Hungarian science faces sweeping reforms

- Universities will switch to Western model
- New competitive grant system to prune staff

Budapest

In the Soviet-style government laboratories and universities of Hungary, 30,000 researchers will soon be grappling with the ingredients of a brave new world — competitive grants and a graduate research programme. These new features will usher in what officials here say will be the biggest shake-up of Hungarian science since the Communist takeover.

Starved by plummeting government funding and the collapse of private research-based industry, it might seem that Hungarian universities and research institutes could have found a better time to reinvent themselves. But on the other hand, the changes may hold the best promise for saving as much as possible of what's good in Hungarian science.

For an emerging democracy, change — even great change — is to be expected. But Hungary's coming research revolution is due as much to the scientific enterprise's crippled condition as it is to new ideology. In the last three years, government research funding has dropped by 25 per cent relative to the country's economy, from over 2.3 per cent of gross domestic product in 1988 to less than 1.7 per cent in 1990. Compared to the US dollar, government funding has dropped by about half — from some \$200 million (in constant 1991 dollars) in 1980 to \$100 million today.

As hard as this has hit the 3,200 researchers in the 52 institutes of the Hungarian Academy of Sciences, some of whom have been unable to buy test tubes and reagents for over a year, it has been worse for the universities.

Academic science in Hungary has been on a decline since 1947, when the universities were stripped of their best researchers by the government to set up the research institutes of the academy, part of a political ideology that sought to exercise state control of research. At risk of being shut out of research altogether, the universities turned to applied science and technology in an attempt to woo industrial support.

Unfortunately, that worked only too well. By the mid 1980s, over 80 per cent of university research and development (and 40 per cent of total university revenues) was funded by industry. But the industrial sector had its own problems. When, in the latter half of the last decade, the Soviet economy failed, the factories in Central Europe that fed it crumbled also.

Industrial support fell from 76 per cent of total Hungarian science funding in 1980, to just 47 per cent in 1989 (the last year for which figures are available). Recent years have been even worse. This spring, the largest Hungarian electronics company, Videoton, which had relied largely on the Soviet defence industry, announced that it was unable to continue operations. Over 1,000 scientists and engineers may lose their jobs.

Universities have therefore been left with departments working on technology that no one outside of Eastern Europe wants and that no one inside Eastern Europe can afford. They have been out of basic research so long that they have little chance of getting back in on their own, without major help from government.

That is just what the new changes in the Hungarian university system are meant to be — a way to get science back into higher education. Under a new plan — called the Athenaeum Initiative — expected to take effect next year, Hungarian universities are about to get the authority to issue Western-style science PhDs for the first time since the Second World War. At present, the power to issue scientific degrees rests with the granting committee of the education ministry.

Under the Athenaeum Initiative, universities will train graduate students through a four- to five-year, PhD-equivalent science degree. A higher degree, awarded on the basis of scientific achievement and expected to be called a Doctorate of Sciences, will be issued by the Hungarian Academy of Sciences. To further the mixing of science and education, academy researchers will be expected to teach part time, and university professors will be given leave to do research at government institutes.

Along with the reform of graduate education, science officials are also putting into place a new competitive grants programme that will replace the incestuous 'old boys network' that has dominated Hungarian science for four decades. This spring, all Hungarian researchers got a chance to nominate members to the new committees that will evaluate grant proposals for the academy as well as for the Hungarian Research Fund, known as OTKA.

Some 6,000 scientists — almost 30 per cent of the 22,000 full-time scientists now working in Hungary — were selected to serve on the committees and will now get

their first opportunity to rank research proposals independently of party affiliations and institutional loyalties. The committees will be split up into dozens of small discipline-specific subcommittees, much like the study sections of the US National Institutes of Health.

"Previously the idea was to spread the money more or less equally to the [academy] institutes, to keep them all going," says Gèza Bittsàszky, head of the government's secretariat for science policy. "Now the funding will be based on quality. Good researchers will get more than before, and poor researchers will get less and will eventually have to leave. I am convinced that half of the people [in the academy laboratories] must find jobs in other areas. Instituting a competitive grants process is a good way to do this."

Officials hope that breaking up the bloated academy research network will have another advantage — it can help turn Hungary away from second-rate technology and back to the basic research that it can still do well. Like the universities, many academy research institutes turned to industry contracts — and more applied science — to make up for the shrinking government funding of the last decade. And like the universities, they found themselves cut off from both markets and leading-edge basic research when industry collapsed. Some of these institutes — among them the Central Research Institute for Physics and the Computer and Automation Research Institute — have already begun major reforms that are expected to shed applied science groups and eventually cut research staff.

"The government does not give up on the support of technology and technical development," says Hungary's official reform agenda. "The role of the state will be narrowed down in this field, however, and will be more marked in strategic areas where there is not enough competition yet." Officials say that chemistry and agricultural biotechnology are fields where Hungary has been able to keep up with international standards and can still compete.

Behind all the changes is the underlying hope that bringing Hungary's science back into the real world may encourage some of its young researchers to stay in the country. In any one year, some 12 per cent of all Hungarian researchers are working abroad; about one-quarter of those have been away for at least five years. This has hit young researchers the hardest; in the past several years the number of scientists in their twenties and thirties has fallen by 30 per cent in some fields. Seven Nobel laureates are proof enough that Hungary can produce good scientists. Officials hope the reforms will convince some of the departed researchers that it is now safe to come back.

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