Opinion of the European Economic and Social Committee on Industrial Change in the Mechanical Engineering Sector

(2005/C 267/02)

On 1 July 2004 the European Economic and Social Committee, acting under Rule 29(2) of its Rules of Procedure, decided to draw up an opinion on Industrial change in the mechanical engineering sector.

The Consultative Commission on Industrial Change, which was responsible for preparing the Committee’s work on the subject, adopted its opinion on 27 April 2005. The rapporteur was Mr van Iersel and the co-rapporteur was Mr Castañeda.

At its 417th plenary session, held on 11 and 12 May 2005 (meeting of 11 May 2005), the European Economic and Social Committee adopted the following opinion by 211 votes to none with 4 abstentions.

Executive summary

Mechanical engineering is a sector in its own right but, as a supplier of capital goods and common technologies used by different industries, it acts also as a cross-fertiliser, causing a knock-on effect on a much greater number of European sectors. It is a key innovative industry and, as such, any European industrial policy must consider mechanical engineering a strategic sector. The sector fits perfectly well into a concrete programme of fixed objectives at regional, national and EU level aimed at the realisation of the Lisbon agenda. This requires both horizontal and sector-specific policies, as well as an adequate mix of the two. Any such policies should help the sector to excel not only across Europe but also worldwide.

There are a number of issues to be addressed in the ongoing process of consultation and policy-making at EU level (as regards mechanical engineering), that will have a stimulating effect on similar processes at national and regional level across Europe. Among the specific conditions to be fulfilled at EU level are: better lawmaking, including regulatory impact assessment prior to regulation as well as a proper implementation and enforcement of existing EU legislation; effective market surveillance; the establishment of a technology platform in order to bridge the gap between research centres and universities and the industry; reducing the growing mismatch between European funded R&D and the needs of this industry; a competition policy that favours development and innovation in SMEs; improvement of access to financial markets and a trade policy that guarantees freedom of access to investment in third country markets. Also of great importance is the adaptation of skills to current standards.

A dialogue between the Commission and all stakeholders at EU level on the implications for industry may set up a framework beneficial for mechanical engineering in the EU and will contribute to the promotion and development of strong regional clusters. All of this requires an active commitment on the part of the European institutions, in particular the Commission.

1. Introduction

1.1 The European Commission is developing a ‘new style’ industrial policy. This policy is based on three pillars: better regulation, sector-specific approach and an integrated approach at EU-level. It is linked directly both to the Lisbon Strategy and to the current re-appraisal of the manufacturing industry’s contribution to the European economy.

1.2 In a large number of sectors this revival of industrial policy at EU-level is warmly welcomed. The EESC supports fully the principles of the ‘new style’ industrial policy (1), the success of which will depend mainly upon an appropriate combination of actions both at horizontal and sectoral level, for the following reasons:

— industrial sectors differ considerably;

— the sectoral level is, in a number of areas, the most appropriate for bringing together industry representatives, including relevant social partners, government officials and policymakers (Commission and national authorities), and other important stakeholders such as customers, educational and training establishments, science and technology institutes, as well as banks.

1.3 There is general political agreement about the need for Europe to meet the challenges of the future by becoming a strong leader in a globalised world. Making the Lisbon agenda a reality is, today more than ever, of major importance. Europe should therefore not only combat its own perceived weaknesses (as compared with its trade partners) but should also support

and develop its strengths. The engineering goods industry provides substantial technological resources, as it owns the technology present not only in its products but also in the processes of its clients, which include the rest of manufacturing industry and essential utilities such as energy, water, transport and communications.

1.4 With the reactivation of the Lisbon agenda and today’s focus on growth and jobs, the Commission rightly emphasises the core role of manufacturing industry, in particular of SMEs. Accordingly, any European industrial policy must consider mechanical engineering as a strategic sector, which, moreover, is flourishing at the present time. Indeed, attention should not only be focussed on sectors facing immediate challenges but equal attention must also be paid to successful sectors.

1.4.1 Mechanical engineering is not only a sector in its own right but, as a supplier of capital goods and common technologies used by different industries, it acts as a cross-fertiliser causing a knock-on effect to a much greater number of European sectors.

1.4.2 The mechanical engineering sector, as provider of enabling technology to all other sectors of the economy, provides the fundamental industrial infrastructure underpinning the European economy.

1.4.3 Moreover, mechanical engineering is one of the major exporting sectors accounting for about 15 % of exports of EU manufactured goods.

1.5 Mechanical engineering has benefited considerably from the internal market, which has provided European manufacturers with a substantial home base. However, while the sector needs a proportionate level of coherent international standards and European regulation, it is essential to maintain balance in order to avoid any over-regulation that might hinder competitiveness. At the same time, greater focus on the implementation and enforcement of regulation is required.

1.6 There is a need for both horizontal and sector-specific policies, as well as for an adequate mix of the two.

2. Strategic importance

2.1 The mechanical engineering sector plays a crucial role in the European economy for a number of reasons:

2.1.1 Mechanical engineering is a strategic industry: it is a high added-value, knowledge-intensive sector which supplies all other sectors of the economy with the machines, production systems, components and associated services, as well as technology and knowledge they need. It is also considered an important contribution to sustainable development because it can result in more efficient production and, in this way, in the decoupling of resource use from economic growth. Mechanical engineering is not a homogeneous but a very diversified industry which covers a wide range of sub-sectors, including: lifting and handling equipment; machine tools; woodworking machinery; non-domestic cooling and ventilation equipment; pumps and compressors; machinery for mining, quarrying and construction; bearings, gears, gearing and driving elements; taps and valves, engines and turbines; agricultural and forestry machinery; machinery for textile, apparel and leather production; machinery for food, beverage and tobacco processing; agricultural equipment; machinery for paper and paperboard production; industrial furnaces and furnace burners; machinery for metallurgy, etc. In addition to all this, there are the common technologies, such as mechatronics, which combine mechanical and electronic elements.

2.1.2 Mechanical engineering provides not only the equipment, but also the skills and knowledge for improving existing processes and products and for developing new products in all subsectors. This is of particular importance when viewed in the context of the economic development of an enlarged Europe and beyond.

2.1.3 European mechanical engineering is a world leader with 41 % of global output, Europe is the world’s largest producer and exporter of machinery (EU 261,707 million in 2002), including complete plant exports. It is vital to maintain such a leadership position, if Europe is to become the most competitive knowledge-driven economy in the world.

2.1.4 Mechanical engineering is a major industry: it is not only one of Europe’s largest industrial sectors, accounting for 8 % of total manufacturing output, but also one of the largest employers with some 140 000 companies (of which, 21 600 have more than 20 employees) providing some 2.49 million people with, for the most part, highly qualified jobs. The strong domestic European market that mechanical engineering enjoys (2003: EU 15, EUR 285 bn; EU 25, EUR 305 bn) represents 70 % of production in the internal market and reinforces both the competitive edge of the industry and the stability of employment in the sector. This industry is therefore essential for attaining the Lisbon objectives.
2.1.5 Mechanical engineering is a key innovative industry; in Europe it is particularly strong in the area of customised machinery and niche markets, which is of great importance to the innovation capacity of all other sectors of the economy. It is also vital to the capacity of all sectors of industry to provide high added-value, thereby achieving a competitive advantage that offsets any handicaps Europe may face in areas such as labour costs. Mechanical engineering is a driver of innovation and a pioneer, applying and integrating innovations into its own products and processes. It should be borne in mind that mechanical engineering is a link — very often the first — in a value-creating chain: should one part of this chain fail, the whole would suffer.

2.1.6 Mechanical engineering is an industry of entrepreneurs, dominated by SMEs (1) — which are to a great extent family-owned — with all the attendant challenges faced by those companies, many of which are also global businesses. Mechanical engineering therefore epitomises the spirit of entrepreneurship fundamental to realising the Lisbon objectives.

2.1.7 Certain other characteristics of the mechanical engineering industry include the following:

— it is not a capital-intensive activity in comparison to other manufacturing sectors but still employs highly qualified personnel in the design and production of tailor-made machines and industrial plants;

— its progress over the last decades is based on increasing adaptability resulting from innovation, permitting an integration of various competitive components that is then marketed worldwide;

— given the universal role of machinery in all production processes, excellent reliability is a must in this sector, which is inseparable from the commonly accepted image of a strong European industrial tradition.

2.2 Mechanical engineering companies enjoy particularly strong customer relationships as production of goods by machine is generally a complex process requiring advanced engineering skills and continuous technical assistance and servicing by the equipment manufacturer. It is an essential part of the industrial fabric and a base for successful clusters, where there is geographical proximity of manufacturing to end users such as in Baden-Württemberg, Rheinland-Pfalz, Piemonte, Lombardia, Rhone-Alp, the UK Midlands and Eindhoven-Aachen. These examples underline the often successful and indispensable contribution made by regional and local authorities.

2.3 Mechanical engineering plays a vital role in improving the environment by producing equipment for the treatment and processing of water, soil, air, waste and manure. It also contributes to facilitating the use of renewable energy sources.

2.4 The mechanical engineering sector is a world leader, underpinning European manufacturing and exports and, therefore, is one of Europe’s strengths.

The introduction of measures to develop mechanical engineering should help the sector to excel not only Europe-wide but also worldwide.

2.5 A very good argument for enhanced support of the sector is that provided by the emphasis the US Administration has recently put on mechanical engineering. Countries such as the USA are increasingly aware of the importance of manufacturing in general and of the mechanical engineering sector in particular, to the economy and to national security (2).

3. What needs to be done at European level

3.1 Industrial change and innovation

3.1.1 Industrial change and innovation in production and processing is the order of the day. Less sophisticated production, requiring less highly qualified operating personnel, is being increasingly outsourced to other parts of the world. In order to maintain and reinforce its position in the home market as well as abroad, ongoing adaptation and innovation in the sector is required. This should be a matter of concern for all parties involved at regional, national and EU level.

3.1.2 The sector drew the attention of EU regulators as early as 1994 who responded in the form of a Communication (3), which was followed by a Council Resolution (4). Neither the European Commission nor the Member States have shown much inclination to implement the proposed follow-up to the Communication and the Council Resolution. Such reticence can hardly be viewed as a positive implementation of policy.

(1) Only 21,600 of these employ 20 persons or more, and only about 4,500 of these companies employ 100 or more people.

(2) See: Manufacturing in America – US Dept of Commerce. A further specific example of the strategic importance of Mechanical Engineering is the provision included in the Fiscal Year 2004 USA ‘Defence Authorisation Act’, which provides an incentive to US defence contractors to use US-built machine tools in defence contracts. This is due to the fact that it is felt as critical to maintain an independent machine-tool capacity for defence, security and political reasons.


This hesitant general attitude had changed under the last 
Commission because of the priority placed on manufacturing 
competitiveness in the framework of the Lisbon strategy. This 
might have led to a favourable climate for genuine partnerships 
at EU-level, which, hopefully, would have promoted positive 
interaction between players at national and local level, as 
appropriate. Unfortunately, the Commission seems to be 
focusing today on a limited number of so-called flagship-
sectors, among which mechanical engineering is not included 
at present.

3.1.3 ‘New style’ industrial policy aims at breaking through 
the barriers that have characterised for so long the relationship 
between public and private actors. The actors must be aware 
that each of them is serving the common objectives. Such an 
industrial policy aims at bringing together people and organisa-
tions to bridge gaps that, previously, have often prevented suffi-
cient innovation.

3.1.4 The wide variety of specialised and often high-tech 
SMEs in the sector, places high demands on the organisation 
and management of production processes. Contrary to certain 
other sectors with a relatively small number of leading compa-
nies, specific instruments and approaches have to be foreseen. 
One such specific approach, for example, might be the creation 
of a Technology Platform for Manufacturing Enabling Industries 
or the establishment of a particular programme which could 
play an outstanding role in this regard (6). A substantial invest-
ment in R&D is required.

3.1.5 A technology platform or specific programme should 
draw on the reservoir of skills developed as a result of a long-
standing European tradition in mechanical engineering and 
form an alliance of the support for European research 
programmes, industrial knowledge in the mechanical engi-
neering clusters and the strengths of specialised European 
research institutes.

3.1.6 Such programmes for mechanical engineering must 
take into account the variety of subsectors and the interaction 
between them, such as common innovations, the combination 
of technologies and, consequently, the need to develop effective 
knowledge circulation in production and business services.

3.1.7 The gap between research centres and universities on 
the one hand, and the market sector on the other, needs to be 
bridged. European R&D-programmes should certainly not be 
exclusively science-driven operating on a long term perspective, 
but should also strive to achieve a balance by reserving funding 
for applied research, which leads to innovative products.

3.1.8 The technology platform should contribute greatly to 
a better understanding between research centres of all kinds 
and the mechanical goods industry, which would, in turn, 
produce beneficial effects for similar fora in the Member States.

3.1.9 The presence of so many SMEs and mid-size compa-
nies in this sector emphasises the need for fewer constraints 
and less administration and greater access to EU programmes.

3.1.10 Naturally, the realisation of large-scale industrial 
projects requires R&D programmes to be focused on break-
through technologies. These have a knock-on effect on the 
whole value chain. However, it is important to achieve the 
right balance of funding between such major projects and 
SMEs.

3.1.11 All this will also have a positive impact on national 
programmes. In an environment dominated by interaction and 
benchmarking, best practice must be taken into account. 
Because of the overwhelming number of SMEs, national branch 
organisations have to play an active role in this field.

3.2 Industrial change and skills

3.2.1 There is a close interconnection between ‘new style’ 
industrial policies, innovation, creativity productivity and skills.

3.2.2 Nowadays young people are less inclined to study and 
to work in the technical industries, a phenomenon that has 
partly to do with an outdated image of industry. This calls for 
an action focusing on new technologies by industry itself, 
supported by a cultural drive on the part of national and Com-

unity media, with a view to altering public perception. Good 
communication between companies and the public, particularly 
with youngsters, is crucial. A change of mentality and approach 
is needed to reverse current trends. Increased awareness of the 
reality of mechanical engineering is needed. This concerns the 
overall process of technology, business services, the chains of 
inter-related technologies, processing, marketing, internationali-
sation, etc. The better these inter-relations and exciting 
processes are presented, the more it will foster interest amongst 
the general public and young people in particular.

(6) Inter alia EESC opinion on Science and Technology, CESE 
1647/2004, rapporteur Prof. Wolf and complementary opinion on 
Science and Technology, rapporteur Mr van Iersel.
3.2.3 All improvements begin with innovative and challenging educational systems. Up-to-date modules have to be devised, also in companies themselves. Industry must be encouraged to cooperate closely with educational institutes, higher education establishments, and vocational training centres. Direct participation of managers in relevant educational programmes must be encouraged and, in return, teachers must be offered the opportunity of interaction with industry. Schools should be encouraged to exhibit at (international) business fairs.

3.2.4 Business parks and technology parks around technical universities should be set up or developed more actively. Successful examples such as Cambridge University, Eindhoven, Aachen and others are to be highlighted.

3.2.5 Due to rapidly developing product and service cycles, life-long learning and, consequently, employee flexibility towards change, must become common practice in companies.

3.2.6 Effective coordination between industry (management, trade unions, staff) and educational establishments at all levels will reinforce regional specialities and, consequently, promote the formation and development of strong regional clusters. This coordination would be largely regional not only because of the enormous number of companies involved, but also because of the impact of regional specialities and differing cultures.

3.2.7 Dialogue between social partners on industrial implications at EU-level can lead to beneficial results. Illustrative examples, comparisons and benchmarks at EU-level may deliver a welcome framework and may set or reinforce the trend for national and regional programmes. A very nice illustration of a dialogue creating such a framework, is that conducted by the WEM-EMF ad-hoc Working Group in 2003 (7). It would be useful to measure the results of the wide variety of initiatives and to make an evaluation of best practices as this may foster dynamism in other regions.

3.2.8 This process can be deepened, notably with the participation of the new Member States, and may be extended to include the participation of educational establishments.

3.2.9 Although the mobility of engineers and engineering technicians within the EU still leaves much to be desired, the Bologna process and the growing convergence among the curricula of European engineering universities, vocational training centres and professional bodies of engineers is leading towards a European labour market in engineering skills.

3.3 Framework conditions

The framework conditions in which businesses operate are extremely important. They include the following:

3.3.1 The internal market

The internal market should guarantee harmonised access to the EU-EEA market and therefore increase European competitiveness. Unfortunately, the internal market for products is not yet fully achieved and the following shortcomings need to be addressed in particular:

3.3.1.1 Regulations

— Better law-making is an essential prerequisite for all companies but particularly for SMEs.

— Legislation should be used only when it is really necessary, that is to say, on the basis of a detailed impact assessment, including a full consultation of stakeholders.

— Legislation should be kept simple, with as few administrative burdens as possible. This applies especially to SMEs, which comprise the overwhelming majority of European mechanical engineering companies (8). Unfortunately it is all too often the case that EU regulators, in spite of their good intentions, overlook the high level of unnecessary administrative burden arising from regulation.

— Regulatory impact assessment is essential: it should be used by all EU — and national institutions, not only in the initial proposal but throughout the legislative process and ex-post, for a certain period following application of the legislation. This would permit an evaluation of the degree of success in achieving policy objectives.

— Existing EU legislation should be implemented and enforced properly: the Commission should improve its follow-up and ensure harmonised implementation. All relevant parties should be encouraged to engage in and to monitor implementation and proper enforcement.


(8) Example: the REACH proposal on chemical products and the proposed Directive on Eco-design of Energy-Using Products, which in their present form are difficult for companies to manage.
— All regulations issued by different directives must be harmonised and all manufacturing definitions referred to in directives must be uniform.

— Additional national requirements should be avoided. There is far too much product-requirement divergence between Member States and this is further reinforced by divergences in transpositions. Such ‘goldplating’, as it is commonly know, only leads to fragmentation of the internal market and therefore undermines the competitive edge.

3.3.1.2 Market surveillance

Improved market surveillance is crucial: in Europe it is insufficient at present and creates an unlevel playing field (9). Customs authorities should therefore increase their controls and be provided with the necessary ways and means to guarantee that products may not be placed on the market unless they conform to all applicable rules.

Control of engineering products at EU borders should also be tightened in order to combat counterfeiting, which is a serious and growing problem that affects as much as 5% of equipment sold in the EU. It is not satisfactory that Member States should only act when there is an accident.

Given that market surveillance is undertaken by national authorities according to differing criteria, harmonisation is required. This could be achieved by the Commission issuing a market-surveillance guide for all Member States.

3.3.2 Trade

The main objective is to achieve market access for European companies without undermining Europe’s own standards in the internal market. With EUR 129 billion worth of machines and equipment exported, the EU is the leader of the world mechanical equipment market. Freedom of access to and investment in third-country markets is thus of vital importance for the mechanical engineering industry.

Another important issue is the liberalisation of the global trade in engineering products and services (including many in the internal market). European mechanical engineering has been a frontrunner in terms of dismantling tariff and non-tariff barriers to trade in the Uruguay round and in the Doha round. The Commission should continue its multilateral, regional and bilateral trade talks in order to push for the elimination of technical barriers to trade, to liberalise outward investment and establishment, to liberalise business services and to phase out import tariffs on engineering products under condition of reciprocity.

Regarding business services, the main objective would be to ensure freedom from interference in the provision of products and allied services.

3.3.3 Competition policy

If the EU is to become the most dynamic worldwide economy, it is not only important that new technologies be developed, but it is also essential that their rapid dissemination be promoted significantly. It is therefore important to create appropriate framework conditions at the level of competition policy, to facilitate the transfer of technology to third parties. When an innovative technology is developed — and mechanical engineering in Europe is often specialised in niche markets — the use of market thresholds, as favoured by European competition authorities for the purpose of determining specific anti-competitive effects, is inappropriate.

3.3.4 Taxes and financing

Taxation levels are generally very high in the European Union. Besides the fact that a decrease in corporate tax is most useful in a capital goods environment, other measures such as investment tax credits will provide a positive incentive.

3.3.5 Banking

The role of financial institutions is often overlooked but they play a major role in carrying out industrial policy objectives by either accepting or rejecting risk and through their degree of accessibility. In some countries, such as, it would appear, Germany and France, practices are more stimulating than they are in others. The EESC is in favour of introducing this aspect to the industrial policy arena, especially in this sector, of such significance to SMEs. This could lead to improved practices across Europe. Other aspects, such as the Basel II provisions are increasingly hampering access to the finance required for investment in research for the development of innovative products or for the growth of businesses in general.

3.4 Ongoing analyses and dialogue between all parties involved, in particular the social partners, on industrial implications at EU-level (as well as at national and regional levels) will certainly provide impetus to these processes.

Footnote: (9) For instance, in the context of construction equipment (and other machines), there have been many cases which show the existence of a ‘grey market’ with machines imported from third countries, which are CE-marked and have a declaration of conformity but are NOT in conformity with European regulations. There are also abundant cases of machines which neither bear a CE marking nor are in conformity and are nevertheless placed on the European market with total impunity. In order to guarantee a level playing field between European manufacturers and others from third countries, this should be avoided.
4. Recommendations

4.1 The EESC is of the opinion that, when devising industrial policy, words must be followed by deeds. The so-called cost of 'non-Europe' could be especially high in mechanical engineering when one considers that this sector is, in spite of its leading role and its important core competences, facing a number of challenges that are not only cyclical, but also structural. These need to be addressed and consideration of the following points is vital in this respect:

4.2 This sector fits perfectly well into a concrete programme of fixing objectives at regional, national and EU level aimed at the implementation of the Lisbon agenda.

4.3 In the view of the EESC the significance of the EU commitment would be twofold:

--- an overall agenda is to be set for a qualitative reinforcement of the performance of mechanical engineering in Europe, and

--- specific conditions have to be fulfilled at EU level concerning regulations, R&D, trade, benchmarking and others.

4.3.1 Responsibility for this is shared by the Commission and the Competitiveness Council, in close cooperation with representatives of the sector. Regular meetings between the sector, including relevant social partners and the Commission, are desirable. To that end, the organisation of the EU's policy support infrastructures, in particular in the Enterprise and Industry Directorate General, should take due account of the requirements of the mechanical engineering sector.

4.3.2 The EESC also pleads in favour of ensuring the Commission has sufficient practical knowledge of and expertise in the mechanical engineering sector.

4.4 The EESC is of the opinion that special attention should be paid to this sector at EU level because of the overwhelming number of SMEs it contains. In this regard, the following aspects merit particular emphasis:

4.4.1 As regards research and innovation, the growing mismatch between European-funded R&D and the needs of the mechanical engineering industry should be addressed and company participation should be made easier in order to match the ambitious goal of increasing competitiveness with equally ambitious financial means in the corresponding items of the EU budget. Most of the companies are SMEs and mid-range companies and, at present, European industrial research projects address them inadequately and make company participation difficult.

4.4.2 The regulatory framework conditions in the EU need to be improved in consultation with the sector, as over-regulation and the growing weight of bureaucracy are jeopardising instead of stimulating dynamic entrepreneurship.

4.4.3 Market surveillance should be stepped up, with a view to ensuring a level playing field between European companies and also between European manufacturers and imports from third countries.

4.4.4 Access to financial markets for these companies has to be improved.

4.4.5 Trade relations with third countries must guarantee freedom of access to and investment in third country markets.

4.4.6 Competition policy should favour the development and innovation and technology in SMEs.

4.4.7 A discussion at EU level between social partners and the Commission on improving output, skills and educational training systems may create a helpful framework for concrete realisation of similar dialogues in the Member States, especially at regional level.

4.5 As an industry in transition, mechanical engineering is evolving rapidly from an industry focused on products to a 'value/access provider', integrating an ever-increasing service content and providing total solutions to its customers. This major challenge, which is key to maintaining sustainable growth and a strong position on world markets, has to be met by appropriate EU policies.

The EESC hopes that the Commission will take its recommendations into account as well as all the appropriate measures, leading Europe to what, according to its President Mr Barroso, is one of its Commission’s main priorities, namely making the Lisbon Strategy a reality.


The President
of the European Economic and Social Committee
Anne-Marie SIGMUND