SPEECH TO BE DELIVERED BY DR NARJES

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The European Community helps to promote innovation in two ways:

- on the one hand, by encouraging the Member States to improve the general conditions for innovation,

- and on the other, by making its own budget resources available for research and development activities, which it conducts independently or through the agency of contract partners.

As part of the opening ceremony of this Fair, I shall be making a number of observations on the improvement of the general conditions for innovation this afternoon. In particular, this will deal with the promotion of company self-financing capacity, the provision of risk capital and the full development of the vast European domestic market. My aim here is to give an account of the contribution made by Community research to innovation. For this purpose, I intend to present my remarks under four headings:

. The scope of Community research
. Special features of Community research
. Inventions, patents, licences and know-how
. Future prospects.

I. Scope of Community research

When I speak of research, this must always be understood in its broader sense which includes expenditure on development and technological demonstration projects. It would be more appropriate to refer to the Community's scientific and technical activities. In this sense, Community expenditure on research totalled approximately 590 million ECU

in 1982. This is a very small amount compared with overall public expenditure on research in the Member States in the same year, which was roughly fifty times greater.

More than 1 000 000 scientists and technicians, including approximately 350 000 research workers, are currently active in the Community. The Member States account for one-fifth of total world expenditure on "Research, Development and Demonstration" (R,D&D). If one excludes the defence sector, this means that Europe's research capacity is twice as large as Japan's and only 27% smaller than that of the US.

The Community concentrates its resources - which are small compared with the total expenditure of the Member States - on specific activities. More than 60% is devoted to the energy sector for research into nuclear fission, thermonuclear fusion, renewable sources of energy and energy conservation. Just under 20% is employed in promoting industrial competitiveness, and although some of this still benefits such traditional sectors as iron and steel, an increasing proportion is going to advanced technology sectors such as information technology. Expenditure on the improvement of living and working conditions in projects relating to safety at work, health and environmental protection accounts for 10% of total resources. Aid to developing countries, raw materials conservation and agricultural research have each usually received only 1-2% of the total.

II. Special features of Community research

All Community R&D programmes have a specific character, which makes it possible to say what they are not. They are neither purely academic research for its own sake, nor do they represent the final stage in the innovation process which involves the development of new products, processes or services. Community research is specific, fundamental research or targeted research having a particular economic or social value. This may be broken down further into research aimed at improving competitiveness and research with no competitive objective:

- the latter is research which is designed

to meet the needs of social policy, legislation, standardization, etc. It is not intended to lead to inventions and innovation, but rather to give rise to Community standards for health and safety at work, quality specifications for materials or legal provisions relating to environmental protection;

- research aimed at improving competitiveness involves the promotion of activities which are immediately preliminary to the development of specific products, processes or services; the results are taken up by scientific and industrial circles for further development; the competitiveness of the economy as a whole is promoted by such far-reaching developments, although the public authorities should not, as far as possible, distort the process of competition; the ESPRIT Programme for the promotion of new information technologies can be quoted as an example of such research.

It must be said with reference to the abovementioned specific features that neither fundamental research nor non-competition orientated research produce a wealth of inventions, patents or licences.

In considering the figures I am about to quote, account must be taken of the division of Community research activities into direct action conducted by the Community alone and shared-cost action carried out in association with its contract partners. The Community engages in direct action within the framework of Euratom in the Joint Research Centre (JRC) which was established in 1958 and which now employs more than 2 000 staff at Geel in Belgium, Karlsruhe in the Federal Republic of Germany, Petten in the Netherlands, and, in particular, Ispra in Italy. The Community also carries out research under contract, by commissioning universities, national laboratories and industrial undertakings to carry out research work on its behalf. If the contractors provide at least half of the resources employed, any inventions made become their property in principle. Consequently, in order to gain an idea of the contribution made by Community research to innovation, the results obtained by these contractors must also be taken into account. Although that is still possible to some extent, the results of Community activity in the field of "concerted action" cannot be dealt with statistically. These projects, in which the Community sometimes participates at its own

expense, involve the consolidation of research programmes conducted in the Member States. No statistics are kept of the success of such concerted action in promoting innovation.

III. Inventions, patents, licences and know-how

As we have seen, Community research is characterized by certain features which must be kept in mind when attempting to express its innovatory value in statistical terms.

The following observations, at least, can be made:

- It is estimated that the technical and scientific activities financed by the Community are currently responsible for approximately 100 inventions each year. Of these, roughly 20 are the result of the activities of the Community alone, the remainder coming from the work of the contractors.

- Since Community research began in the ECSC sector in 1952 it is estimated that approximately 2 500 inventions have been made in all fields of Community activity; the Community itself has been responsible for approximately 2 000 of these.

- Not all inventions can, or deserve to, be patented. The abovementioned inventions gave rise to 800 initial patent applications by the Community and, as far as can be established, to more than 1 000 initial applications by the contractors. Approximately 6 400 subsequent applications were made.

- Roughly 160 Community inventions are still protected by patent and it is estimated than several hundred inventions made by the contractors enjoy similar protection.

- The number of Community inventions which are not just protected but which are in active use is smaller. If an invention is considered to be "active" when it is undergoing further technical refinement or is already commercially exploited, the Community can be said to hold more than 100 active inventions.

- Twenty-eight licencing agreements - of which 10 produce licensing revenues - are currently in force between the Community and private enterprises.

- Since 1974, an active policy has been pursued on the exploitation of Community inventions by private enterprises. Although the licensing revenues to the Community are still modest, they double in value roughly every three years. At present, they amount to approximately 25 000 ECU/year.

I should now like to give a number of examples of what has been achieved to date:

- Some innovations concern new or improved equipment, which is designed either for use in research laboratories or industry or to improve the quality and productivity of various processes, for example, in the steel industry;

- Others are intended to bring about further developments in production techniques in the fields of welding and metal-working and metal processing or in the manufacture of semi-conductors, which are now such a crucial factor in the electronics sector.

- In the field of energy conservation, solar energy collectors have been improved and we have also issued a licence for the manufacture of multi-purpose power units for electric motors with adjustable speeds of rotation.

- Another invention in the energy-conservation field concerns a new thermal-storage process for central heating in buildings. Our German licensee was awarded the German Prize for Invention at the recent Hanover Fair for developments and patent applications made pursuant to this invention.

Some of these examples of innovation were exhibited two or three weeks ago at the Hanover Fair or are on show here. Further details can be obtained from the pamphlet on "Innovation from Community Research" which is available at this Fair.

Although I would prefer to speak about inventions which have already produced favourable results, I should like to mention an extremely promising development that may contribute to the solution of the problem of acid rain to which so much attention has recently been given. This invention was made at the Joint Research Centre in Ispra. In this process, the pollutant sulphur dioxide produced in the combustion of coal or oil is transformed into a usable by-product and not into substances entailing difficult or expensive disposal. Preliminary studies suggest that this form of sulphur dioxide elimination is less expensive than the method currently employed.

Inventions, patents and licences are only one factor to which reference can be made in attempting to measure the Community's contribution to innovation. The dissemination of the know-how acquired in research projects is of equal importance. Every research contract leads to a final report which itself gives rise to a flood of scientific and technical publications. More than 20 000 of these publications have been produced to date. Every year, the Commission publishes some 60 volumes which give details of the results obtained under research contracts. The monthly journal "Euroabstracts" contains summaries of research reports, the full text of which can be obtained in microfiche form. A wide range of knowledge is available to all interested parties in the Community. Frontiers do not constitute a barrier and the only limitation results from language difficulties. The Commission does not have the financial resources to translate the research reports, but "Euroabstracts" publishes summaries in the language in which the final report was drafted.

IV. Future prospects

The EEC Commission is convinced that research expenditure and research priorities must be reviewed in the light of the challenges to be faced in the eighties, of the needs of European society and of the requirements resulting from the Community's various policies.

The Commission has therefore proposed that the Council

should adopt a new strategy in the field of science and technology under its 1984-87 Framework Programme. Details of this programme have been published and, in the present context, four of its elements seem particularly important:

- expenditure will rise by more than 50% from just under 600 million ECU in 1982 to an annual average in excess of 900 million ECU;

- in this connection expenditure on research in the energy sector will decline from 60% to approximately 50% of total expenditure whilst the amount of resources devoted to the promotion of industrial competitiveness will increase from nearly 20% to almost 30%. This should produce a powerful impetus to innovation;

- all research projects will be more fundamentally market-orientated. Greater support will be given to new technologies and innovation will be stimulated;

- the modest resources previously available for the exploitation of research results will be increased. New measures are planned in respect of the dissemination of know-how, patent protection and the marketing of Community-promoted R&D results.

The use of new technologies for the creation of new industries or the rejuvenation of old sectors of the economy is an indispensable element in the battle against unemployment. The scientific and technical activities of the Community have an important part to play in the introduction of such technologies.