European Communities Commission

8 Storey's Gate,
London SW1P 3AT
Tel: 01 222 8122

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CO-OPERATIVE SCOPE FOR BIOTECHNOLOGY

Summary

Biotechnology - sometimes known as the 'life sciences' - has developed dramatically in the last few years but, as in other fields of high technology, the European Community is failing to compete with rivals, the United States and Japan. Indeed, a US report prepared for the White House in May 1983 practically dismisses the European effort, pointing out the Community's lack of qualified scientists and engineers (many of whom migrate to America), inadequate industry/university co-operation, and belated and insufficient R&D funding.

In addition to its efforts to stimulate development in informatics and industrial R&D (1), the European Commission has now submitted a framework plan (2) to the Council of Ministers designed to do the same for the new life sciences. The scope in agriculture, health care and the environment is immense - some may think alarming - but though most of the Community countries have, in the 1980s, launched their own programmes, they are hampered as usual by fragmentation, lack of resources, and failure to take advantage of the common market.

The Commission would like to see greater common concentration on a number of specific areas of development as part of a coherent strategy which could stand up to American and Japanese competition.

The life sciences

The biological sciences cover a wide range of disciplines including biochemistry, genetics, microbiology, physiology, plant and animal anatomy, bio-physics, and so on. They have all contributed to modern standards of food supply, health care, and control of the environment but today, according to the Commission, their potential for human welfare is even greater. This potential it defines as the 'new biotechnology' - a multi-disciplinary system which, properly handled, should contribute significantly to the solution of many contemporary problems.

Yet in this vital field the Community is being outspent by the United States by a factor of 2:1 in public sector research and more in industry, and 'out-planned' by the Japanese with their ten years of coherently planned approach. While admitting that figures can only be tentative the Commission estimates (3) that public sector R&D expenditure stretching from the very narrow to overlapping agricultural and medical research ranges in the USA per annum from $200m - $550m compared with $156m to $380m in the European Community. Japan, with a public expenditure of at least $50m p.a. utilises its resources in a particularly effective and coherent way, compared with the situation to date in most individual Community countries.

(1) See BR ISEC/B1/1983
(2) COM(83) 672 and Annex, 4.10.1983
(3) COM(83) 328 of 8 June 1983 ./.

Community weaknesses

Although the Federal Republic of Germany has had outstanding industrial strength in all major areas of biotechnology, this is not reflected in the Community as a whole. The Commission points to fragmentation of research, shortages of technicians and scientists and, in particular to the absence of appropriate logistic support for laboratories in the shape of data banks, patent counselling, and multi-disciplinary training. The situation is aggravated by the decision of many biotechnological experts to work in America, where scope and conditions are better.

As in other technological fields the Community is not short of invention; its main weakness lies in general failure to exploit such inventions for practical and industrial purposes. The Commission's strategy seeks to change this state of affairs.

Biotechnological potential

In the Annex to its latest Communication the Commission recapitulates the potential of the new biotechnology for the future. These include:

- further industrial applications in such areas as monoclonal antibodies, preparation of new vaccines and so on leading to the creation of cell lines and strains of organisms displaying new properties; the construction of new types of reactors for bio-mass processing and the recycling of useful materials; and development of more reliable and less expensive methods of introducing, testing, and evaluating new products.

- wide opportunities in a developing market, where over 40 per cent of manufacturing output in a developed industrial country is biological in nature or origin, and therefore likely to be influenced or transformed by developments in biotechnology.

- strategic significance as a powerful tool for renewal and innovation of the economic base of contemporary society, particularly in the chemical industries and in industries such as agro-feed, environment, and water treatment and distribution.

A Community plan

At the June 1983 European Council meeting in Stuttgart heads of government recognised the importance of a Community dimension for the new biotechnologies, and the Commission's proposals are an extension of this recognition in the practical field. It recommends action in four major areas:-

- a strong research base or critical mass based on a pooling of skills and an alliance of disciplines;

- support for research through multi-disciplinary training and suitable logistic backing;

- clearly defined regimes covering all stages from laboratory development and testing through marketing to post-marketing monitoring;

- economic and social impacts of biotechnology on health, agriculture and industry. Such impacts are particularly relevant to the Community's agricultural policy, and in the public health sector which has witnessed a rapid expansion of medical costs and the substantial replacement of the private customer by the state customer.

In order to accomplish these ends the Commission recommends a five year programme

(1984-89) at an estimated cost of 200m ECU (£114m) (1) over the period which would concentrate on co-operation in multidisciplinary training and research both in the general 'horizontal' sector of information dissemination and logistic support, and in specific sectors related to agriculture and health care where industry finds few inducements because of commercial restraints or fragmentation of the common market. Research activities would be complemented by a training programme specifically designed to increase the numbers of trained technicians and scientists qualified in basic biotechnology - a multidisciplinary activity not now usually taught in universities.

In addition the Commission proposes the establishment of an expanded series of networks to provide an ad hoc system of collaboration between individuals, specialised groups and institutions, coupled with an information base regularly updated to handle and disseminate material. The Commission continually stresses the importance of seeing biotechnology disciplines and their effects as inter-related, particularly where agri-industry, such as food processing and health are concerned, with their impacts not only at home but on the developing world.

Biotechnological discoveries can, however, be harmful as well as beneficial. The plan, therefore, calls for increased collaboration with the Commission in devising safety regulations and in monitoring, taking account of the work of other interested organizations such as OECD, WHO and the Council of Europe.

There is also need to give more consideration to the question of patents, and the Commission urges all Community countries to ratify both the European and the Community Patent Conventions, as a first but necessary step towards commonly accepted regulations on this issue.

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(1) 1 ECU = 57p

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ANNEX

SUMMARY ESTIMATES BY COUNTRY OF PUBLIC EXPENDITURE ON BIOTECHNOLOGY R&D

(M. ECUS - 1982/1983)

	Biotechnology		"Biotechnology-relevant" (1)
F.R. Germany	36		132
France	31		84
United Kingdom	46		59
Italy	13		34
Netherlands	10		26
Belgium	7		14
Denmark, Greece, Ireland, Luxembourg: say	3		6
	146	-	355
(U.S. $m	156	-	378)

(1) The biotechnology-relevant figure is on a broader basis, reflecting R&D expenditure in relevant medical, agro-food and life-sciences research.