

Czechs revise policy on research funding, aim for a more Western approach

Vienna. The newly created Czech Republic plans to develop a national policy towards research and to adopt a competitive system for awarding grants. That approach is in keeping with a report issued last month by the European Communities calling for university research to be given priority in the short term and for the government to focus on applied research and technological development to achieve long-term economic health. But the report warns that the changes must be implemented gradually to avoid damaging the country's fragile research infrastructure.

Science in Czechoslovakia was well-supported under communism, with levels of spending — at least 2 per cent of gross domestic product — comparable to Western Europe. But a large proportion of the money was wasted as the system had no single body responsible for an overall research strategy and gave out non-competitive awards. Most applied research was handled by government ministries, while basic research was the responsibility of the national Academy of Sciences.

Applied research institutes were run by

several different ministries and funded without regard to the quality or direction of the research; instead, political favouritism largely determined how the cake was divided. Chronically overstaffed, most of these

than 600 scientists but published on average only 12 papers a year. Even so, its funding has been reasonably well-protected since the 1989 revolution.

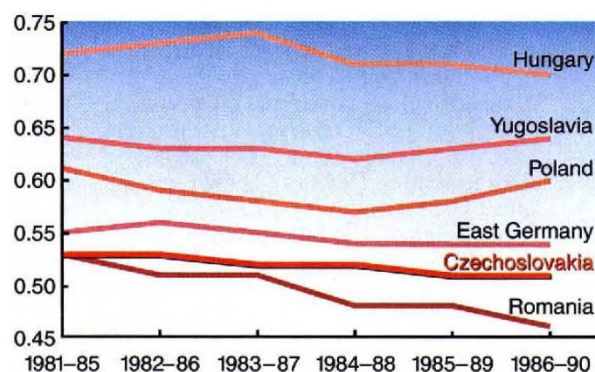
By contrast, industry-linked applied research institutes have fared badly. Government funding has dried up and industry, struggling to survive, has reduced its own commitment to the point where institutes are fighting over the few industrial contracts available. At least half the staff have lost their jobs.

Before 1989, the Academy of Sciences ran more than 70 institutes of varying quality. But because the money was given to the institute, rather than to a specific project, successful research did not attract extra funding. Universities received very little money for research, and only 14 of the republic's 24 institutes of higher education did any research.

Relations between the Academy of Sciences and universities have been strained since 1989. Resenting the academy's power under communism and their own lack of research facilities, the universities originally demanded the right to take over the research institutes. But the academy resisted,

East-bloc science: Impact of cited papers

(world average=1.0)



Source: Institute for Scientific Information, 1991

institutes had questionable relevance to the needs of their parent ministries and contributed little. One institute run by the agriculture ministry, for example, employed more

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Prague institute leads the way

Vienna. Ambitious plans are afoot for a centre of excellence, called the Prague Institute for Advanced Studies (PIAS), in the economically depressed capital of the new Czech Republic.



Peter Pechan

Born out of the idealism of the 1989 revolution, founded officially in 1991, and opened for operation this year, PIAS will be dedicated to research in the life sciences and to technology transfer.

The institute was originally linked to a sister organization in Slovakia, the Slovak Applied Research Centre (SARC), that would focus on the transfer of human skills for technological development. But the two institutes have gone separate ways since the decision, now in effect, to divide Czechoslovakia into two republics.

The future of SARC, which so far has a staff of only six, awaits larger decisions about the economy by the new government of Slovakia.

Prospects for PIAS are much brighter. Three of its five planned research divisions will be established by the end of the year and are already operating with a skeleton staff. The ecological medicine group has begun to assess the effects on health of air pollution in the mining and chemical areas around Teplice in northern Bohemia. Peter Pechan, the institute's

director, calls it "a model programme of cleanup to make up for our country's past". By 1995, divisions of biomedicine and imaging will join existing ones in plant biology and virology to complete the research teams.

A sixth division will organize technology transfer. PIAS has emphasized the development of intellectual property of commercial value, a new concept for the country, with researchers rewarded financially for their inventions. PIAS also wants to set up a science park that would benefit both basic research and industrial efforts.

This month, PIAS moves into a building formerly occupied by a government research institute. During the next five years, it expects to expand in size to more than 350 staff, all on short-term contracts, including collaborators from outside universities with which it intends to form close links. Its faculty will train as many as 50 PhD students a year.

But the best of intentions can be frustrated by harsh economic reality. PIAS will not come cheap, particularly since its dream is to become financially independent. PIAS has just received ECU490,000 (US\$650,000) from the European Communities to cover part of its 1993 expenses. It will receive an additional ECU10.9 million later in the year to cover the capital costs of equipping laboratories. Despite those contributions, the centre will need government contributions to meet an expected annual operating shortfall of as much as ECU4 million during its first five years.

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maintaining that the research enterprise would suffer if suddenly handed over to people without experience. To avoid a stalemate, the government turned for advice to the West.

The result was a large-scale study funded by a programme to help in the restructuring of Central European economies. The study, whose work was interrupted by the decision of the Czech Republic and Slovakia to go their separate ways, was conducted by the British consulting firm Segal Quince Wicksteed of Cambridge.

Some of the study's recommendations have already been implemented. Last month, for example, responsibility for science was transferred to the education ministry, which plans to establish a science unit to set national priorities. But the Ministry of Health will retain its own budget for medical research.

Efforts are also being made to create a system to make competitive grants. In 1991, part of the academy's budget was allocated on a competitive basis but the overall distribution of money did not change. The Ministry of Health introduced a system with a greater impact on funding decisions, and the Ministry of Education plans to use it as a model for an agency that would serve both universities and research institutes. The report advocates a 10-year evolution from a system giving nearly all the money directly to institutes to one allocating at least 85 per cent of its budget to individual projects.

Other recommendations will be implemented very soon. The report says that the first decade's grants should favour disadvantaged universities, giving them a chance to establish expertise in basic research, and it recommends that 20 per cent of the funds be set aside for collaborative work between universities and research institutes. But it argues against transferring the institutes to the higher education sector, saying the move would cause considerable disruption and might not foster such linkages. It wants centres of excellence dedicated to well-defined programmes of applied research, an idea in keeping with recommendations that the Czech Republic should focus on research encouraging long-term economic recovery.

The government is not expected to adopt all the recommendations. The report criticizes the government's decision to take a *laissez-faire* approach to technological development, reflecting a historical fear of authoritarian interference. An applied research centre in Prague (see left) is hoping to beat the odds. As usual, the major impediment to such an ambitious programme is money: since 1989, research funding has fallen by 50 per cent in real terms. In times of such economic hardship, the will to maintain a relatively expensive research base must remain strong if the system is to flourish.

Alison Abbott

Congressional pork cramps NASA's ground-based projects

Washington. Managers of the US National Aeronautics and Space Administration (NASA)'s Earth science programme are struggling to find money for hundreds of ground-based research projects scheduled for 1993. Unless money can be transferred within accounts, managers of NASA's \$150-million Earth sciences research and analysis programme — which includes fundamental studies unconnected to specific spacecraft missions — may, in the words of one researcher, "have to tell some investigators not to go into the field this year". The programme provides grants averaging \$100,000 a year for ground- and aircraft-based investigations.

The shortage, which could amount to as much as \$21 million, results in part from a decision by Congress to spend \$20 million this year on an Earth science information centre in Michigan, the home state of retiring US Representative Bob Traxler, who headed the appropriations subcommittee for NASA. The Consortium for International Earth Science Information Network (CIESIN) was not requested by NASA, nor was it peer-reviewed, making it one of hundreds of so-called "porkbarrel" projects. Traxler retired at the end of last year after serving 18 years in Congress.

To make room for CIESIN, Congress deleted \$15 million from the "mission operations and data analysis" portion of NASA's proposed budget in Earth science. That would have cut funds for analysing data from the Upper Atmosphere Research

Satellite (UARS) launched in 1991 primarily to investigate ozone depletion in the upper atmosphere. Last month, however, NASA and Congress agreed instead to take the money out of the research and analysis budget, temporarily rescuing UARS.

The research and analysis programme includes much of NASA's fundamental work in verifying data from remote-sensing observations in space, including flights over Antarctica and the Arctic to measure atmospheric ozone loss, as well as expeditions to study global tropospheric chemistry, solid Earth geophysics and ocean processes. The money is also used for laboratory research to calibrate the results of such observations.

NASA plans to eliminate some investigations scheduled for 1993 if the money is not restored, says UARS project director Robert McNeal, rather than applying the budget cuts across the board. "I'd rather do some things well than squeeze everybody to the point where nothing can be done", he says.

Berrien Moore, director of the University of New Hampshire's Institute for the Study of Earth, Oceans and Space and an adviser to NASA's Earth Observing System (EOS) project, says that this year's shortage demonstrates that the agency does not have the necessary resources both to build the spacecraft it has planned — including the multibillion-dollar EOS — and to analyse the results from those missions. A budget that's already constrained, Moore says, "can't possibly tolerate these congressional add-ons".

Tony Reichhardt

Chemical weapons treaty signed

London. After 20 years of formal diplomatic negotiation — and many more of lobbying from the scientific community — an international treaty banning the development, production and use of chemical weapons is being signed in Paris this week.

The treaty, likely to come into effect early in 1995, will prohibit all work on toxic chemical agents, apart from what is necessary for purely defensive purposes. It will also require all signatory states that currently possess such weapons — primarily the United States and Russia — to destroy them over the next 15 years.

Formally known as the Chemical Weapons Convention, the treaty is welcomed by scientists who see the technology as epitomizing society's misuse of modern science. "I think it is an astonishing success to have solved all of the many problems involved in a manner agreeable to a large number of states", says Matthew Meselson, professor of molecular biology at Harvard University. Effective policing of the treaty will

depend largely on the operation of a new international agency, known as the Organization for the Prevention of Chemical Weapons (OPCW). Located in The Hague in the Netherlands, it is expected to take on a role comparable to that of the International Atomic Energy Agency in Vienna.

Several compromises have been necessary to reach final agreement. One involves the terms of 'challenge inspections', under which a signatory state can be required to demonstrate that fears of clandestine work on chemical weapons are unfounded. The United States — concerned that such challenges would be used to gather information from military facilities having little to do with chemicals production — has successfully argued that inspectors must wait for up to five days before entering a suspect site.

Similarly, the initial plan called for the destruction of existing stocks of chemical weapons within ten years. The United States and Russia are holding talks on appropriate technologies.

David Dickson