French science policy

Good effort, but must try harder

THE French government has made "undoubted progress" and achieved "significant results" with its innovation policy, but "serious weaknesses" remain. These are some of the conclusions of a report requested a year ago by the French research minister Hubert Curien from the Paris-based Organisation for Economic Cooperation and Development (OECD), the international organization whose members include 24 of the world's richest nations. OECD has a long record of making assessments of national science policy.

OECD is determinedly politically independent, but its report on France, the third of a series of national innovation policy reviews, but the first to deal with a major economy, comes at a critical juncture, as it appears less than a month before the French general election on 16 March, which is expected to throw out the present socialist government. Moreover, research policy is probably that government's greatest success, and the report is therefore being treated with great political seriousness as a clear objective analysis of the government's past and present programme, as developed under socialist president François Mitterrand, who came to power just five years ago.

Despite difficult economic circumstances the world over, French researchers have not lacked money. The French government has put an immense effort into research and development compared with its economic competitors, according to figures in the OECD report.

Comparing 1983 levels with those of 1979, French spending on basic research is estimated to have risen 43 per cent in real terms, compared with 9 per cent in the United Kingdom, 6 per cent in Japan, 1 per cent in the United States and no rise at all in West Germany. Government support for industrial research and development rose 48 per cent in France over the same period, followed by West Germany (22 per cent) and Japan (10 per cent). Over the same period, support for industrial research actually fell in the United Kingdom (by 4 per cent) and in the United States (by 6 per cent).

France was also ahead in every other category of research spending, according to OECD, such as infrastructure (a real increase of 18 per cent over the four years, the nearest rival being Japan with 16 per cent), health and welfare (33 per cent, compared with falls or stagnation in other major countries) and space and defence research (26 per cent, the nearest rival being the United States with a 21 per cent increase).

But despite this cash flow, the fundamental conclusion of the authors of the report, a group of senior, non-French European and US technology policy-makers, is that France still has a very long way to go before it can become as competitive in innovation as West Germany, the United States, Japan or even Great Britain.

During the whole of the 1960s and 1970s for example, the proportion of patents granted in France to companies of French origin fell by nearly half, from 40 per cent in 1960 to 25 per cent in 1980. Even if President Mitterrand's policies manage to reverse this trend, the effect will be long in coming.

According to a poll conducted by the European Management Forum, a group representing senior management in Europe, France is actually perceived to have dropped in its capacity to innovate since 1980, falling from ninth among nations in 1980 to thirteenth in 1985, using criteria such as "capacity to exploit inventions commercially" and "capacity to abandon declining activities and invest in growth activities".

Nevertheless, OECD broadly judged recent trends in French government policy and spending to be positive. Even so, it says that a number of recent French initiatives have been too timid, and that others may have been hindered by an increased fiscal burden on industry to support the government's social policies.

OECD also criticizes French industry for its attitudes to research. The report quotes a survey which showed that 68 per cent of managers and engineers in French industry think that research is not an essential part of innovation: and that 78 per cent would seek potential innovators in the *grandes écoles,* the elite and dustily academic French engineering schools, rather than in the universities (where most French research is done).

The "ivy league" of French higher education and its graduates are therefore out of touch with the needs of modern innovators, OECD judges, but while recognizing the problem, the present socialist government has been meek in its attempts to solve it.

The OECD authors lay a great deal of blame on the education system, and on the schools which are largely geared to nurturing the narrow cleverness that the *grandes écoles* require from their entrants. French teaching remains "purely deductive and abstract" and this "has prevented France, unlike Japan, the United States and Germany, from developing an authentic industrial and enterprise-based culture", the reports claims.

Nevertheless the present government has taken some action in these areas, and the report praises efforts to extend the granting of a *baccalauréat* (high school diploma) and hence status to a wider range of technical subjects. Efforts to attract more of the *grandes écoles* graduates, who generally end up in high management or civil service positions, into taking a research degree are also praised, though the numbers involved are small (500 a year at present).

OECD also gives a pat on the back to the ministry of education for attempting to give the universities more serious structures of evaluation and a concomitant autonomy. But "it seems so far as higher education is concerned things have come to a stop half way along the road, hesitating to introduce any real autonomy".

Research councils, such as the Centre National de la Recherche Scientifique (CNRS), with its 25,000 staff and 1,300 laboratories (two-thirds of which are run jointly with the universities), have increased their power, according to OECD but have simultaneously made efforts at greater consultation and regionalization of policy-making. But OECD criticizes the influence it believes is still exerted by a whole series of pressure groups that are "profoundly conservative — that is, most of the unions of teachers and researchers and other bodies". The research councils, despite their apparent formal power, are "relatively impotent in the face of an egalitarian grass-roots attitude opposed to clear-cut decisions", is the report's view.

The reforms in research policy under Mitterrand have, however, been "efficient and tailored to the French system". Their greatest success has been to create "a consensus round national science policy", and to encourage an outward-looking shift in the attitudes of researchers towards industry and other social partners such as the schools and regional government.

But altogether the French system is still riven by a system of contradictory "egalitarian and feudal" tendencies that hinder change, say the authors of the OECD report. Before the climate for innovation in France can really improve, major long-term educational and social changes will have to take place, or be engineered, the report concludes. But there is much of France that will have heard all this before. Whether the changes are desirable, and whether they will be more likely to take place under the present, or a new, government is for the French electorate to decide.

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Reviews of innovation policies: France by Viscount Etienne Davignon (former vice-chairman of the European Commission), Professor Umberto Colombo (president of the Italian Nuclear and Alternative Energy Agency, ENEA), Dr A.P. Speiser (director of research, Brown Boveri and Co. Ltd and chairman of the research and development committee of the Swiss Confederation of Industry), and Professor J. Zysman (Institute of International Studies, University of California, Berkeley). OECD Directe ate for Science, Technology and Industry (Paris 1986).