLEMENTED** *** Communication Energy infrastructure priorities for 2020 and beyond COM(2010) 677- 17.11.2010** *** Proposal for a regulation on guidelines for trans-European energy infrastructure (COM(2011) 658) – 19.10.2011**	2011 onwards	A	L
		2.2.3	liberalise EU energy markets in order to **enhance competition in the energy sector** and avoid putting the EU's manufacturing industry at a significant disadvantage in the global markets	*** Communication Energy 2020 A strategy for competitive, sustainable and secure energy adopted 10.11.2010** *** Implementation**	2011 onwards	A	L
		2.2.4	develop an **infrastructure funding** strategy including the creation of EU project bonds and fostering public private partnerships	*** Consultation on the Europe 2020 Project Bond Initiative closed on 2 May 2011** *** Conference in April 2011** *** Proposal for a regulation establishing the Connecting Europe Facility (COM(2011) 665) – 19.10.2011**	2011 onwards	A	L
		2.2.5	address identified transport bottlenecks and cross-border inter-connection of energy grids	* Regular monitoring by the Commission	2011 onwards	D	M
		2.2.6	promptly implement the Third Internal Energy Market Package	* Regular monitoring by the Commission	2011 onwards	D	M
	2.3 Standardisation [4.4]	2.3.1	present a **Standardisation** strategy to promote a stronger role for European standard setting in a rapidly changing world and society	**IMPLEMENTED** *** Communication plus the revision of Directive 98/34/EC, Decision 87/95/EEC on ICT Standardisation and Decision 1673/2006 on the financing of European Standardisation, including revision of the ICT Standardisation policy - 1.6.2011**	2011	A	L

3. A NEW INDUSTRIAL INNOVATION POLICY [chapter 5]	**3.1 Industrial innovation [5.1]**	3.1.1	follow up the work of the HLG on **Key Enabling Technologies** to promote the wide and timely deployment, take-up and commercialisation of new technologies	*** High-Level Group - final report published 28.6.2011** * Communication with an Action Plan on Key Enabling Technology deployment – adopted on 26.6.2012 (COM(2012)341.	2010-12	A	M
		3.1.2	promote industrial research, development and innovation on **advanced manufacturing technologies** to facilitate the modernisation of the EU industrial base and provide responses to societal challenges like energy efficiency, climate change and resource scarcity	*** Communication Partnering in Research and Innovation COM(2011) 572 – 21.9.2011** * Continuation of the Factories of the Future Private-public partnership in the Horizon 2020. * Studies of how REACH could be further streamlined for the benefit of innovations, and emerging technologies, including nanotechnologies	Ongoing	A	M
		3.1.3	promote initiatives such as the Universities-Business Forum pilot action funding Knowledge Alliances to bring together higher education and businesses to improve EU's **high-skilled workforce**,	*** Fourth European University-Business Forum took place in March 2011** *** Supporting growth and jobs – an agenda for the modernisation of Europe's higher education systems COM(2011) 567 – 20.9.2011** * Communication Rethinking skills in Europe - foreseen in Q3 2012 * Communication on skills governance – foreseen in Sep 2012	*Jul 2011 *Q3 2011	A	L
		3.1.4	promote new business concepts and related manufacturing technologies focused on the development of sustainable, user-driven design-based products in the **textile and clothing sector** as well as other large consumer markets	* Major study on the competitiveness and future prospect for the textiles/clothing and footwear sectors will be finalised in 2012. Conferences with stakeholders will be organised as a follow-up.	2011-2012	C	L
		3.1.5	develop policy approaches for greater **cross-fertilisation of innovation** including into traditional manufacturing sectors and SMEs	* improving use of ICT and creative industries for industrial competitiveness through the European Creative Industries Alliance and through large-scale demonstrators with impact on sectors	2011	C	M
		3.1.6	present a new strategy for globally competitive **clusters and networks** including specific action to promote globally competitive clusters and networks in both traditional and emerging industries	* Communication on fostering industrial competitiveness and innovation in the EU through world-class competitive clusters – on hold until the study is completed * Study on relation between business networks and clusters (Eur. Comp Report 2012) - final report expected in Q3 * 3 CIP Calls launched, on studying clusters in emerging industries, on internationalisation of clusters, and on cluster management excellence – results expected Q2 2013	2012-2013	B	L
		3.1.7	encourage the parallel notification of **aid to cross-border collaborative R&D&I projects**	* on-going monitoring	Continuous activity	D	M

		3.1.8	foster closer cooperation between policies for key enabling technologies to maximise synergies and complementarities in technology deployment	* Communication with an Action Plan on Key Enabling Technology deployment – adopted on 26.6.2012 COM(2012)341.	2012	A	M
		3.1.9	promote '**smart specialisation**' through EU Regional policies to develop clusters and improve the innovation performance of regions	*** Launch Smart Specialisation Platform – 24.6.2011**	2011	A	M
	3.2 Skills base [5.2]	3.2.1	promote **e-skills** for ICT practitioners, users and managers	* External Evaluation report onf the implementation of the Commission's Communication on "e-Skills for the 21st Century" and several studies in progress - 2012 * European e-Skills Week - 26/30 March 2012	2012	A	M
		3.2.2	**encourage the networking** of Member State industry, education and employment authorities to share information and best practice on labour markets and skill strategies	Implementation of Strategic Framework for EU cooperation in "Education & Training 2020" * KNOWFACT – A Knowledge Partnership for the definition and launch of the European Teaching Factory Paradigm in manufacturing education – launched Dec 2011	Ongoing	A	M
		3.2.3	propose **guidance principles on framework conditions for job creation**, including on investment in the development of graduates in science, technology, engineering and maths	*** Proposal for a Council Decision on guidelines for the employment policies of the Member States COM(2011) 813 – 23.11.2011**	2011	A	M
		3.2.4	increase the usage of the European Social Fund for skills upgrading and restructuring	* Within framework of 2007-2013 Structural and Cohesion Programmes	Ongoing	B	M
4. CAPITALISING ON GLOBALISATION [chapter 6]	**4.1 Trade and international regulation [6.1]**	4.1.1	ensure that an **analysis of impacts on competitiveness is performed for all trade negotiation mandates** within the impact assessment process	* Impact assessment of upcoming mandates, e.g. possible Free Trade Agreement with Japan	2011 onwards	A	L
		4.1.2	prepare for the Council and the Parliament an **economic analysis of consequences of the proposed deal for the EU**, prior to signature	* Undertaken after a new trade agreement is concluded	2011 onwards	B	L
		4.1.3	make an **annual report on trade and investment barriers** for the Spring European Council, including 'beyond the borders' measures and industrial policy practices and identifying priorities for market access strategy and enforcement action	**IMPLEMENTED** *** First Trade and Investment Barriers Report 2011 COM(2011) 114** * Annual reporting	2011 onwards	A	L

		4.1.4	develop **international regulatory co-operation initiatives** with a view to develop globally compatible rules and standards. In that respect, our trade agreements should also promote the use by our partners of international rules and standards, as well as of trade-friendly conformity assessment procedures	* Trans-Atlantic Economic Council. * Other regulatory dialogues. * Technical Barriers to Trade committee	Ongoing	A	L
		4.1.5	seek closer economic integration with neighbouring countries through the **European Neighbourhood Policy** (negotiating Agreements on Conformity Assessment (ACAAs) with neighbouring countries that have completed the preparations); give greater priority to market institutions and economic governance in relations with **development partners**	*** Communication on a Partnership for Democracy and Shared Prosperity 8.3.2011 COM (2011) 200** * Communication on the European Neighbourhood Policy – 2011-12 * ACAAs - Countries concerned (1st phase): Egypt (toys, gas appl.) and Tunisia (construction, electric. prod.); integration of ACAAs in other FTAs (e.g. Ukraine and Croatia, FYRoM, Albania) * Communication on trade and development – January 2012	2011 onwards	A	L
		4.1.6	present a strategy for support for the **internationalisation of SMEs** with concrete measures building on policies set out in the Small Business Act	**IMPLEMENTED** * A study is on-going *** Communication: 'Small Business, Big World - a new partnership to help SMEs seize global opportunities' COM(2011) 702 – 9.11.2011**	2011	A	M
		4.1.7	integrate **traceability requirements** for third country producers in Commission proposals where relevant	* Inclusion of traceability requirements in legislation where relevant	ongoing	B	L
		4.1.8	accelerate the adoption of the Commission's proposal on the **indication of the country of origin** of certain products imported from third countries ; - include where relevant in FTAs	* Adoption of the Commission proposal * Ensure that FTAs include appropriate IP regimes		A	L
		4.1.9	review **Strategy for the Enforcement of Intellectual Property Rights** in Third Countries that defines a broad framework to fight IPR infringement in third countries, as well as specific action lines to do so	* Inter-service group * Communication on a revised strategy for the protection and enforcement of intellectual property rights in third countries – end of 2012	2011	B	L

	4.1 Ensuring access to raw materials and critical products [6.2]	4.2.1	present a **Strategy on Raw Materials** including proposals on fostering better framework conditions for sustainable supplies of domestic primary raw materials, increased recycling, and finding substitutes for other raw materials	**IMPLEMENTED** *** Communication on commodity markets and raw materials COM(2011) 25 – adopted 02.02.2011** *** Communication on the Innovation Partnership on Raw Materials COM(2012) 82– adopted on 29.02.2012** * continued implementation of the strategy on Raw materials: 2010-2011 report on raw materials – March 2012	2011 onwards	A	M
5. PROMOTING INDUSTRIAL MODERNISATION [chapter 7]	**5.1. Resource, energy and carbon efficiency**	5.1.1	develop the **long-term sectoral industrial strategies** and policies needed to assist the transition to a low-carbon, resource and energy-efficient economy in line with the EU roadmap for a low carbon economy by 2050,	*** Study on EU Industry in a Sustainable Growth Context – October 2011**	2011	B	L
		5.1.2	**monitor sustainable competitiveness**, including EU industry's voluntary initiatives aimed at resource sustainability	*** Study on Competitiveness of the European Companies and Resource Efficiency – July 2011**	2011	A	L
		5.1.3	review the **Sustainable Consumption and Production / Sustainable Industrial Policy** and consider the possible **extension of the Eco-design Directive to new products**	* Communication reviewing the Sustainable Industrial Policy/Sustainable Consumption & Production Action Plan (of 2008) - foreseen Q3 2012 * Evaluation of Ecodesign Directive completed by the end 2011. * Review of the Ecodesign Directive 2009/125/EC – foreseen Q4 2012	2012	B	M
		5.1.4	launch an **Eco-innovation Action Plan** to ensure the commercialisation and deployment of key environmental technologies	**IMPLEMENTED** *** Communication on innovation for a sustainable Future - The Eco-innovation Action Plan COM(2011) 899 – 15.12.2011**	2011	A	M
		5.1.5	foster closer coordination between policies for environmental technologies to maximise synergies and complementarities in technology deployment, including policies for boosting demand, in particular in eco-innovation	Monitored through annual Article 173 Review (ENTR B3)	2011 onwards	D	M

	5.2 Structural excess capacities [7.2]	5.2.1	review Community support for **re-integrating redundant workers** into new jobs including through the review of the European Globalisation Adjustment Fund (EGF) regulation	**IMPLEMENTED** *The derogation of 2008 in the application of the EGF has been extended until the end of 2013. * Proposal for a regulation on the European Globalisation Adjustment Fund (2014 - 2020) – 6.10.2011	2011	A	S
		5.2.2	launch a consultation of European social partners on a **European framework for restructuring**	**IMPLEMENTED** *** Green Paper Restructuring and anticipation of change: what lessons from recent experience– COM(2012) 7 - 17.1.2012**	2012	A	L
		5.2.3	**review the Rescue and Restructuring Guidelines for State Aid**	* Guidelines on Rescue and Restructuring to be revised in 2012, planned adoption 2013	2012	C	S
		5.2.4	present proposals to **accelerate the implementation and improve the focus of European Structural Funds** through the Fifth Cohesion Report and in the new Cohesion policy regulatory framework	* **5th Cohesion Report published, COM(2010) 642 final - 09.11.2010** * Regulatory framework proposal on 6th October - Negotiation phase on-going.	2010-11	A	M
	5.3 Building on Corporate Social Responsibility [7.3]	5.3.1	put forward a new policy initiative on **corporate social responsibility** addressing emerging issues such as business and human rights, and company disclosure of environmental, social, employment-related, and governance information	**IMPLEMENTED** *** Communication 'A renewed EU strategy 2011-14 for Corporate Social Responsibility' COM(2011) 681 – 25.10.2011**	2011	A	M
		5.3.2	valorise EU industry's voluntary initiatives aimed at resource sustainability	Commission evaluation of stakeholder transparency initiative in the chemicals industry	2011 onwards	B	M
		5.3.3	examine the possibility of an initiative on the **Environmental Footprint of Products**	A harmonised methodology for the calculation of the environmental footprint of products (including carbon footprint) is under development. Testing is on-going. Final methodological guide planned for September 2012.	2011-12	B	M

6. THE SECTOR-SPECIFIC DIMENSION — A TARGETED APPROACH [chapter 8]	**6.1 Space: a driver for innovation and competitiveness at citizens' service [8.1]**	6.1.1	propose measures to **implement the priorities of the space policy**	***Communication on an EU Space Strategy at Citizens' Service COM 2011(152) – adopted 04.04 2011** *** Communication on the European Earth Monitoring Programme (GMES) and its operations (from 2014 onwards) COM(2011)831 – 30.11.2011** * Proposal for a regulation on the implementation and exploitation of European satellite navigation systems COM(2011) 814 – 30.11.2011 * Two legislative proposals expected in 2012 * Communication on industrial policy for the space industry – foreseen Q4 2012 * Regulation establishing a Third Party Liability regime for the EU Global Navigation Satellite Systems - foreseen November 2012 * Proposal for a Regulation on the setting up and operations of Space Surveillance and Tracking (SST) services at European level - foreseen July 2012	2011	A	S
		6.1.2	pursue a Space Industrial policy developed in close **collaboration with the European Space Agency and Member States**		2011-12	A	
	6.2 Sustainable mobility [8.2]	6.2.1	propose a **Clean and Energy-efficient Vehicles platform** to ensure infrastructure investments, including pilot projects, and to launch research initiatives on key technologies and materials	* CARS 21 HLG work ongoing - Interim Report – 2.12.2011 - Final report on 6 June 2012 * Communication - Report on the results of the CARS 21 High Level Group – Q3 2012	2011-12	A	M
		6.2.2	launch a **Strategic Transport Technology Plan,** including a strategic initiative on Clean Transport Systems and an e-mobility package, to enhance the efficiency and the safety of the transport sector	* Communication on Strategic Transport Technology Plan (September 2012) * Communication on alternative fuels strategy (late 2012)	2011 onwards	A	M
		6.2.3	undertake a feasibility study on **rail energy storage and the hybridisation of diesel traction**, enabling demonstration and further research projects to increase energy efficiency and strengthen competitiveness	* Study overview and competitiveness survey of the railway supply industry – launched in October 2011	2012-13	B	M

	6.3 Tackling societal challenges [8.3]	6.3.1	promote corporate responsibility, improve access to medicines, and strengthen the competitiveness of the **pharmaceutical industry;** facilitate the functioning of the **Internal Market for medicines** through a review of Directive 89/105/EEC on the transparency of pricing and reimbursement procedures	* Process on Corporate Responsibility in the field of Pharmaceuticals launched in 2010 ***Transparency Directive COM(2012)84 adopted on 1/3/2012**	2010 onward	A	S
		6.3.2	present a **Security Industry initiative,** including a fast-track system for approval of priority technologies, setting priorities for harmonisation and standardisation and considering coordinated public procurement, and setting up a European Security and Dual-use Platform	* Communication Industrial Policy for Security Industry – adopted on 26 July 2012 (COM(2012) 417).	2012	A (July 2012)	M
		6.3.3	develop a strategy for the **Sustainable Competitiveness of Construction** to ensure appropriate framework conditions for construction products and services, improve resource efficiency and environmental performances of construction enterprises, and promote skills, innovation and technological development	*** Competitiveness study completed in March 2011** * Communication on the strategy for the sustainable competitiveness of the EU construction sector – due July 2012	2011	A (July 2012)	M
		6.3.4	put in place conditions to **create bio-based markets**, improving relevant legislation and framework conditions for industrial use, promoting innovation through demonstration projects, and developing European and international standards	* **Communication " Innovating for Sustainable Growth: A Bioeconomy for Europe" COM(2012) 60 – 13 February 2012** * Standardisation activities are on-going	2011-12	A	M
	6.4 Re-invigorating the competitiveness of the EU through the value-chain [8.4]	6.4.1	follow up the High Level Group on the **competitiveness of the chemicals industry**, notably its potential contribution to providing solutions to critical societal challenges through Innovation Partnerships	**IMPLEMENTED** *** Staff Working Paper on the progress with the implementation of the recommendations of the HLG on chemicals industry - adopted 04.02.2011**	2011	A	S
		6.4.2	use the High Level Forum for a Better Functioning Food Supply Chain to ensure the swift implementation of the recommendations of the High Level Group on the **Competitiveness of the Agro-Food Industry**	*** Action plan adopted by the Forum on 16.11.2010;** * The Forum will deliver a Final report on the results achieved at the last HLF meeting at the end of the year 2012	2011-12	A	S

		6.4.3	propose strategic initiatives following the Green paper on Unlocking the potential of **cultural and creative industries,** including - a Communication on key aspects of the **competitiveness of the fashion industry**, - a **European Creative Industries Alliance** (ECIA) to establish policy dialogue on industrial and innovation strategies based on service innovation in this area - an **Expert Forum on Innovative Creative Industries** to extract lessons from the work carried out under ECIA	* Communication Unlocking the potential of cultural and creative industries – foreseen September 2012 * Communication on fashion on industry – (on hold) foreseen 2013. * ECIA will be launched in February 2012 (specific deliverables after 2-3 years, depending on projects)	2011-14	B	M
		6.4.4	propose strategic initiatives in emerging industries notably those that demonstrate the transformative power of service innovation - a **European Mobile and Mobility Industries Alliance** (EMMIA) to establish policy dialogue on industrial and innovation strategies based on service innovation in this area	* EMMIA will be launched in March 2012 (specific deliverables expected after 2-3 years, depending on projects) * A concrete action specific to GMES will be launched in 2012.	2011-2014	A	S
	6.5 Addressing concerns of energy-intensive industries [8.5]	6.5.1	adapt **State aid rules** to allow for an appropriate compensation for indirect Emission Trading Scheme costs, such as those passed on through electricity prices, while ensuring a level playing field in the Single Market and the attainment of the Community objectives on emission reduction	* Guidelines on certain State Aid Measures in the context of the Greenhouse Gas Emission Allowance Trading Scheme – adopted on 22.5.2012	2011	A	S
		6.5.2	bring forward a **Sustainable Industry Low Carbon Scheme** (SILC) to coordinate framework conditions, funding actions, data collection, and other activities of the EU and Member States promoting development and uptake of low carbon technologies in line with the SET-Plan	* Publication of a call for proposals – deadline 30.8.2011; * Signing specific contracts - Q4 2011; * Second round of CfP – 2012 * Final report - Q4 2012	2011 onwards	A	S
		6.5.3	consider an **energy-intensive industries low carbon implementation initiative** in the context of the discussion on future research Public-Private Partnerships to ensure the appropriate R&D, financing and deployment strategies for low-carbon production	Energy-intensive Industries PPP to be proposed (Covered under SPIRE)	2012 onwards	B	M

		6.5.4	promote demonstration projects and uptake for **ultra-low carbon production technologies,** including industrial carbon capture and storage, while avoiding distortions to competition	**IMPLEMENTED** * Support for sustainable and low-carbon technologies in energy-intensive process industries has been included in the Horizon 2020 financial framework	2011-16	A	M
		6.5.5	further explore the opportunities to bring in further **innovative incentive mechanisms** linked to the carbon market, namely for fast movers	Study launched: Support to the Commission in the development of an instrument for fostering investment in clean technologies with allowances for the EU Emission Trading System – Dec 2011	2012	A	M
	6.6 An enhanced sectoral approach [8.6]	6.6.1	consult with stakeholders on the best way to use and **strengthen the industrial dimension of Joint Technology Initiatives and European Innovation Partnerships** as announced in the Innovation Union Initiative, and on priorities in this respect	Input into Common Strategic Framework for Research and Innovation: e.g. the Innovation Partnerships on Smart Cities and Raw Materials, - New Private-public partnership (PPP) on Energy-Intensive Industries and renewal post-2013 of existing PPPs on Factories for the Future, Energy-efficient buildings, and Green Cars.	2011	B	M
7. A NEW EU GOVERNANCE FOR INDUSTRIAL POLICY [chapter 9]		7.1.1	**monitor the actions** outlined in this Communication to strengthen the European policy framework for industrial policy, working closely with the Council and European Parliament	Quarterly monitoring through the DG Enterprise Rolling Plan and the Competitiveness Inter-Service Group	2010 onwards	D	
		7.1.2	**report** to the Council and the European Parliament on the EU's and Member States' industrial competitiveness and related policies and performance on an annual basis	Annual reporting in the framework of Article 173: *** Communication: Implementing the Industrial Policy Flagship: Reinforcing Industrial Competitiveness Across the EU COM(2011) 642 – 14.10.2011** *** European Competitiveness Report 2011 – SEC(2011) 1187 - 14.10.2011**	2011 onwards	A	
		7.1.3	initiate **peer reviews and exchanges of good practices with Member States** to improve cooperation on industrial policies across the EU	Peer reviews, technical missions to the MS	2010 onwards	D	

* In square brackets a reference to the chapters in the original text of the Communication is made