Bangladesh

Planning science

Dacca

Better use of the existing facilities and manpower for scientific research and development are given special attention in the Bangladesh government's Second Five-Year Plan, now published. In research and development, priority is given to agriculture, light and heavy industry, energy provision including nuclear power, housing and sanitation and transport.

The contribution of science and technology to the socio-economic development of the country has so far been relatively insignificant. Although Bangladesh boasts about 30,000 scientists and technologists with postgraduate qualifications, some 7,000 engineering graduates and more than 100,000 lower-level scientists, university research has often been "too academic" and in the government establishments research has often duplicated work done elsewhere. In nationalized industries there has been little initiative for innovative research, and in the private sector there has been virtually no research and development work.

Allocation for science and technology in the Bangladesh Second Five-Year Plan

	Estimated budget (in millions of taka*)
Agriculture	2,400
Industry	1,570
Flood control and water resources	750
Transport and communication	210
Health	390
Education	50
Natural resources	260
Nuclear power	1,000
Science, technology and research	1,550
Others	200
Total:	8,380

*US\$1 = 15.30 taka.

Main spending areas in the new plan (see table) are agriculture, industry, flood control and water resources, nuclear power plants and science and technology research. Of the allocation to science and technology research, nearly half of the 1,550 million takas budget goes to the Bangladesh Atomic Energy Commission. The bulk of the rest goes to the Bangladesh Council of Scientific and Industrial Research, the Space Research and Remote Sensing Organization and the Museum of Science and Technology.

The nuclear power programme includes a plan for the country's first research reactor for the production of radio-isotopes, a new 125-MW nuclear power plant in the western zone of the country and a study of the feasibility of extracting nuclear minerals from beach sand.

The space research organization is to concentrate on the completion of Bangladesh's advanced multipurpose

satellite ground station. The station's equipment is to be developed so that it can receive data from the various satellites including CMS (Japan), TROS-N and NOAT (United States) and METEOR (USSR). Important aspects of the satellite-based work for a developing country such as Bangladesh are a natural resources survey and a disaster-warning network. The five-year plan includes policy recommendations aimed at improving links between research centres and industry, improving primary and secondary education and giving further education a more practical bias. **M. Kabir**

Soviet fertilizers

Going it alone

Fertilizer production has been hived off from the Soviet Ministry of the Chemical Industry and now merits a ministry of its own, under Minister Aleksei Petrishchev, previously deputy chairman of the State Committee for Material and Technical Supply. At the same time, a new Minister of the Chemical Industry, Vladimir Listov, has been appointed. He was formerly deputy minister and has been working in the Party Central Committee since 1977.

These changes provide an indication of the direction of Soviet planning in the next five years, coming as they do in the closing weeks of the five-year plan. "Chemicization", as it is called, was launched by Khrushchev in 1958 and was continued by his successors. But Krushchev himself was less fond of chemical fertilizers than of the "virgin lands" — horizon-to-horizon grainfields in the erstwhile uncultivated steppelands of Asia. In 1965, his successors introduced a new agricultural strategy based on increased investment in agriculture, land improvement (drainage and irrigation) and an emphasis on intensive methods of cultivation, increasing the yield per hectare by the use of fertilizers rather than by expanding the total area cultivated.

The expansion of the chemical fertilizer industry was initially heavily dependent on Western technology, particularly the Pullman-Kellogg ammonia system and urea plants. Indeed, much of the capacity of these plants is still being used to pay off the cost of the equipment under compensation agreements.

Recently, however, the Soviet Union has been stressing its independence in all matters of chemical production. To some extent, this may be a reaction to world events. The main raw materials of the Soviet chemical industry are oil and natural gas, and the Gulf war has produced a spate of assurances that there is no oil shortage in the Soviet Union.

Poland is the Soviet Union's main supplier of another raw material vital to the fertilizer industry — sulphur. Political changes there may force Soviet planners to look more seriously at plans to utilize their

own relatively inaccessible sulphur beds.

Irrespective of politics, however, the Soviet fertilizer industry does seem to have reached a stage of relative technological independence. The new Chirchik ammonia plant, for example, is based on Russian technology and Russian contracting.

In spite of official emphasis on increasing the yield of food crops, Soviet agriculture's capacity for fertilizer remains far from satisfied. In 1976 only 50 per cent of the total grain cultivated area received any fertilizer at all.

The setting up of the new Ministry for the Production of Chemical Fertilizers strongly suggests that all branches of the fertilizer industry are to receive a boost in research and development. It also suggests that the forthcoming five-year plan will maintain the current emphasis on the "non-black-earth" regions in the west of the USSR, where the relatively poor soil demands considerable use of fertilizers.

If, as seems likely, the new ministry plans to build more fertilizer plants, the siting of these plants will be a major policy decision. At present, most plants lie in the non-black-earth zone, handy for the market, but far from Siberia, the main source of raw materials. Plants could, of course, be set up in Siberia, but the Siberian economy is in a bad way. **Vera Rich**

European plutonium

Project denied

Brussels

The future of the European Commission's support of research and development on plutonium cycling is in doubt. Last month, after a year-long search for a compromise, the Committee of Permanent Representatives (COREPER) rejected Euratom's second four-year plan even though this had been approved by the European Parliament last May. Officials now seem at a loss to know how an acceptable proposal can be devised.

The first programme ended in 1979 with what the commission described as "highly significant results" and encouraged it to draw up the more ambitious plan for 1980-84 now rejected. A total of 30 million European Units of Account (1 EUA = £0.56) was for research on the environmental effects of using plutonium (including the reprocessing of plutonium fuel), the transport of plutonium, the fabrication of mixed plutonium oxide and uranium oxide fuels and the recycling of used mixed-oxide fuels from light-water reactors.

France and the United Kingdom have led the opposition to the programme while Germany and Belgium have shown the greatest enthusiasm. The French and British are anxious to have cheap plutonium with which to fuel fast-breeder reactors and would rather buy plutonium from fellow member states than use recycled plutonium from their own reactors — the theory being that this would

increase the supply of plutonium and keep prices down.

Commercial rivalry is also said to have contributed to the rejection of the plan. The United Kingdom has already developed a process for fabricating mixed-oxide fuels and fears that a new research programme may compromise its capacity to collect royalties from the licensing of the process.

The desire to cut back on the commission's budget also probably contributed to the rejection of the programme, and thoughts are therefore now turning towards a "supplementary programme". Unlike a joint programme, this would be financed only by the interested countries.

Germany is committed to the plutonium-cycle programme because it wants to keep all options open, and public pressure at home makes any movement towards improving nuclear safety particularly attractive. Belgium, which generates 20 per cent of its electricity from nuclear power stations, feels that the programme would help towards securing steady fuel supplies. Italy and Holland seem prepared to go along with the programme but Ireland and Denmark are less sure — Ireland because it would draw little benefit in the foreseeable future and Denmark because it is interested only in the safety aspects of the plutonium cycle and would prefer the budget to be halved.

Jasper Becker

Project planning

Staged inquiries

The proposal that major planning issues of national importance, such as the fast-breeder reactor, should be decided in two stages, with a "project inquiry" followed by a local planning inquiry, was debated at a seminar on "The future of the big public inquiry" held at the Royal Institution, London on Monday 24 November.

The proposal has its origins in the work of a working party of the Council for Science and Society which issued a report in July 1979 recommending that project inquiries should investigate major proposals in depth, paying attention to the need for the project and considering all possible alternatives. One objective was to avoid lengthy and sterile wrangles at statutory local planning inquiries and even disruption by frustrated environmentalists.

There has recently been growing dissatisfaction with inquiries on national issues such as the building of major airports and motorways and nuclear installations. The siting of motorways seems to have been a particularly contentious subject and inquiries on such subjects have often been disrupted by highly regarded citizens.

The working party of the Council for Science and Society relied on the assistance

of Justice (the British section of the International Commission of Jurists) and the Outer Circle Policy Unit. The chairman was the barrister Paul Sieghart, vice-chairman of Justice, and the members were drawn from public administration, industry and planning.

At this week's meeting, Lord Kearton (with an extensive background of manufacturing industry) welcomed the proposal for preliminary project inquiries. He said few "big" inquiries were likely to arise in the near future and these would consist of proposals by the government for new motorways or for nuclear installations or refineries from bodies concerned with energy.

Sir Wilfred Burns, chief planner at the Department of the Environment, however, attacked the notion of the project inquiry. He argued that such a process would bring into question decisions reached democratically by parliament, the ultimate arbiter in matters of general policy.

The audience, consisting of officials, planners, consultants and members of pressure groups, seemed on the whole to have been in favour of the concept of a project inquiry. John Tyme, the veteran motorway protester, summed up the need for change by saying that many developers were "biased and ignorant, and many so-called experts on traffic or energy needs had been shown to be wrong".

Kenneth Mellanby

French science museum takes shape

Paris

The new French Museum of Science and Industry is at last beginning to take shape, even if at present only in the form of an architect's model. Two years after the commissioning of a report on the possibility of a new museum, and a year after that report was handed in, the final architectural plan has been selected. This pace, extraordinarily slow even for France, is a result of the problems attendant on a prestige project of this kind in a country in which "prestige" often equals "personal politics".

As originally conceived by the President of France, Valéry Giscard d'Estaing, the museum was to be the scientific equivalent, in grandeur and prestige, of the immensely successful Centre for the Arts created by his predecessor Georges Pompidou. To be erected on the 52-hectare site of La Villette in the north of Paris, the project was to be the largest, most modern science museum in the world. The original report, prepared by Maurice Lévy of the University of Paris, envisaged the conversion of an existing building on the site to a 100,000 square metre showplace of scientific and technical advance (*Nature*, 3 January).

Since then, however, a number of problems have surfaced which threaten to delay the project or to change it a great deal. There have been problems of money; the floor space available to the museum has

had to be reduced by more than half, to 40,000 m²; even so, the whole project is expected to cost 800 million francs — at a time of growing austerity in France. There have been clashes of personality; early in the year Lévy resigned as head of project, to be replaced after a three month interregnum by André Lebeau of the Conservatory of Arts and Crafts, an older, very traditional Paris museum.

Nor has the departure of Lévy ended all the differences of emphasis on policy questions among the museum staff. For example, the director of exhibitions, Goery Delacote, speaks of using the history of science and technology to "show the failures as well as the successes" so as to avoid a "triumphalist" conception of

science, while general director Lebeau maintains that "the historical dimension should be present more to enlighten the comprehension of contemporary science than to tell the story of past science".

Added to all this is the fact that President Giscard d'Estaing retains a final say over all aspects of the museum's planning. Nor is this merely a formality. It was the president who chose the design of the winning architect Adrien Fainsilber from among the seven preselected by an international committee.

Thus the problems of a multiplicity of power centres, ambiguities in conception and increasingly tight financial resources suggest that the new museum is in for a prolonged and difficult gestation period which may last beyond 1984, the proposed date of completion.

Jim Ritter

Will Giscard, like Pompidou, have a centre...