

FRANCE

Crucial Year for French Science Policy

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It is becoming increasingly evident that the sixth research plan is not running as smoothly as might have been hoped.

DURING the past few years the evolution of French science policy has been characterized by innumerable pitfalls and an imprecise course. But 1972 may be a crucial year to the extent that once the research budget for 1973 is known, it will be possible to discern the trends of research as scheduled in the sixth research plan (1971–1975), and, especially, to find out whether or not some research agencies will succeed in finding their second wind.

Using the budgets of 1971 and 1972 as a guide, it is now possible to prepare a rough balance sheet for the execution of the sixth plan which, on examination, suggests that the public funds destined for research are falling behind. The average annual rate of growth of research and development expenditure for the two years was 7% (in 1970 francs), whereas the plan anticipated an upturn in the growth of funds from 7.5% to 11%. The growth in 1972 of the programmes which are covered by the plan is large (12.7%) but this is less than the average growth of public expenditure (16.9%). The sectors recognized by the plan as having priority, such as the biomedical and social sciences, were also growing at a smaller rate than was planned. The funds destined for basic research increased but at a smaller rate than the average for 1972. There are also great disparities between disciplines. Fundamental biology, for example, experienced stagnation in 1972 but, by contrast, industrial research, which had been favoured by the plan, grew by 33% between 1971 and 1972.

It must be noted that an important objective of the sixth plan was not attained, namely the levelling off of funds destined for the so-called *grands programmes*. Although the plan forecast, for example, a reduction of the share in the national research and development effort enjoyed by the *grands programmes*, it seems that they resisted the erosion. The programme of research into the production of electricity by nuclear means, which was intended to be maintained at a constant level, grew by 16% between 1971 and 1972.

Everything points to the inability of the sixth plan to attain its objectives, so that expenditure by the end of 1975 will be, at best, the minimum anticipated (19,500 million francs). This situation places the administration charged with the coordination of the science policy in a very embarrassing position, for commitments have been made by certain research bodies like CNES (Centre National d'Etudes Spatiales) and CNEXO (Centre National d'Exploitation des Océans) on the assumption that the rate of growth of funds would be larger. As the 1973 budget is not likely to alleviate the situation, the objectives of the plan in 1973 will certainly have to be changed. The difficulties arise from the *grands programmes*, notably the atomic energy programme and the space programme, both of which place a heavy burden on the plan. The agencies chosen to carry out these programmes, such as CEA (Commissariat à l'Énergie Atomique) and CNES, also find themselves confronted with serious structural problems. CNES, for example, has been forced to close its centre at Bretigny and to transfer most of its activities to Toulouse.

Since the decision in 1969 to abandon the French graphite-gas nuclear reactor, CEA has experienced great difficulties in restoring equilibrium. It now hopes to contribute to the conception of the second generation of light water nuclear reactors in order that France might gain some independence from the nuclear industry in the United States. It is actually more a problem of industrial policy than of science policy that faces the CEA in this field; one must acknowledge that the Minister of Industrial and Scientific Development is also hesitating about the direction to take.

In the field of oceanographic research, there is a structure problem; CNEXO had to be from the start a flexible agency responsible for the organization of the very dispersed oceanographic research activities in France. In this respect, CNEXO was unable to resist the temptation to construct its own laboratories and to invest heavily in costly equipment. It was, therefore, recently decided to reinforce the powers of the technical and scientific committee of CNEXO so that it actually functions as a coordinator between agencies. A similar orientation is anticipated for IRIA, an agency which is supposed to perform research in computer science and whose operation is not yet satisfactory.

The Centre National de la Recherche Scientifique (CNRS) which, with the universities, has a responsibility for basic research, is confronted with several problems. The budget of this organization is about 1,200 million francs, a sum which posed a few management problems which have been resolved successfully by the reinforcement of the scientific and administrative direction of the Centre. Moreover, with the establishment in 1971 of the procedure of programmed thematic actions (ATP, a procedure which was reinforced in 1972 with 25 million francs), the management of CNRS has tried to define a more selective policy. This policy has, however, provoked some criticism, especially by the trade unions, because it tends to decrease the power of the partially elected scientific committees. Having demonstrated with ATP that it can introduce a new procedure (and this is one of the goals of the operation), CNRS now hopes to develop research in the engineering sciences. Lying half way between basic research and applied research, engineering has always been neglected in France and CNRS intends to fill that gap. But such an orientation might cause problems between CNRS and the schools of engineering and industry.

The most serious problem which has confronted CNRS as well as other research bodies is that of the recruitment and training of its scientists. The year-long debate has centred on the problem of the thesis, for the reform of the universities in 1968 implies a redefinition of the doctoral diploma. The doctoral thesis in science is submitted after about 5 or 6 years, a period considered by many to be too long. Rather than introduce a single degree of the PhD type (as many had hoped), the reform would still recognize the two types of doctoral theses that now exist: a thesis corresponding to the doctorate of the third cycle (which lasts two years) and one corresponding to the "state doctorate".

French science policy has not as yet emerged from its phase of uncertainty and of moroseness. These feelings are certainly apparent at the level of the institutions in charge of the coordination of science policy—in particular DGRST (the Délégation Générale à la Recherche Scientifique et Techniques). These agencies know that certain decisions are necessary, but they also realize that they lack the means of implementing them.