

**COMMISSION OF THE EUROPEAN COMMUNITIES**

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COMMUNICATION FROM THE COMMISSION

**STRENGTHENING THE COMPETITIVENESS OF THE EUROPEAN  
MACHINERY CONSTRUCTION INDUSTRY**

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## INTRODUCTION

The present Communication on Machinery Construction aligns itself with the recent Communication "An Industrial Competitiveness Policy for the European Union"<sup>1</sup>, which establishes the priorities and identifies the actions to be taken in the realm of industrial policy. The new framework Communication is based on the Treaty on European Union and on the orientations given in the White Paper on Growth, Competitiveness and Employment, respecting the principles approved by the Council in 1990 on the basis of the Communication "Industrial Policy in an open and competitive environment".

This horizontal approach of industrial policy is based on a close monitoring of the evolution of industrial competitiveness and on implementation of an efficient partnership between Industry and Public Authorities. The Commission has already applied this approach successfully on industrial activities like the car and maritime industries.

The goals of the present Communication are to investigate into the structure and situation of the EU machinery construction industry in relation to its supplier and customer industries, analyse the premises for its competitive upgrading and propose the means of applying the above horizontal approach to this particular area of industrial activity.

This responds to the requests made in 1985 by the Council and the European Parliament of regularly reviewing the situation of the advanced production equipment industry<sup>2</sup>. It also responds to the wish expressed by the European machinery construction industry for coherent measures to meet the specific problems it faces, based on horizontal instruments of Union industrial policy.

From 1991 till 1993 the EU mechanical engineering industry has experienced its worst recession since World War II. Production has fallen from 225 to 210 billion ECU, apparent consumption from 190 billion ECU to 170 and employment from 2.7 to 2.3 million. This crisis was caused by a cyclical decline in investment in capital goods in the machinery construction's end-user industries (mainly the manufacturing industry), compounded by a sharper competition brought about by the long-term trend in economic globalization.

The present competitiveness policy initiative handles the machinery construction industry not in isolation but in its relations with its suppliers and customers within the context of manufacturing industry. Engineering is the exclusive supplier of production equipment to industry. Engineering products account for the major part of the growth of the industrial production base. Machinery construction, which stands for roughly half of the engineering industry, supplies the machines and equipment used to make capital and consumer goods in general. The machines supplied by the mechanical engineering industry are used for manufacturing vehicles, machines, household appliances and capital and consumer goods in general, building, farming, etc.. Its main market is the manufacturing industry.

As major supplier of advanced capital goods machinery construction is essentially linked with all important downstream industries. Machine performance greatly influences the productivity potential in those key sectors, like the automobile industry. A loss of global competitiveness of the machinery industry would therefore have serious consequences for the whole EU manufacturing industry. The Commission considers the EU machinery industry as a key sector of European economy. It has an essential importance and sensitiveness in itself and due to the central role of machinery for industry.

By size EU mechanical engineering remains the world leader with almost 1/3 of the production of market economy countries. It produces equipment worth 210 billion ECU, what accounts for 8% of EU industrial output. The EU exports in the order of 70 billion ECU and imports 30 billion.

Like its overseas competitors, the European machinery construction industry is characterized by a small and medium sized company structure. It is a fragmented, labour-intensive industry: 120 thousand firms employ 2.3 million people. 4% with 100 or more employees account for 64% of the turnover and 62% of employment; 14% between 20 and 100 employees and 82% with less than 20 people.

With regard to global competition a distinction has to be made between the situation of the EU mechanical engineering industry in its domestic and its overseas markets. In the European Union this industry enjoys a very strong position. EU producers control over 4/5 of the domestic market. If we look at the West European market as a whole, the domination of the local machinery manufacturers is even more evident. Indeed, the EU and EFTA are each other's main trading partners.

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<sup>1</sup> COM(94) 319 final, adopted on 14 September 1994

<sup>2</sup> Cf Advanced manufacturing equipment in the Community, Commission Communication to the Council of 22.3.85 (based on COM(85) 112 final).

Mechanical engineering contributes to the European economy with the largest trade surplus of all industrial sectors. Nevertheless, the terms of trade of the EU with the rest of the world have worsened since the mid-eighties owing to fast growing imports from Far East countries. Outside Europe the EU machinery exporters have a relatively weak presence, specially in the fast growing Pacific Rim. There is a particularly notorious trade imbalance between the EU and Japan.

EU mechanical engineering is a strong competitive industry. Europe has traditionally been and still is the world leader in this area. A key factor of its success has been its flexibility and adaptability to the needs of its customers. This position has been maintained through technological excellence, traditionally based on mechanical know-how. In a wider sense the finest asset of European mechanical engineering is its personnel. Not only are its engineers among the best of the world, but its workers are highly-skilled and relatively well trained. The proportion of skilled labour in the total work-force is very high. The professional experience of contemporary European engineering staff rests on a centennial tradition of craftsmanship.

European machinery construction offers an unequalled diversity of products adapted to particular technical requirements. There is no doubt that the unique market segment know-how, customer adaptation, short reaction lag to market changes and organization flexibility of engineering SMEs are critical factors in the European supremacy in speciality machines and equipment. Its broad product range is a strength of the European machinery industry. On the other hand, the production model of special machines based on short batches precludes economies of scale. This is a handicap of European SMEs in comparison with some competitors which are more active in the volume business. Smaller firms are generally better suited to manufacturing speciality machines and larger firms standard machines. A competitive machinery construction industry needs both kinds of firms.

The technological base in Europe today is sufficient to launch applications towards, i.a., the global information society. However, European engineering does not fully exploit the possibilities offered by innovation to upgrade its competitiveness. Certain foreign competitors, specially Japan, have in the last two decades narrowed the technological gap with Europe and even surpassed it in some technologies. Although still relatively far below the European level, some of the engineering industries of other Asian countries like Taiwan and Korea are climbing the technology ladder at a faster pace than their European counterparts.

The trends in the 1980s and early 1990s in world trade and assimilation of new technologies indicate that our leadership is increasingly threatened. Machinery construction is very sensitive to investment slumps. It regularly faces sharper fluctuations in demand than most other sectors due to its dependence on the investment level of other industries, most of which are quite cycle sensitive themselves. The sector is confronted with a productivity gap in regard to certain competitors as a result of structural shortcomings and cyclical malfunctions. In particular, capital is much more expensive for European industrial firms than for their main overseas competitors. Non-wage labour costs are higher in Europe than in our major competitor countries, like USA or Japan. Another factor affecting international competitiveness is the relative inflexibility of working practices in certain European countries. Industry also needs to increase its efforts to modernize if it is to become a global player.

The approach the Commission proposes to answer those questions is to transform this traditional, mature industry hitherto based on mechanical engineering technology into a modern, renewed industry based on a better utilization of new technologies in such areas as information and communication (ICT), new materials, micromechanics, lasers, man-machine interfaces, organizational improvements and clean production. However, we should not lose sight of the past excellencies of this industry - macromechanical know-how, creativity, flexibility, close contacts with its customers.

Based on this analysis, the Communication identifies the support that the EU Industrial Competitiveness Policy can contribute towards the improvement of the business environment in which machinery manufacturers operate. It then selects among the instruments at the disposal of that policy the most appropriate to tackle the problems besieging European machinery construction.

To this end the Commission proposes coherent measures in the fields of investment promotion, business environment, industrial cooperation, technical harmonization, R&TD, vocational training, regional policy, trade policy and environmental protection. None of the proposed actions presuppose obligatory expenditure. Most of them can be implemented by means of Union or national instruments already in place. Due to the small size and resource shortage in a large part of this industry, those instruments are not sufficiently known or sought after. An improved access to and participation of the machinery industry in such instruments is therefore desirable. In order to facilitate the implementation of the proposed actions, the Commission pleads for reinforcing the dialogue between the European and Member States' authorities and the representatives of this industry.

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## 1 OVERVIEW AND STRUCTURE OF THE EU MACHINERY CONSTRUCTION INDUSTRY

### 1.1. The notion of machinery construction industry

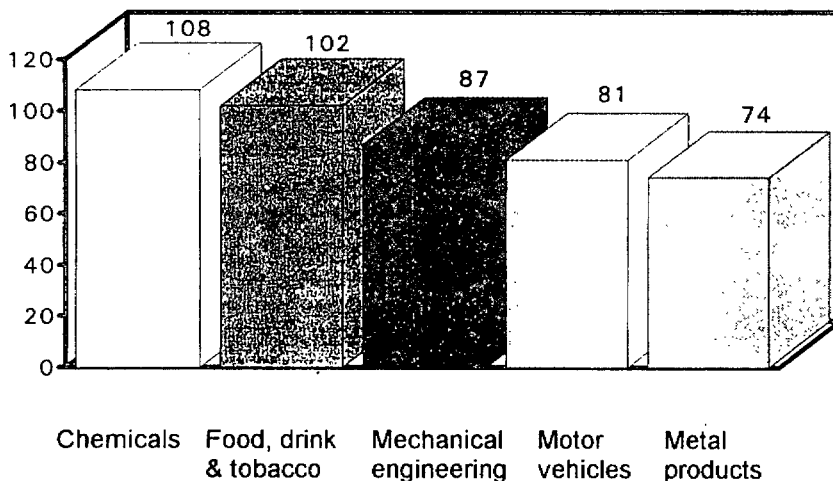
The subject matter of this Communication is the EU machinery construction industry<sup>3</sup>. Its product scope comprises machines and mechanical equipment<sup>4</sup>. Its country coverage is the EU Member States<sup>5</sup>, taking also into account the experiences in EFTA states.

Although the Communication is focused on machinery construction, it does not deal with this industry in isolation but rather in its relations with its supplier and customer industries and the significance of that double up- and down-stream relationship for the whole manufacturing industry.

### 1.2. The importance of the mechanical engineering industry in the Union.

**Mechanical engineering is quantitatively an important part of the manufacturing industry.** With a production of 210 billion ECU it accounts for 8% of total EU industrial output. Among EU manufacturing industries it ranks 5th<sup>6</sup> with respect to production, after the food and drink, chemical, motor vehicles and electrical and electronic engineering industries and before such industries as metal articles, paper, printing and publishing, rubber and plastic or textiles. It is a fragmented, labour-intensive sector: almost 120 thousand engineering firms employ 2.3 million people. Subsequently its gross value-added ratio at factor costs is high: 0.40, of which 2/3 is labour cost. For comparison this industry generates a gross added value of 87 billion ECU (1992) while the motor vehicles, parts and accessories industry generates 81 billion.

Graph 1: Value added of mechanical engineering in sectoral comparison (billion ECU, 1992)



Source: DEBA

<sup>3</sup>In German speaking countries the concept of machinery construction (Maschinenbau) is well established: its coverage corresponds to that of Chapter 29 of the NACE nomenclature plus manufacture of safes and strongrooms, office machinery, computers and other information processing equipment and railway locomotives and rolling stock. Union industrial literature speaks of mechanical engineering with a coverage identical to that of Chapter 32 of the old NACE. English speaking countries traditionally use the concept of mechanical engineering, covering manufacturing of all types of mechanical machines and appliances as well as fabricated metal products. In the United Kingdom steelwork is included in mechanical engineering.

<sup>4</sup>The product scope is based on the Revision 1 of the the EU Statistical Classification of Economic Activities (NACE). It comprises all the groups under Division 29 "Manufacture of Machinery and Equipment n.e.c." from 29.1 through 29.5 devoted to machines and equipment and heading 28.62 devoted to tooling. These include manufacture of engines and turbines, except aircraft, vehicle and cycle engines; pumps and compressors; taps and valves; bearings, gears, gearing and driving elements; furnaces and furnace burners; lifting and handling equipment; non-domestic cooling and ventilation equipment; other general purpose machinery n.e.c.; agricultural tractors, other agricultural and forestry machinery; machine-tools; machinery for metallurgy, for mining, quarrying and construction; for food, beverage and tobacco processing, for textile, apparel and leather production, for paper and paper-board production, other special purpose machinery and precision tools.

The manufacture of weapons and ammunition of Group 29.6 and the manufacture of domestic appliances of Group 29.7 are excluded from this Communication. It should also be recalled that by propulsion mode there are two main kinds of machines: mechanically driven and electrically driven machines. Manufacture of electrical machinery is the competence of the electrical engineering industry and therefore falls outside the scope of the Communication. For the sake of convenience manufacture of mechanically driven machinery and equipment is referred to below as machinery construction.

There is no empiric data available on the machinery construction industry in the sense given to it in this Communication. The sectoral description and analysis below is based on existing research on mechanical engineering. Thus, figures found in the Communication are slight overstatements of the size of the sector studied. Depending on the subject and source mechanical engineering and machinery construction are used without distinction. However, this is not thought to significantly affect the relevance of the analysis or the conclusions. Machinery and mechanical equipment forms the core of all three concepts.

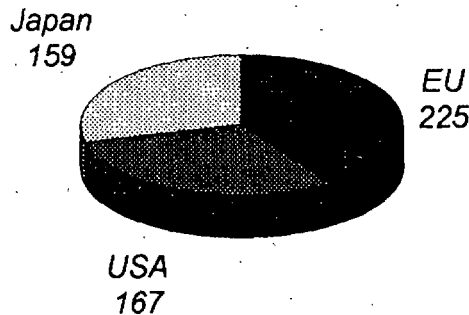
<sup>5</sup>Since this is a European Union document the country coverage *sensu stricto* is the EU Member States. However, the mechanical engineering industry of the EU and EFTA countries, which is represented by one industrial federation (ORGALIME), forms an organic unity featuring a West European, highly internationalized industrial bloc and shares much the same structural characteristics and problems. The Communication has been drafted thinking also about EFTA industry in the perspective of the integration of EFTA nations into the European Union within the Communication's implementation period.

<sup>6</sup>Aggregated at 2-digit level of NACE

The share of payroll costs on total production costs is highest in Denmark with 36.6%, followed by Germany with 34.2%; Ireland is in rear position with 22.5%. The corresponding EU average share for the whole manufacturing industry is 12.6%. Indeed, the outstanding technical level and complexity of most engineering products requires highly qualified and subsequently well-paid staff. The Europeans produce more special machines, whose construction is less suited to automation, than their overseas competitors.

EU mechanical engineering is the world leader both quantitatively and qualitatively. The Union stands for almost 1/3 of the mechanical engineering production of all market economy countries. The EU output is around 25% larger than USA's or Japan's output. However the recent recession and trends indicate a potential loss of leadership at world level.

Graph 2: Mechanical engineering production in international comparison (billion ECU, 1991)

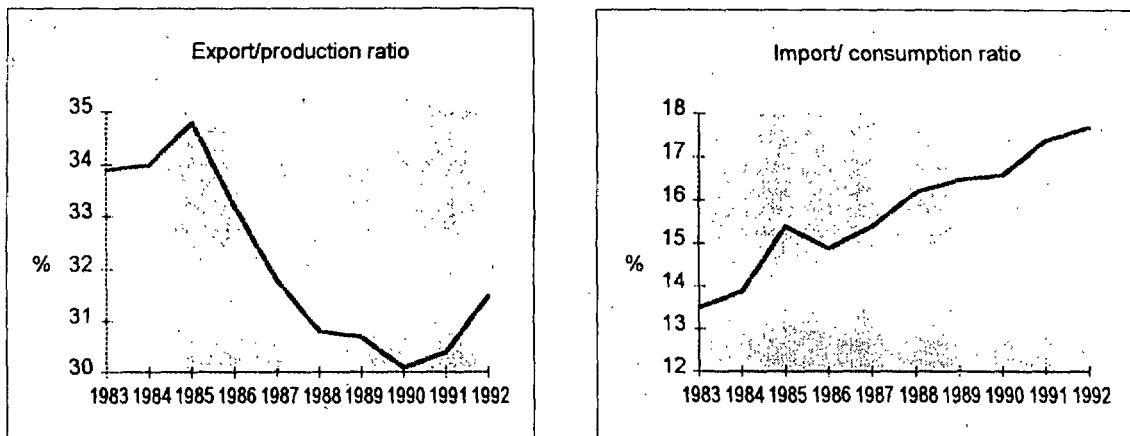


Source: Eurostat, Census of Manufacturers

Since 1985 intra-EU trade has grown faster than market consumption. While in 1980 machines trade between EU countries amounted to 25% of the EU consumption, in 1992 their share had risen to 33%, with 61 billion ECU traded that year.

The mechanical engineering industry contributes a positive trade balance of 37 billion ECU to the Union<sup>7</sup>. The trade balance in 1992 was + 37 billion ECU. The export/import ratio was 2.13. Although the Union still enjoys a sizeable surplus with the rest of the world, its terms of trade have worsened since the mid-eighties from a 100 index, taking 1985 as reference year, to 111.5 in 1992, due to increased imports from Japan and other Asian countries. EFTA is the first customer of EU mechanical engineering absorbing 19% of our exports, followed by the USA with 17% and the OPEC countries with 10%. Likewise, EFTA is by far our major supplier with 40% of extra-EU imports, followed by USA with 29% and Japan with 18%. Imports from the Pacific Rim are growing much faster than from EFTA and USA. During the seventies and eighties EU engineering took market shares over from USA but lost to Japan. Between 1980 and 1992 the market share of foreign suppliers grew from 15% to 18%.

Graph 3: Trade ratios of EU mechanical engineering



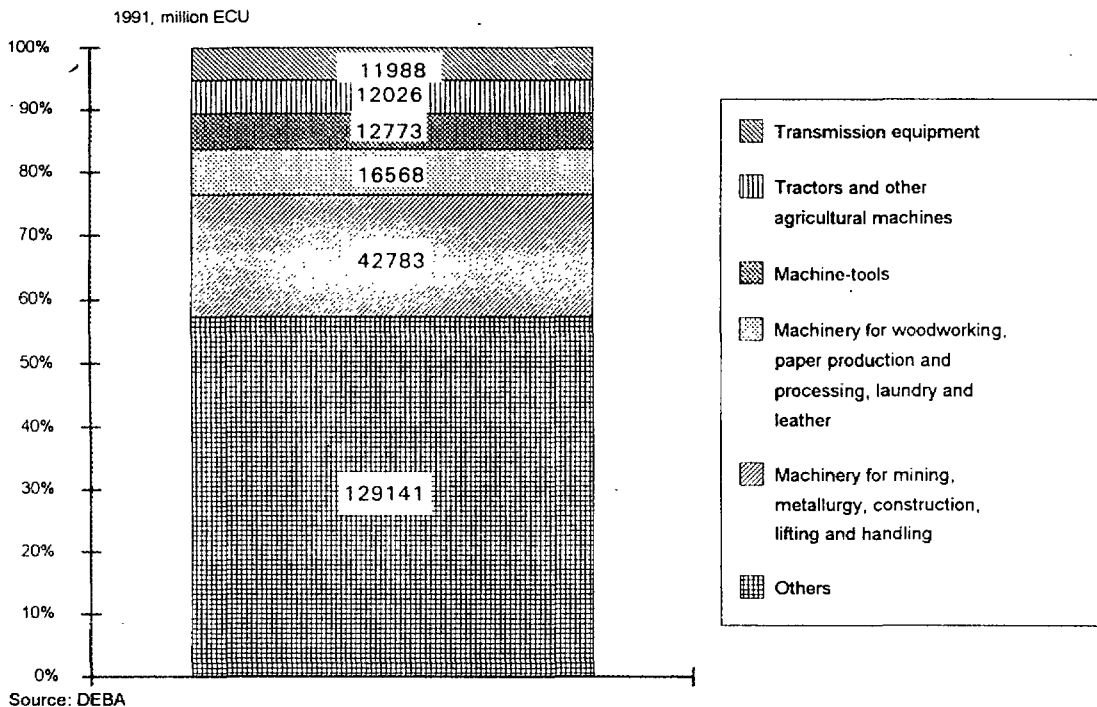
Source: DEBA

<sup>7</sup> That year the sector exported 68,946 M ECU worth of mechanical equipment outside the EU, which imported 32,403 M ECU of these goods.

Half of the EU mechanical engineering equipment is made in Germany. In the UK, Italy and France there is also a sizeable production. The evolution in the geographical distribution of EU mechanical engineering during the eighties points at a progressive consolidation of its concentration in a limited number of regions<sup>8</sup>.

Mechanical engineering firms design, construct and distribute production equipment and parts for practically all branches of the economy from agriculture to utilities, from public works to aerospace. Within mechanical engineering machinery for metallurgy, mining, quarrying, construction, lifting and handling is by far the largest<sup>9</sup> subsector with over 40 billion ECU output, followed by machinery for wood-working, paper production and processing, laundry and leather in excess of 15 billion. The heterogeneity of these two sectors accounts for their size. The former subsector is dominated by construction and civil engineering equipment. Then comes a cluster of subsectors with over 10 billion output, including machine-tools, tractors and other agricultural machinery and transmission equipment. Other sizeable subsectors are the food, drink and tobacco processing machinery and the textile machinery. This ranking also gives a notion of which are the main customer industries of mechanical engineering products.

Graph 4: Breakdown of EU mechanical engineering by sectors



Another essential characteristic of European mechanical engineering is a distinct industrial structure dominated by small and medium enterprises<sup>10</sup>. This applies to all Member States. In 1990 there were almost 120 thousand mechanical engineering companies in the European Union, with the following breakdown: 4% with 100 or more employees account for 64% of the sectoral turnover and 62% of employment; 14% between 20 and 100 employees and 82% with less than 20 people.<sup>11</sup>

<sup>8</sup> Germany alone stands for 53% of the value added in the EU. The UK is second with 15% followed by Italy with 13% and France with 10%. In the Benelux, Spain and Denmark there is a modest production and very little in the rest of the Union. Germany shows also the highest intensity of mechanical engineering with a 12.5% share in total manufacturing, followed by Denmark with 10.0% and Italy with 9.6%; in Greece it is less than 1%. Between 1987 and 1992 Germany increased its share of EC mechanical engineering from 42% to 53%; all the other significant producer countries lost shares. Production is concentrated in a few industrial regions: North Rhine-Westphalia, Baden-Württemberg, Bavaria and Lower Saxony in Germany, Lombardy and Emily-Romagne in Italy, the South-East and the Midlands in Britain and Isle of France and Rhone-Alps in France.

<sup>9</sup> There are no comparable production statistics for all the main types of produced machines and equipment so their relative weight can only be approximately estimated and the machine types ranked.

<sup>10</sup> As a rule, the many smaller companies manufacture units or small batches of customer-tailored, special machines in niche, low-volume markets. The few big companies make relatively long batches of standard machines or components.

<sup>11</sup> The SME dominance is determined by the product range. Concentration on specialized production methods and products is best suited to smaller, surveyable companies in possession of specific know-how and is, indeed, a precondition for such companies to remain in the market. In the company size breakdown (Table 1), the companies with 100 or more employees account for 64% of the sectoral turnover and 62% of employment. There is only one corporation in Europe, Mannesmann, predominantly devoted to machinery construction with more than 100,000 employees. The largest three firms in the sector (Mannesmann, Thyssen and Deutsche Babcock) are German. 82% of all EU companies have less than 20 employees. As a rule, the many smaller companies manufacture units or small batches of customer-tailored, special machines in niche, low-volume markets. The few big companies manufacture relatively long batches of standard machines or components, gaining economies of scale from their large-scale production facilities and financial solidity.

Table 1

**Breakdown by enterprise size of EU mechanical engineering (1990)**

number of employees	number of enterprises	% of enterprises	% of employment	% of turnover
≥ 100	4,437	4	62	64
≥20 ≤ 99	16,683	14	23	24
< 20	98,794	82	15	12

Source: Eurostat

**Employment in mechanical engineering is an important contributor in absolute numbers to the Union labour market:** 2.3 million employees make it the third largest industrial employer after the electrical and electronic engineering and the food and beverage industries and before such industries as metal articles, chemistry and motor vehicles. In Germany and Italy it is the largest industrial employer.

The engineering business is **more and more becoming a service business** requesting an uniquely qualified sales and after-sales staff (most often engineers). The manufacturer does not any more offer stand-alone machines but solution packages to the needs of his customers, including concurrent design and engineering, installation, run-in, maintenance, operators' training and complete after-sales service. Equipment application know-how has become as important as construction know-how.

**Machinery construction is a growth market for European industry due to its top-of-the-range products, its sustainable volume and its key role within manufacturing industry.** With its technical know-how and adaptability it also functions as an engine for technical progress in its customer industries.

### 1.3. The essential role of machinery construction in the economy as supplier of capital goods

**The (mechanical and electrical) engineering industry is the exclusive manufacturer of equipment for industry.** Engineering products account for the major part of the growth of the industrial production base. The machines supplied by the mechanical engineering industry are used for manufacturing cars, lorries, aeroplanes, textiles, machines, household appliances and capital and consumer goods in general. Its main market is the manufacturing industry<sup>12</sup>. Machinery is at the base of economic development and industrial competitiveness.

As major supplier of advanced capital equipment goods machinery construction is crucially linked with all important downstream industries. **Machine performance determines the potential for productivity raises in several other key sectors**, like the automobile industry. The industrial future of the Union among advanced industrial nations therefore depends largely on the consolidation of a competitive machinery construction in Europe.

This sector has close links with other growth markets. European technical prowess in machinery design and construction is entirely based on the ability of the industry to innovate and exploit the advances of engineering science and outstanding professional skills of its staff. The machinery industry relies more and more on new technologies, such as information and communication technologies (ICT), new materials, micromechanics, lasers and man-machine interfaces; at the same time it constitutes a major market for goods and services emanating from those technologies. Mechanical engineering is, together with the chemical industry, the main supplier of environmental control and clean production technologies and products.

The supplier industries of the machinery construction industry directly related to the production process include purveyors of fungibles, material inputs and means of production<sup>13</sup>. It is important to note that in terms of cost and technological relevance the means of production is the most important of these three categories. Within means of production the most important kind of equipment is mechanical machinery. This means that the first supplier of the mechanical engineering industry is itself: machines are made by machines. In this context the machine-tool industry occupies a key position.

<sup>12</sup> In the case of West Germany the shares of its major sectoral clients are 72% for manufacturing, followed by 8% for services, 7% for power and water supply and mining, 6% for agriculture and forestry and 5% for construction.

<sup>13</sup> Fungibles are electricity, water, fuels, welding materials, lubricants and others which are used up during production. Suppliers of material parts and components are the primary iron and steel processing (cold drawing, rolling and forming products, wires, steel tubes), foundry and forging, secondary metal transformation (screws, nuts, bolts, springs, chains), boilers and metal containers, tools, drives and transmissions, mechanical, hydraulic, electrical and electronic components and sub-assemblies industries. Suppliers of production equipment are the tooling, electrical and mechanical machinery industries.

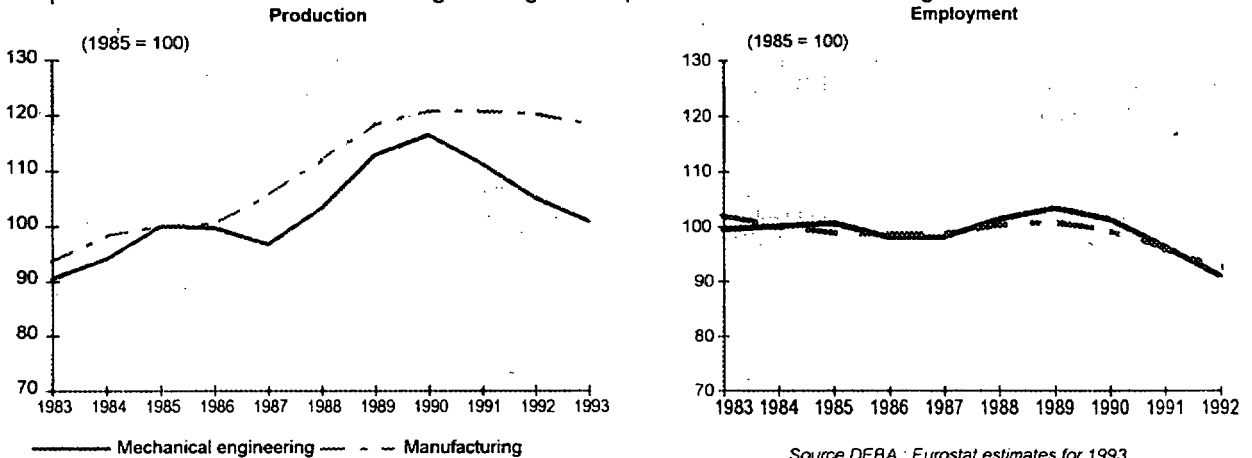


The development of the machinery construction industry and those of its supplier and customer industries are intertwined: changes in any of them reflect immediately in the other two. For instance, a cut in the price of steel goods alleviates at once the production cost of machines; a fall in the demand for cars soon leads to shorter order books for machine manufacturers. All these three categories of industries are particularly cycle-sensitive. Owing to its unilateral dependence on sectors, which in their turn are cycle-sensitive, the mechanical engineering sector is regularly confronted with sharper fluctuations in demand than most other industries.

#### 1.4. Past expansion, current crisis and conditions for a competitive up-grading

In line with the above, the development of mechanical engineering in the last decade is best understood in terms of investment trends. During that period the economic indicator curves of the sector have been a mirror image of the general economic curves, only on a larger scale and with 1/2-1 year lag. Between 1991 and 1993 it has recorded the deepest and longest recession since the 2nd World War.<sup>14</sup>

Graph 5: Evolution of mechanical engineering in comparison with manufacturing



In the medium term the prospects are more favourable. The EU Internal Market and the European Economic Area together with certain EFTA countries provide incentives for investment in West European production and trade. The Commission's Action Plan for Growth, Competitiveness and Employment furnishes fresh fuel to the coming upswing. The long awaited Uruguay Round agreement boosts world trade, triggering in its wake a surge in demand of industrial commodities.

<sup>14</sup> Graph 5 shows how following the recession of 1982/83, production rose during 1984/85; from 1982 till 1985 output increased in real terms by a 2.7% annual average. In 1986/87 it stagnated again. From 1987 to 1990 it grew once more steadily and sizeably: from 1985 till 1990 it increased by a 3.9% annual average. 1991 recorded the beginning of the deepest and longest recession which has hit the European mechanical engineering industry since the 2nd World War. Between 1990 and 1993 EU production has fallen in current terms from 227 thousand million ECU to 210, apparent consumption from 190 thousand million ECU to 171 and employment from 2.7 million to 2.3, i.e. 15% of the sector's workforce has been lost, half of which in East Germany.

## 2. GOALS AND CHALLENGES

### 2.1 Specificities of a EU policy for machinery construction

The Commission's goal is to assist industry and the member States, respecting the principle of subsidiarity, in upgrading the competitiveness of the EU machinery construction industry in the framework of the Union policy of industrial competitiveness. A competitive industry is indispensable to maintain the Union's position in the world economy. While fully respecting their contributions to the economy, the reality is that at the continental level neither services, information technologies nor any other economic activity can replace the unique role of the manufacturing industry as the supplier of material goods and a prime generator of wealth and employment.

The Member States too have generally attached great importance to machinery construction. The objective importance of mechanical engineering varies considerably between EC countries and regions. Some national and regional governments, mostly where the machinery industry is concentrated, have or have had specific promotion plans for this sector. This Communication takes into account to the greatest possible extent their valuable experiences. It must be admitted, however, that their strategies have not been co-ordinated among them but have rather striven to attract investments in machinery production into their territory. Without prejudice to the question of regional disparities, economic efficiency in the EU machinery construction market is better achieved when resource allocation uses the criterion of comparative advantage.

Machinery construction is a key industry; essentially important in its own right and owing to the central role of machinery for the whole of manufacturing industry. It should be emphasized that the first responsible for its competitive upgrading is the European machinery industry itself. Within their respective competences the Union and its Member States should also take all measures conducive to the consolidation of the global competitiveness of their machinery industries.

The European machinery construction industry has never asked for a privileged treatment. Its basic goal is not to trigger intervention from either the Union or the Member States, but to create means by which individual companies can achieve their own strategic objectives.

The European machinery industry will have in the coming years to meet challenges on four fronts, and accordingly it will need to:

- i. **overcome the shortcomings**, both exogenous and endogenous, both structural and cyclical which render it sensitive to cyclical fluctuations, undermine its reinvestment capacity and threaten its long-term profitability;
- ii. **accelerate its restructuring**, both with regard to company structure and size, to product upgrading and market orientation;
- iii. learn how to **draw** the greatest possible competitive **advantage from** the **innovation** process, which involves R&TD in, inter alia, the fields of production automation, data processing and telecommunications, training, organizational and managerial improvements, grasping market openings and above all readiness to apply research results;
- iv. step up efforts in order to **become a true global player**, with a strong presence not only in Europe but also in the USA, Far East and other significant future markets.

Within the domain of machinery construction, manufacturers of different types of machines and equipment are subject to partially diverse production technologies, markets and competition conditions. It is believed, however, that all subsectors have sufficient similarities to benefit from common measures so that only the machinery construction industry in its totality justifies a European policy initiative. When carrying out the actions proposed here Public Authorities and other concerned bodies ought to take into account the specificities of this sector: mature industry, broad product range, focus on home market, production technology based on mechanics, fragmented company structure and low investment capacity.

## 2.2 Premises and challenges

### 2.2.1 The macroeconomic environment

From the viewpoint of the machinery construction industry a **stable evolution of the economy** in the **long term** is even more important than specific measures taken to enhance competitiveness. Continuous growth of the economy offers industry, of course, optimal opportunities for profit reaping and expansion. However, industry is also able to adapt itself to a stagnating economy and even to a decreasing trend in demand, provided that the evolution is smooth, the impending changes can be forecast and the necessary accompanying measures to facilitate structural adjustment are put at its disposal.

Updating the organization and work methods of concerned Union and national public services to best business practice is essential in improving this industry's competitiveness. Government must also create an attractive business environment for the continued location of machinery plants in the EU. In this respect it should in the first place ensure a steady development by means of an adequate fiscal and monetary policy. A special effort should be made to avoid unbridled cyclical swings and frequent changes of economic policy, which are especially damaging for the machinery construction industry. In shaping their economic policy, public authorities should attach value to industry's capacity of creating wealth; for industry to thrive here **long-term inward investment in the Union must be encouraged**, taking account inter alia of the level of the fiscal burden and non-wage labour costs borne by our industry relative to its major competitors.

Further Government has to promote the development of public services having an impact on industrial competitiveness, such as education or communications, for which it is responsible.

### 2.2.2 Innovation

Technological excellence lies at the heart of competitive advantage. This holds specially true of economies oriented toward advanced, specialized, knowledge-intensive production but relatively poor in land, raw materials, energy and population, like the Union and of an industry such as engineering that produces mainly leading technology products with a high value-added.

The dependence of all industrial branches on mechanical engineering to upgrade their production equipment arises in this industry a vigorous innovative drive. The machinery manufacturer continuously receives requests from his customer industries, which he must swiftly transform into new processes and products. The limits originally imposed on the mechanical engineering industry by mechanical science are long gone : information technology has spread to virtually all its subsectors. This trend began in the seventies with computer aided design (CAD) and manufacturing (CAM), which by now have reached almost universal use. Production proper is increasingly carried out by flexible cells which integrate several machines working together on a work-piece thanks to coordinated, computer steered numerical controls (CNC). Fully automated, computer integrated manufacturing (CIM) progresses slower than first expected.

**Future productivity increases are expected to arise more from market pull than from technology push.** Factory automation provides a good example. In the past machine users tried to solve production bottlenecks simply by letting more performing machines do the same tasks. Higher costs, lack of experience with the new technology and above all poor task definition led sometimes to disappointment. On the drawing-board large-scale automated production lines (CIM) appear to have superior performance. However, CIM market introduction of during the last decade has gone slower than predicted. Most machinery users lately prefer smaller flexible cells which are more versatile and easier to work with. Also the higher initial investment cost of CIM has been a deterrent in a period of squeezed returns. The future outlook is that the manufacturer, rather than developing a new machine model and then searching for users, will first study with users their impending production tasks and develop solutions for those tasks on the basis of his machine construction capacity.

**European industry is the world leader in engineering technology.** The European engineering industry is recognized to possess an outstanding record both in manufacturing technology and product range and performances. However, certain foreign competitors, specially Japan, have in the last two decades narrowed the technological gap with Europe and even surpassed it in some technologies. Although on average still relatively far below the European level, the engineering industries of other Asian countries like Taiwan and Korea are climbing the technology ladder at a faster pace than their European counterparts. A great effort must therefore be made in the upgrading of medium- and high-tech products so as to consolidate or recover the technological edge of this industry.

**Our engineering is barely maintaining its ground** in market segments which it has traditionally dominated and is losing the battle of many new products. It keeps its ground in the domestic market but is not sufficiently present in overseas markets, specially in the fast growing markets of the Pacific Rim. European engineering experiences difficulties in transforming the excellent theoretical proficiency, that it undoubtedly possesses, into new marketable products within a sufficiently short development lead time. In this regard pre-industrial development activities of companies are of key importance. If he is to remain in the market, the European machine manufacturer, rather that developing a new machine model and then searching for users, will have to first study with users their impending production tasks and then develop solutions for those tasks on the basis of his machine construction capacity.

A resolute Innovation Policy is a capital instrument of Competitiveness Policy. The 4th Framework Programme of European community activities in the field of research and technological development and demonstration (1994-1998) has therefore as a basic goal strengthening the scientific and technological base of the Community and its industry in order to improve its international competitiveness. Vocational training programmes are being stepped up too.

In the globalized economy competitive advantages are no longer limited to wealth in natural resources. They are rather based on immaterial resources like professional skill, organization, information, cultural environment and scientific and technical prowess. European engineering is a perfect example of the validity of that assumption.

### 2.2.3 Assets: personnel, know-how, Europe-wide market

The main asset the European machinery construction industry has to offer is its **professional skills**. Technically speaking European engineering is the world leader. The US and Japanese machinery industries can match European engineering standards in some areas and maybe even surpass them in a few, but the European wealth in specialized technologies, processes, products and services is unequalled. The innovation potential of European mechanical engineering is foreseen to remain at a high level on account of expected developments in the fields of intelligent manufacturing, microelectronics, micromechanics, mechatronics and new materials. The superior inventiveness of European engineers is demonstrated by the number of European mechanical engineering related patents, ahead of USA and Japan.

In a wider sense the finest asset of European mechanical engineering is its **personnel**. Not only are its engineers among the best of the world, but its workers are highly-skilled and relatively well trained. The proportion of skilled labour in the total work-force is very high<sup>15</sup>. The professional experience of contemporary European engineering staff rests on a centennial tradition of craftsmanship. Notwithstanding, some European engineering companies still are somewhat less proficient in penetrating overseas markets than in meeting the particular technical requirements of their traditional clients. During recessions there is a risk that the innovative capacity of European engineering is drained by personnel reduction.

The completion of the Single European Market starting 1993 eliminates the barriers affecting the free circulation of machines in a 385 million consumer strong market (EU/EFTA). Here important benefits are beginning to be reaped from economies of scale, product standardization and abolition of internal border formalities. Between 1985 and 1992 the share of intra-EU trade in Union consumption of mechanical equipment grew from 1/5 to 1/3. Had it not been for industry preparation for the Single Market, investment would have plummeted even lower in the period 1991/92. Although undergoing today a major restructuring, Central and Eastern Europe offers in the medium term very interesting opportunities for West European machine makers.

### 2.2.4 The issue of product specialization

Smaller firms are generally oriented toward manufacturing speciality machines and larger firms toward standard machines, though of course this is not always the case. A competitive machinery construction industry needs both kinds of firms. A Commission study on the machine-tool sector recommends **reinforcing the European presence in the standard machines market while maintaining our position in the specialities market**. That recommendation is extrapolable to other subsectors of the machinery industry.

There is no doubt that the unique market segment know-how, customer adaptation, short reaction lag to market changes and organization flexibility of engineering SMEs are critical factors in the European supremacy in speciality equipment. Its broad product range is a strength of the European machinery industry. However, the production model of special machines based on short batches precludes economies of scale. This is a handicap of European SMEs in comparison with some competitors which are more active in the volume business. Cooperation between manufacturers of speciality and standard equipment and better financial support to the growth of SMEs are two ways of strengthening European presence on both markets.

<sup>15</sup> According to a French survey in 1989 engineers represented 11% of the payroll of machinery firms, technicians 17% and qualified workers 47%; thus only 25% were non-qualified.

### 2.2.5 Weaknesses: cyclical sensitivity, non-wage labour costs and financing

**Acute cyclical sensitivity** is one of the most serious weaknesses of the machinery construction industry all over the world. Every sector of the economy experiences hardships due to cyclical oscillations, but the machinery sector is particularly disrupted for two reasons. Firstly, due to its quick innovation pace machinery manufacturers must keep up a high level of expenditure in R&D during recessions, but specially the smaller ones are impaired by their limited financial strength. Secondly, employees are often laid-off during recessions; these are mostly highly-qualified staff on which the machinery companies have heavily invested but which are hard to get back once the cycle swings up again. Since European machinery construction has been repeatedly shaken by recurring recessions, it may be concluded that the temporary symptoms reveal a structural problem. On the other hand, in periods of growth engineers and skilled workers are often hard to find for European machinery companies<sup>16</sup>.

European machinery construction suffers from recessions more than its competitors. **Higher non-wage labour costs** in some of the main machinery-producing EU countries<sup>17</sup> are one of the significant factors in competition with USA and Japan. Another factor affecting international competitiveness is the **relative rigidity in working practices in certain Member States**; for example, there is little flexibility to adapt working hours to seasonal and cyclical oscillations in demand.

**Capital is more expensive** for European industrial firms than for their main overseas competitors<sup>18</sup>. Besides the quantitative rate handicap, banks in certain competitor countries show more confidence in the long-term prospects of their industrial clients and support industry more actively. This phenomenon is particularly marked in Japan where engineering companies and banks often form part of the same keiretsu or conglomerate.

The financial difficulties of the European machinery manufacturers are not just external. Fierce competition and pressure from dominant customers forces them to slash profit margins. Family firms carry on with lower level of net profits than joint-stock companies. This results in an **internal shortage of reinvestment**. Thus, not only are the smaller manufacturers financially weak but their possibilities of consolidating their financial standing are very limited too.

Besides, certain organizational factors of European companies account for part of the gap. European engineering firms seem to be more hierarchical and compartmented than the Japanese ones. More attention is paid in Europe to the development of traditional products and customer relations and less to new product areas and geographical markets. There is a tendency of over-engineering, i.e. to building and fitting machines at higher levels of quality and accessories than what the market requests. Making customer tailored machines is slower and more labour-intensive than making standard ones, which penalizes European productivity. Shop-floor experience is valued less than in Japan. Work in our factories is organized more by functions than by tasks. European managers ought to pay more attention to these matters.

In the case of Japan there are also factors at national level which add to the competitive advantages of domestic companies. There is evidence of Japanese targeting on certain kinds of machines. The Japanese authorities have been more active in assisting their machinery industry. The Japanese machinery market is foreclosed owing to national buying preference on non objective grounds, vertical integration of distribution channels and restrictive regulations and administrative routines. The European engineering industry cannot imitate the Japanese model since its structure and environment are different, but it should make better use of its own assets and obtain smoother access to the Japanese market and free and fair trade with the rest of the world.

Because of external handicaps concerning investment, labour-market, working regulations, fiscal policy and financing, and internal deficiencies, **there is a productivity lag with respect to some of our overseas competitors**. According to a German study, the average Japanese machine-tool worker is 2.8 times more productive than his German colleague. The gap is probably less striking in other machinery subsectors less amenable to long-batch, automated production, but productivity remains a serious problem for the sector as a whole.

<sup>16</sup>The sector has particular difficulty in recruiting engineers. It takes 10-15 years to train a specialized engineer. Industry has repeatedly complained about the inadequacy of the educational and vocational training schemes in most Member States to meet their needs. Their staffing problems are compounded by a trickle of skilled staff caused in part by recessions, as explained above, and in part by other sectors' better wages and images. Each employee who leaves European mechanical engineering impoverishes its technological heritage.

<sup>17</sup>According to the White Paper in 1991 non-wage labour costs (sum of taxes and obligatory social security contributions) amounted to 39.6% of GDP in the EU but only 29.8% in the US and 30.9% in Japan. Within the EU there are cost differences ranging from 47.1% of GDP in Denmark to 34.4% in the UK.

<sup>18</sup>The mid 1992 day-to-day call money rate was 9.69% in Germany, 9.99% in France, 9.78% in the UK but 4.53% in Japan and 3.25% in USA. If this was a temporary situation it would not concern a long-term Competitiveness Policy, but the interest gap has not diminished in the past five years.

### 3. THE MEANS: UNION MEASURES AND ACTIONS PROPOSED TO INDUSTRY AND THE MEMBER STATES

#### 3.1. Investment promotion : enhancing competitiveness and employment

The EU machinery construction industry needs an effective domestic market in which free and fair competition are assured in order to upgrade its competitiveness. To raise the level of investment in capital goods in Europe is crucial for the health of this industry. Both the offer of machinery by this sector and the demand of machinery from end-user industries are to be encouraged. The first thing to do in order to encourage investment is to eliminate the structural obstacles that hamper it. The Commission recommends Member States to take horizontal economic measures that can benefit the whole manufacturing industry. Such measures, together with others aimed at improving the efficiency of the labour market could also be instrumental in fighting against the present high unemployment rate in this branch.

Hitherto investment by the manufacturing industry has concentrated on investment in physical production equipment, mainly in machines<sup>19</sup>. The absolute level of European industry's **physical investment** has to be increased or at least maintained. Reducing it would have a negative impact on the machinery construction through shrinking demand for its products and on the manufacturing industry at large through lower productivity. The new Communication on Industrial Competitiveness calls for all Government policies to take fuller account of **intangible investment**. Effective exploitation of the new factors determining industrial competitiveness calls for the promotion of knowledge, human resources and innovation. These two categories of investment are compatible and the machinery industry should be encouraged to step up both.

Member States should consider granting further **tax, depreciation and other incentives for sound investments in capital goods** in general, including machinery, insofar as their economic situation allows it. This measure would encourage badly needed investment after years of insufficient expenditure in the renewal of production equipment and generate more wealth through heightened productivity than the resulting loss in public revenue. It also has the advantage of not distorting competition between industrial branches. In order to encourage the ongoing restructuring of the EU machinery construction industry, it invites the Member States to shorten the tax depreciation terms of production equipment and make depreciation regulations more flexible within the limits of Union and national law.

In comparison with US companies, European companies, very specially SMEs, have more difficulty in obtaining loans for start-up, high-risk or high-technology projects. It is desirable to build up the risk capital market in the Union. Machinery companies are invited to avail themselves of the favourable loans and other financial services of the **European Investment Bank** and the **European Venture Capital Association**.

#### 3.2. Business environment: improving framework conditions

Streamlining of the laws and regulations limiting business practices, upgrading public and private services to industry and supporting cooperation sought by companies are useful means of enhancing the competitiveness of the European machinery sector.

The objective of providing a competitive environment for business is the central element of the Union's **Strategic Programme for making the most of the Internal Market (COM(93) 632)**. Through this Programme the machinery construction industry will experience the completion of the basic legal framework needed for the functioning of the Internal Market in the field of machines and equipment, ensuring conformity and transparency in the transposition of Union directives in this field into national law and quality in the enforcement of the latter. Improvements are also envisaged in the area of European standardization, conformity assessment and quality promotion. Further improvements are planned including i.e. active application of competition policy, tackling the problem of delays and double-charging in cross-border payments, further proposals on transport, the creation of a more favourable tax regime for business and improvement in the area of company law.<sup>20</sup>

The competitiveness of an enterprise depends, apart from its own skills and the costs it bears, on the stimulation it receives from the industrial tissue around it. An **efficient business infrastructure** is a precondition for the location and flourishing of industry. The European economy has the duty of furnishing top-quality services to its industry. The main responsibility herein lies with central and local authorities and

<sup>19</sup> According to a study by the IFO-Institute machines account for 44% in value of the total investments of German industry

<sup>20</sup> In this latter area the Strategic Programme indicates that, besides pursuing its efforts designed to provide firms with instruments which would facilitate their development in the Internal Market, the Commission intends to initiate a fundamental reflection on the legal framework in a single market. So far progress has been made with the adoption of the Statute of European Groupings of Economic Interest, the Insiders Directive, the 11th Directive on Bank Branch Office Accounting and the 12th Directive on the Individual Company. However, the central goal of the European Company Statute, which would enhance mobility of firms in the Internal Market, has not been achieved. A number of directive proposals remain blocked. The difficulties are particularly linked to the transfer of headquarters and mergers.

the service sector. For its part, The White Paper gives a fresh thrust to the objective of the Maastricht Treaty of developing Trans European Networks by proposing a 400 thousand million ECU investment in large-scale infrastructure works in the areas of transportation, telecommunications and energy distribution. The machinery construction industry will benefit greatly from the resulting improvement in business infrastructure. It can also supply part of the equipment needed for their realization, specially the construction machinery industry.

**Free and fair competition** in an open market is the most important prerequisite for the future competitiveness of the European machinery construction sector. State aids to particular companies or to sectors must conform to the very strict criteria applied by the Commission if they are to be declared compatible with the common market. The Commission will step up its efforts to reduce public aid, taking into account regional imbalances, and will shortly look at possible changes in the mechanisms for controlling state aids. The intention is also to simplify the monitoring of minor cases. Ongoing measures have to be better co-ordinated taking into account the competitiveness of EU industry as a whole. Distortions of competition between the EU and its trading partners must be removed too.

### 3.3. Industrial cooperation: promoting private initiatives of mutual interest

Industrial cooperation is above all the responsibility of industry. However, it is for Public Authorities to establish a framework to capitalize on mutual interests. The Commission's primary objective is to promote cooperation between different operators in the machinery and equipment market through removing legal and fiscal obstacles to cooperation, supporting industrial initiatives on growth markets, organizing round tables or developing a legal framework for a common promotion of European investment in third countries. SMEs should be encouraged to participate in industrial cooperation, specially in a fragmented industry like machinery construction. The Commission will give priority to cooperative initiatives which are of European interest.

Voluntary cooperation schemes at the initiative of private partners are welcome both among EU companies and between them and third country companies, both within the machinery construction industry and the upstream and downstream industries. In the case of machinery construction particularly high productivity gains can arise from a better technological integration between the materials and components machines are made of, the production technology of machines and their applications. An even closer collaboration along this line of industrial activities would therefore be very fruitful. Such collaboration must strike a balance of interests and prove profitable for all the involved types of enterprises, having in mind that while manufacturers of mechanical components and machines generally are SMEs, their suppliers of materials and fungibles as well as their customers are often large corporations.

Indeed, we observe that since 1990 the trend towards industrial cooperation among European machinery manufacturers and between them and their suppliers and customers has gained pace, despite the slowdown in economic activity, as illustrated by the growing number of strategic alliances and mergers. This trend has to be further encouraged.

The Commission will study the opportunity of summoning a Round Table of Industrialists of the mechanical engineering and connected industries, based on the model sketched in the Communication on Industrial Competitiveness Policy.

### 3.4. Technical harmonization: EC-wide regulations on the way to world-wide recognition

Industry perceives that the further development of European harmonization, specially an acceleration in standards, is crucial for the functioning of the Internal Market. In the application of technical harmonization to mechanical equipment the Commission shall continue applying the full potential of the New Approach on Technical Harmonization in which only essential requirements are mandatory and the Global Approach to Certification and Testing. In the field of Quality Promotion the Member States and Industry should also step up their activities. The New Approach applies to all the equipment covered by this Communication with the exception of farm and forestry tractors. The development and use of European standards of voluntary application shall be promoted. Technical harmonization, certification and quality are powerful means of raising competitiveness. They are industrial policy at its best: deregulatory, open and horizontal.

Of particular interest to the machinery construction industry is **speedily completing the transposition into Member State laws of New Approach directives, in particular the Machinery Directive**, and accelerating the preparation of the harmonized standards covering that Directive's essential safety requirements in view of its entry into force. In order to facilitate trade and access to foreign markets it is important that European standards (EN) remain compatible with international standards (ISO, IEC).

The Commission shall continue its efforts to disseminate the contents of the said Directive among machinery firms, specially SMEs, and orientate manufacturers when applying the Directive's principles to machine design and construction. The Commission is concerned about the low level of awareness and assimilation of the Directive among the concerned parties. Member States should step up their efforts in assuring the widest possible diffusion, specially among SMEs, of its key provisions. The campaigns launched by Denmark and other countries provide useful experience.

A cost-benefit analysis should be done before passing any new law or regulation which may affect industry. Existing regulations should be reviewed in order to ascertain whether they are really necessary and beneficial and render them as simple and homogenous as possible. Specially such regulations that may raise trade barriers are candidates for deregulation. Whichever the economic prospects may be, what industry has the right to expect from Government is long-termedness, predictability, transparency and accountability.

The Union shall accelerate its efforts to grant EU exporters of machinery the benefit of a guaranteed access to foreign markets, as far as technical regulations and standards are concerned, through the negotiation of Mutual Recognition Agreements with our main trading partners.

### 3.5. Research and innovation: key contributions to sustainable competitiveness

The new horizontal Communication on Industrial Competitiveness reasserts that the EU must place its science and technology base at the service of industrial competitiveness. 96% of research carried out in the EU is financed by either the Member States or Industry.

The lion's share has to be borne by industry itself. European industry has a lower share in R&D than either Japanese or US industry. Recently, however, it is becoming more aware of its importance and redoubling its research efforts. Industry must step up its expenditure in R&D to the utmost of its financial capacity. More industrial cooperation in research would also be welcome. Aware of the limited capacity of European engineering firms, specially SMEs in recession times, to bear additional costs, the Commission has proposed to the Member States in the White Paper **tax credit schemes for research**. Such credits could be developed to encourage machinery companies to invest more in science, even in the long term.

Member States have a fundamental rôle to play in fostering R&D in the EU since they account for the lion part of the expenditure. However, as the Commission has pointed out in the White Paper, R&D within the Union should be better coordinated. The Commission has recently made specific suggestions in this regard in its Communication "Research and Technological Development: achieving coordination through cooperation".

Within the limited possibilities left by the remaining 4%, EU funded R&TD aims at **strengthening the scientific and technological bases of Union industry** and encouraging it to become more competitive at international level. The **4th Framework Programme** of European community activities in the field of research and technological development and demonstration (1994-1998) with a budget of 12,300 M ECU is more focused towards the development of generic technologies of wide application, taking more account also of the needs of users, than its predecessor, the 3rd Framework Programme, in line with the aspiration of industry. **Research on industrial technologies will receive 1,995 M ECU (IMT)** or 17% of the total Programme budget, of which 1,707 millions to industrial and materials technology and 288 to measuring and testing. Of particular interest for the machinery construction industry within the Industrial Technology activity are Theme A - Design, engineering, production systems and human management - and Theme B - Materials and material-related technologies - **For information and communication technologies (ICT)**, which also interest this industry, an amount of 3,405 M ECU is to be made available. The **development of a competitive European CNC** is a strategic issue for the machinery construction industry. This problem is to be tackled by the OSACA project in the framework of the ESPRIT programme. **Research in support of technical standards** will also be included in the 4th Framework Programme, thus strengthening the competitive position of EU industry.

Due to the inroad of data processing and automation in state-of-the-art mechanical manufacturing technology, the kind of research nowadays needed in mechanical engineering is often dependent on a combination of contributions from the mechanical and information sciences. There is therefore a widespread desire in the engineering industry for a **closer collaboration between IMT and ICT**, successors of the BRITE-EURAM and ESPRIT programmes. In this regard the 4th Framework Programme gives particular attention to the coordination of research of interest to industry. Such coordination will take place both within specific programmes (focused clusters in ICT and vertical coordination in IMT) and between specific programmes in related areas, i.e. between IMT and ICT. The latter can range from close collaboration among the responsible Commission Services to simultaneous calls for proposals and common examination of received proposals.



Companies cannot always participate directly in Union and Member States R&D projects. The **CRAFT** facility established under BRITE/EURAM enables groups of SMEs with insufficient research facilities to contract outside organizations to carry out R&D on their behalf. This technology stimulation, together with support for exploratory phases of research, will be carried forward under the new IMT programme and extended to other specific programmes. Another outstanding feature of the 4th Framework Programme, specially for SMEs, is the **Programme for Dissemination and Optimization of Research Results**, which incorporates activities from the current VALUE and SPRINT programmes.

Of particular interest for EU and EFTA machine manufacturers and research centres seeking co-operation with each other is **EUREKA**. It is a cooperative R&D scheme which receives public support from 23 European States and the Commission. It covers practically all sciences and technologies, with emphasis on new materials, lasers, robotics and manufacturing automation.

**COST** promotes transnational cooperation between companies on joint R&D projects. All the Union and EFTA countries plus a number of Central and Eastern European countries participate. Research is undertaken in all fields, notably in new materials and advanced production technology. This programme is interesting for EU and EFTA firms seeking partnerships in Eastern Europe.

The technological position of this industry can furthermore be improved by stronger links between its firms on the one hand and universities and research bodies on the other. A large amount of basic and practical knowledge lies in the technological infrastructure but European industry does not draw from it all the benefit it could. The Member States should take measures to bridge that gap.

### 3.6. Vocational training: fighting the shortage of engineers and other qualified staff

More emphasis has to be given to mechanical engineering in the **training policy** to be developed in application of the White Paper, with the involvement of public authorities, business and the social partners. Industry attaches great importance to the adoption of European minimum standards for training. More co-ordination among existing European and national training schemes is required. This training strategy shall endeavour, taking into full account the advice of the social partners, to better anticipate future technological needs. The first priority is increasing shop-floor workers' training in new technologies. More use of interdisciplinary training is recommended. Particular attention shall be paid to the training of SMEs' staff.

It is advocated to generalise the use of training vouchers that young apprentices in engineering firms can spend throughout their working lives in order to update their skills. The Union should set in place a medium- and long-term **framework for linking systems of continuous training and training credits with measures for increasing flexibility and reducing work time**. The Commission does not see the reduction or flexibilization of working time as a universal solution at the level of European machinery construction but believes it can be one way to improve competitiveness that can be discussed at company and branch level. Work time reduction must safeguard productivity, specially that of highly skilled staff, without jeopardizing product development.

A **partnership between universities, Member States and industry** to set up a system of initial and continuous training would suit multidisciplinary training and training for jobs that require advanced technical skills, information technology, etc.

The **COMETT** programme for education and training in technology, the **PETRA** initiative for training of young people and their preparation for working life and the **FORCE** programme for development of continuing training shall be reinforced. From 1995 the above training instruments shall be replaced by the **LEONARDO** programme and the Euroform initiative for vocational training in the framework of the Structural Funds. The new programmes will revolve around the objectives of facilitating adaptation to industrial change, facilitating integration and reintegration into the labour market, improving training schemes at company and Member State levels, facilitating exchanges of young people in initial training, stimulating cooperation between training establishments and firms and supporting exchanges between the training systems of the Member States. The budget foreseen by the Commission for LEONARDO in 1995 is 142 M ECU with a ceiling of 100,000 ECU per project and year. The machinery construction sector is exhorted to tap these Union instruments to their full extent.

The European **Social Fund** also supports training schemes with the aims of encouraging employment and increasing workers' mobility.

Member States ought to consider the foundation of **new training institutes in mechanical engineering** according to its eventual needs. Their goal would be to raise the knowledge and skills of European mechanical engineering manpower and provide the qualified personnel industry requires.

### 3.7. Structural funds: reducing regional disparities

In the interaction between strengthening the industrial competitiveness policy for machinery construction and economic and social cohesion which is one of the objectives of the Union, the analysis furnished by the Communication (Point 1.2) on the competitive situation and geographical distribution of the EU mechanical engineering industry provides pointers towards the prospects of this activity in different regions. This may lead certain countries and regions to re-examine their current actions for this sector.

The objective of Union regional policy is to progressively narrow the existing disparities in economic development and infrastructure between different countries and regions. In July 1993 the Council of Ministers adopted the regulatory framework of the Structural Funds for the period 1994-1999. With an allocation of 141 billion ECU, one third of the EU budget, the new Structural Funds are the privileged instrument of Union economic and social cohesion policy. For industry this solidarity translates into more equitable competition conditions for firms located in different EU countries and regions. A close partnership between the Commission, the responsible authorities in the Member States and industry is foreseen at every step of the programme planning.

**Of special interest for machinery construction companies are Objectives 2, new 3 and new 4.** Objective 2 operational plans are targeted at traditional industrial basins in need of restructuring. A significant part of the EU machinery industry is situated in Objective 2 zones, i.a. North Rhine-Westphalia and parts of Lower Saxony in Germany, the Centre and North of Italy, industrial basins of England, Wales and Scotland, the North, North-East and Rhone Valley in France, Catalonia and the Basque Country in Spain.

The new Objective 3 integrates both the combat long-term unemployment and the incorporation to the labour market of youth and workers risking to lose their job. The new Objective 4 has been created to facilitate the adaptation of workers to industrial change and the evolution of production systems. The latter is addressed to both active workers and unemployed. The interventions under these objectives can allay cyclical workforce disruptions in the machinery sector.

The Community Support Framework for Objective 1 also includes some regions of interest to the machinery construction industry like the Eastern German Länder or Hainault in Belgium. When investing in the production infrastructure of backward regions the Structural Funds create additional demand for machinery, from which the machine producing regions of the Union profit. Conversely they can also serve to help develop machinery construction in regions where it is non-existent or fledgling.

9% of the the Structural Funds' interventions during 1994-99 is earmarked for **Community Initiatives**. Two of the new initiatives decided for this period are of particular relevance to engineering firms: ADAPT, aimed at helping the workforce adjust to industrial change by improving their qualifications and encouraging organisational adaptation (1400 MECU); and SMEs, whose purpose is to improve the competitiveness of small and medium-sized firms in particular, including those which are subcontractors for large firms, (1000 MECU). Whereas the SME initiative is confined to less-favoured regions, ADAPT can also apply to non-assisted regions of the Union.

### 3.8. External trade policy: opening up world markets

For an export-oriented economy like the Union **liberalisation of world trade** constitutes a first rank precondition for global competitiveness. The overall benefits of fair access to foreign markets largely outstrip imagined or real risks of strong import flows. This interest of the sector is met by the objective of the Treaty of European Union to open markets to free competition. The EU was the first to adopt a policy designed to correct the impact of competition distortion on trade. The Union has a fundamental interest in ensuring that its trading partners allow fair competition as it does. Tightening-up of competition rules in the EU must be paralleled by fair foreign trade conditions.

In this respect the successful outcome of the **Uruguay Round** entails a powerful thrust forward for the Union machinery industry and, indeed, for all industry. This agreement will cut import duties on machinery and mechanical appliances by half over a ten year period and curb technical barriers to trade, giving exports of EU mechanical engineering equipment an estimated annual 4.5% boost by the end of that period. Moreover, its psychological effect as heralding the end of the recession can hardly be overestimated. The establishment of the **World Trade Organisation** will significantly reinforce the multilateral trade system, providing the required framework for pursuing further market opening, i.a. with regard to technical barriers to trade. The nascent organization will also play an essential role in the enforcement of the multilateral trade rules arising from the Uruguay Round.

Although the **Common Commercial Policy** is a Union competence, actions with trade implications of certain Member States may result in competition distortion. **Harmonization** of such actions should therefore be further pursued, notably in the field of **export credit insurance schemes** (for which a directive concerning medium- and long-term financing is under preparation) as well as of **export controls on dual use goods**. The **finalization of a common extra-EU import and export regime** is a precondition for fair competition on Member State markets and will facilitate the dismantling of customs formalities on intra-EU shipments. A better integration of Member States' activities in export markets in the Union's external trade policy is also desirable. The European machinery construction industry endorses these strivings. Machine manufacturers will draw advantage from the Union's dynamic external policy through the completion of the CCP and the improved management of the EU external frontiers.

Industry expects from the Union a firm reaction to **sectoral subsidies, State aids and other illicit practices by other industrialised countries**. In the view of the sector this problem is particularly acute in the case of certain Asian nations. The Commission has recently forwarded to the Council significant modifications to the **Illicit Practices Regulation** as well as a new **Regulation on Subsidies**, which could prove useful in this respect. The Union will continue to use the trade instruments at its disposal at the request of industry, provided the circumstances merit it, in a manner consistent with the relevant multilateral rules. Of special importance for European machinery construction is the access to foreign public procurement. Careful attention must also be paid to the effects of any bilateral trade arrangements between USA and Japan to ensure there is no discrimination against EU machinery suppliers.

The European machinery industry must be **present in growth markets, particularly in China and in the Pacific Rim**. To this end the Commission will study the opportunity of extending and developing export promotion and industrial co-operation, specially for SMEs. Whenever needed, the Commission will favour possibilities for European companies to pool their resources in order to accede to far-away markets.

Member States could also promote closer relations between their engineering firms and engineering firms in third countries by means of a cooperation programme on the model of the Euro/Japanese programme on consumer electronic components, as well as of cooperation in the fields of science, technology and training.

An **industrial assessment mechanism** based on the White Paper's conclusions and inspired by the Trade Assessment Mechanism on Japan, could be a useful tool in exploring the reasons for the below-average export performance of the machinery construction industry in certain key markets and proposing corrections.

### 3.9. Specific measures for small and medium sized firms

Since the majority of machinery construction firms are SMEs, most measures recommended elsewhere are primarily oriented toward smaller enterprises, although they can be applied to enterprises of all sizes. This point takes up measures targeted at SMEs only.

SMEs often have the benefit of innovative capability, flexibility and the ability to meet short notice deadlines, and are generally well equipped to compete effectively in the market place. However, there are weaknesses within SMEs which hinder their ability to fully exploit their growth and employment potential. For example, SMEs have difficulty in overcoming the increasing complexity of their legal and administrative environment. Their structural capacity to deal with this is hampered by the fact that most management functions continue to be carried out solely by the head of the enterprise himself. This plus the difficulties of obtaining finance, both working and equity capital, as well as weaknesses in management capacity, access to R&D, all points to the need for programmes which can help SMEs overcome these problems. In particular, technological stimulation measures aimed at promoting participation of SMEs, such as the ones which have been carried out in the BRITE-EURAM programme under CRAFT, will continue in the next specific R&TD programmes.

The Commission's proposals for an Integrated Programme for SMEs and the craft sector, announced on May 1994 (COM(94)207 final) puts into concrete form proposals for a closer partnership between all parties concerned with the development of SMEs, to meet the objectives outlined in the White Paper for SMEs to support their growth and employment potential. The Integrated Programme also assembles various initiatives, both existing<sup>21</sup> and new at a Community level, to ensure their coherence and visibility. There are also provisions within the 4th Framework Programme R&TD and within the EIB global loans and EIF schemes for loan guarantees all designed specifically to help SMEs. The Commission will study ways of

<sup>21</sup> A panoply of measures for SMEs already exists in different Union policies. The Multiannual Programme in favour of enterprises adopted in June 1993 reinforces the priority axes of Enterprise Policy in order to encourage the Europeanization and internationalization of SMEs. The network of 210 Euro-Info Centres is being reinforced to meet the needs of SMEs. The EIC network is moving towards more specialized assistance. The BC and BRE networks facilitate partner search for business co-operation. The Enterprise and Euro-partenariat programmes as well as the measures in support of transnational sub-contracting all encourage partnerships between enterprises. In addition, pilot actions are being undertaken such as Euromanagement and Seed Capital.

strengthening the European risk capital market, specially concerning equities and shares in SMEs. A study will shortly be performed on the financial instruments available to the capital goods sector. The Member States are invited to study the creation or improvement of instruments for aiding the financing of SMEs.

The Industry Council of 28th September 1994, after an in-depth study of the Integrated Programme, adopted a Resolution on Policy in favour of SMEs inviting the Commission to propose actions in order to implement that Programme. It is necessary to improve the efficiency of European policy for SMEs by means of a new partnership between the Member States and the Union.

### **3.10. Clean manufacturing: environmental protection as business opportunity**

The Maastricht Treaty establishes as one of the Union's prime tasks to promote a harmonious and balanced development of economic activities and sustainable growth respecting the environment. Union environmental policy is under development. In the meantime throughout the Union a number of environmental authorities and agencies are issuing a rapidly increasing volume of often diverging and unrealistic environmental control measures, many of which affect business. This is why it is urgent to **consolidate environmental policy as a primary Union competence.**

The **5th Environmental Action Programme** puts at the disposal of the Union a range of policy instruments at sectoral level. In regard to industry, a new set of business-oriented environmental instruments is to be exploited. A start has been made with eco-auditing, eco-labelling, voluntary agreements, liability schemes, etc.. Some of these instruments will create new job opportunities.

In environmental protection industrialists ought not to view requirements only as a deterrent for business. **The EU environment policy offers considerable advantages to first movers.** This fast growing market is currently estimated at between 75 and 100 thousand million ECU, of which 45 thousand million are generated in the Union. Directive 89/392 is expected to raise the safety standard of machines sold on the EU market. These trends offer new possibilities for innovation and increased yields. Mechanical engineering is one of the main suppliers of environmental technology: machinery and plant manufacturers are capable of offering end-of-the-pipe technology and integrated emission reduction systems. European environment control technology is world leading together with USA.

The Commission will deepen its dialogue with the Union's trading partners in order to **prevent environmental overregulation in post-industrial export markets** (Japan, USA, EFTA) and **environmental dumping in new industrial competitor countries** (East Asia).

### **3.11. Implementation of measures**

To ensure full participation and effective coordination in the implementation of the actions suggested in this document, Member States will be invited to forward appropriate comments and suggestions to be taken into account in the further elaboration of proposals. The Commission will follow up the debates in the Council and Parliament on the present Communication and the developments in its diffusion and implementation in the Member States. 18 months after its publication the Commission will present a report on the above.

It is equally important to ensure a systematic and continuous dialogue with the European machinery construction industry, departments of industry and all other concerned parties. The modalities of such a renewed dialogue will be developed, taking into account the experience of the Commission in the past and the particularities of the European machinery construction industry and the main partners.

Consultation shall take place at least once a year to follow up the work programme arising from the summary of proposals.

#### 4. CONCLUSIONS

- Engineering is the supplier *par excellence* of production equipment to industry. Machinery construction is at the core of the engineering sector. Machine performance determines the potential for productivity increases in the whole manufacturing industry. Hence, **maintaining a sizeable European machinery output will prove decisive for the future position of the Continent as a world industrial power.** Machinery construction also makes a substantial contribution to the surplus in EU's trade balance.
- In its turn, the competitiveness of a machinery construction firm depends greatly on the productivity and quality of its suppliers and the welfare of its customers. The problems the sector is currently undergoing cannot therefore be tackled in isolation but only in the framework of an economic policy that ensures a competitive environment for all manufacturing industry. If this vast area of the economy linked to machinery construction is to maintain its competitiveness, **it is imperative to turn the relations of EU machinery manufacturers with their suppliers and end-users into a source of competitive advantage.**
- **EU machinery construction gives work to over 2 million people.** The welfare of the sector is therefore a matter of Union concern. More than 80% of the sector's firms have 20 employees or less. Upon that background actions to promote employment and foster the competitiveness of SMEs ought to be at the forefront of the European policy for its industry. The White Paper on Growth, Competitiveness and Employment provides an adequate framework for those actions.
- Confronted by serious structural problems (acute cyclical sensitivity, financial fragility, erosion of its competitiveness, etc.), this industry is searching for the strengthening of its global competitiveness. In large, mature sectors like this, where the EU industry has still a strong position in its home market, **the general trend towards an increase in value added has to be followed.** A renewed dynamism can be created by an effort of innovation, productivity and quality.
- Acute cyclical sensitivity is one of the sector's most serious structural weaknesses. The machinery construction industry is particularly disrupted by cyclical oscillations owing to the financial fragility of its many small companies. Since the investment jolts suffered by this sector reflect cyclical oscillations of the whole industry, only a stable evolution of the whole economy at long term can lead to a tempering of the sector's investment pattern. Hence **it is of the utmost importance that the Member States carry out a macroeconomic policy leading to a steady growth and that they sufficiently promote capital investment.** It is likewise clear that the sector would draw advantage from short-term anti-cyclical measures aimed at attenuating drops in investment during recessions.
- **The foremost goal of Union policy with regard to the machinery construction sector is to contribute towards improving at term its competitive environment.** To this end the Commission proposes to the Member States and industry the implementation of measures in a number of areas such as investment promotion, business environment, industrial cooperation, research and technological innovation, vocational training, structural funding, external trade policy and specific measures for SMEs. **The measures proposed for the machinery construction industry are generally horizontal actions. They could also benefit the suppliers of machine parts and end-users of machinery and ultimately all manufacturing industry.**

**ANNEX**  
**SUMMARY OF PROPOSALS**

Policy area	Proposed action for machinery construction	To be implemented or triggered by			Others	Point in Section 3
		EU	MS	Industry		
<b>Investment promotion</b>	Encourage investment both in tangibles and intangibles		+			3.1
	Consider tax and depreciation incentives for investment in capital goods		+			
	Shorten the tax depreciation terms of production equipment		+			
	Co-ordinate national investment promotion measures	+	+			
	Profit from EIB and EVCA financial services			+		
<b>Business environment</b>	Apply the Strategic Programme on the Internal Market	+				3.2
	Implement macroeconomics for improving industrial competitiveness		+			
	Improve the business infrastructure		+	+	+	
	Restrict State aids to an indispensable minimum	+	+			
	Encourage strong European industrial groups within competition law	+	+			
<b>Industrial cooperation</b>	Promote industrial co-operation, specially among SMEs	+	+	+		3.3
	More cooperation between machine manufacturers, suppliers & users			+		
	Consider round table of industrialists	+		+		
<b>Technical harmonization</b>	Continue applying New Approach on technical harmonization	+				3.4
	Continue applying Global Approach on certification and testing	+				
	Promote Quality	+	+	+		
	Transpose new approach directives, i.e. the Machinery Directives		+			
	Accelerate the preparation of harmonized standards			+	+	
	Improve diffusion of the Machinery Directives	+	+			
	Negotiate mutual recognition agreements with third countries	+				
<b>R&amp;TD</b>	Increase investment by industry			+		3.5
	Improve Collaboration between national R&D programmes		+		+	
	Grant tax credit schemes		+			
	Improve co-ordination among Union funded programmes	+	+			
	Profit from the Extended rapid response approach to SME applications			+		
	Profit from closer Collaboration between IMT and ICT programmes	+				
	Develop a European CNC by means of the OSACA project	+	+			
	Foster diffusion of R&D to SMEs through CRAFT, VALUE and SPRINT	+				
	Promote pan-European R&D through EUREKA and COST	+	+	+		

Policy area	Proposed action for machinery construction	To be implemented or triggered by			Others	Point in Section 3
		EU	MS	Industry		
Vocational training	Pay more attention to mechanical engineering in training policy		+	+	+	3.6
	Achieve minimum standards at EU level	+	+	+		
	Coordinate better between European and national schemes	+	+			
	Anticipate better future technological needs	+	+	+	+	
	Increase shop-floor workers' training in new technologies		+	+	+	
	Make more use of interdisciplinary training		+	+	+	
	Pay more attention to the training of SME staff		+	+	+	
	Generalize the use of vouchers		+			
	Consider linking continuous training with increased labour flexibility	+	+	+	+	
	Set up a partnership between universities, MS and industry		+	+	+	
	Make full use of Leonardo, Socrates and Social Fund schemes	+				
Consider establishing new training institutes in engineering		+				
Regional policy	Make full use of the Structural Funds, in particular:					3.7
	some machinery companies can profit from Objective 1 funds;	+	+	+		
	many machinery companies can profit from Objective 2 funds;	+	+	+		
	make more use of new Objectives 3, 4;	+	+	+		
profit more from Community Initiatives.	+	+	+			
Trade policy	Profit from Uruguay Round Agreement			+		3.8
	Achieve World Trade Organization	+				
	Harmonize export credit insurance schemes		+			
	Harmonize export controls on dual use goods		+			
	Finalize the Common Import and Export Regime	+	+			
	React vigorously to third countries' aids and barriers to trade	+				
	Use trade policy instruments whenever legitimate	+				
	Develop exports to growth markets, specially in the Pacific Rim			+		
Create an industrial trade assessment mechanism	+					
Specific measures for SMEs	Give priority to SMEs in industrial policy		+			3.9
	Co-ordinate Member States policies through concerted actions	+	+			
	Implement the 1993 Multiannual Programme	+				
	Carry out the new actions in the Integrated Programme	+				
	Implement SME measures in regional, R&D and training programmes	+				
Strengthen the European risk capital market, specially for SMEs	+	+				

Policy area	Proposed action for machinery construction	To be implemented or triggered by			Others	Point in Section 3
		EU	MS	Industry		
Environmental protection	Consolidate environmental policy as primary Union competence	+				3.9
	Carry out 5th Environmental Action Programme	+				
	Prevent environmental overregulation and environmental dumping	+	+			



**STRENGTHENING THE COMPETITIVENESS OF THE EUROPEAN  
MACHINERY CONSTRUCTION INDUSTRY**  
**COMMUNICATION FROM THE COMMISSION TO THE COUNCIL AND  
THE EUROPEAN PARLIAMENT**

**FINANCIAL STATEMENT**

**1. TITLE OF OPERATION**

Strengthening the competitiveness of the European machinery construction industry.

**2. BUDGET HEADING INVOLVED**

See point 7.2.

**3. LEGAL BASIS**

Treaty on European Union and, in particular, Articles 3 and 130 thereof, Title XIII on industry, Title XV on research and technological development (Articles 130f et seq.), Title VIII on social policy and industrial changes (Article 123).

**4. DESCRIPTION OF OPERATION**

**4.1 Specific objectives of operation**

The tasks that this Communication sets out to fulfil are :

- a) to investigate into the structure and situation of the EU machinery construction industry in relation to its supplier and customer industries;
- b) to analyse the premises for its competitive upgrading;
- c) and to propose the means of applying the Union's horizontal approach on industrial competitiveness to the industrial activity of machinery construction.

The final objective of the above activities is facilitating the restructuring of the European machinery construction industry and contributing towards the strengthening of its global competitiveness.

To this end the Commission proposes coherent measures in the fields of investment promotion, business environment, industrial cooperation, technical harmonization, R&TD, vocational training, regional policy and trade policy.

**4.2. Duration**

This Communication forms part of the continuously evolving framework of Union Industrial Competitiveness Policy. The specific actions proposed on machinery construction will be reviewed annually and are expected to be applied for ten years at the most.

#### **4.3. Target population**

Member States, regional and local authorities, EU institutions, machinery construction industry, credit institutions, educational and training bodies, standardization and certification bodies.

### **5. CLASSIFICATION**

#### **5.1 Non-compulsory expenditure**

This being a Commission Communication, none of the measures put forward herein are compulsory. By their nature some of the measures would be carried out primarily by the Member States' national or local authorities, others by Union institutions, still others by Industry itself or by other bodies.

#### **5.2 Differentiated appropriations**

Not applicable

#### **5.3 Type of revenue involved**

Not applicable

### **6. TYPE OF EXPENDITURE OR REVENUE**

The Commission shall make proposals after discussion at the Council and Parliament.

### **7. FINANCIAL IMPACT**

With respect to the actions that would be carried out by the Member States or other bodies, quantification is left to their discretion. The Communication does not set quantitative targets on these non-compulsory proposals.

With respect to the actions to be carried out by Union authorities, they are in every case the application to a specific area of industrial activity of instruments already approved and included in the Budget of the European Communities.

This Communication will have no additional impact on the 1995 year Budget and fits in with the financial perspectives for 1993 to 1999. It covers certain direct support provided pursuant to policies or activities covered by the various provisions of the Treaty.

### **8. ELEMENTS OF COST-EFFECTIVENESS ANALYSIS**

#### **8.1 Specific and quantifiable objectives; target population**

The Communication's overall objective is to contribute towards making European machinery construction more competitive. The EU industry has currently almost 1/3 of the world machinery market. It should sustain or if possible increase that share. The main responsibility for that objective lies with Industry itself and the degree to which it will be achieved depends in the first place on the measures Industry will take. Within this context it is not possible to quantify the contribution to that objective arising from measures taken pursuant to this Communication. The target population are in the first place the 2.3 million employees of the EU mechanical engineering industry.

## 8.2 Grounds for the operation

The European machinery construction industry is confronted with a productivity gap with regard to certain competitors as a result of structural shortcomings and cyclical malfunctions. This industry also needs to modernize itself in order to become a global player.

- Cost:  
Not applicable
- Spin-offs:  
Most measures proposed are extrapolable to the whole of manufacturing industry or can otherwise increase its productivity through an improved performance of the equipment it buys from the machinery construction industry.

## 8.3 Evaluation

- Each measure mentioned in point 7.2 has its specific evaluation procedure.
- 18 months after the publication of this Communication the Commission must submit to the Council a report on the diffusion and implementation of the measures proposed in it.
- In addition, consultation shall take place at least once a year to follow up its Work Programme.

## 9. Administrative expenditure

### 9.1 Operation expenditure on studies, meetings of experts, etc.

#### 9.1.1 Experts' meetings (A0-2500)

Under reserve of the outcome of the decisions concerning the budget and resource allocation, the Commission will yearly and during the period of a maximum of 10 years when the proposed actions will be enforced, summon two experts meetings, one with officials from the Member States' Ministries of Industry and the other with representatives from Industry and other concerned bodies. These meetings will ensure a systematic and continuous dialogue with all the concerned parties and provide for the annual follow-up consultation on the Communication's Work Programme foreseen in Point 3.9 of the Communication: 1 meeting x 32 government experts/meeting x 801 ECU/expert = 25,632 ECU/year; 1 meeting x 20 private experts/meeting x 918 ECU/expert = 18,360 ECU/year. total annual expense 43,992 ECU, 1995 through 2004.

#### 9.1.2 Conference (A0-2550)

18 months after the publication of the Communication the Commission will summon a conference to present its Report on the debates in the Council and Parliament on the Communication and its diffusion and implementation in the Member States. This action is in fulfilment of the corresponding provision of Point 3.9 of the Communication: 30,000 ECU in 1996. It will include room rental (18,000 ECU), invited experts(4,590 ECU), printed and audio-visual material (3,000 ECU) and interpretation (4,410 ECU).



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