South Korea sets sights on G-7 status

Seoul

WITH commercial achievements that parallel Japan's success in the 1970s, South Korea has already achieved a reputation as one of Southeast Asia's economic "little dragons", along with Taiwan, Hong Kong and Singapore. Now the country hopes to follow in Japan's footsteps by establishing itself as a scientific and technological power.

To do that, the South Korean government is planning to launch a \$7,000-million research-and-development project next year with the goal of bringing the country's technological capabilities up to the level of the world's leading industrial nations by 2000. Named the 'G-7 project' after the G-7 group of Western summit nations (the United States, Japan, Germany, France, Italy, Canada and the United Kingdom), the project would be by far the largest single investment ever made in science and technology by the Korean government.

Before the project can get under way officially, the Korean parliament will have to pass the G-7 budget request for fiscal year 1992 (which begins on 1 January), a move that should come in the next few

weeks. Government researchers say that science-related budgets undergo only minor modification during the parliamentary process, so the project is certain to go ahead. The biggest hurdle was overcome earlier this year when the Ministry of Science and Technology and other science-related ministries, such as the Ministry of Trade and Industry, decided to launch the project in 1992.

South Korea hopes that by bringing the

level of its science and technology up, it will be able to join the powerful G-7 group early next century. The political process of democratization in South Korea from 1987 has dramatically increased wage levels and the demand for welfare, pushing

up the cost of production and reducing the international competitiveness of Korean export products. Furthermore, heightened protectionism of technology by advanced nations is restricting the advance of Korean industry, and the only way forward is for the country to catch up with the advanced nations by developing its own indigenous high technology to make value-added products for export. The target of catching up by 2000 may seem ambitious, but over the past three decades South Korea has shown a remarkable ability to develop its science and technology infrastructure.

With the partitioning of Korea at the 38th parallel at the end of the Korean war in the early 1950s, the southern half of the country was left with a largely agricultural economy, few natural resources, a meagre industrial base and very few facilities for research and development. In 1965, government and industry spending on research and development amounted to less than 0.3 per cent of the nation's then-tiny gross national product (GNP).

But as a result of a concerted effort by government and industry, annual investment in science and technology now stands

White lab coats and greasy hands

Seoul & Daeduck

THE quest to secure economic competitiveness has pushed South Korea to establish a number of scientific and technical institutes. Most recently, it has decided that more of its researchers need to get their "hands greasy" if the country is to keep its edge.

The Korea Institute of Science and Technology (KIST) opened in Seoul in 1996 to carry out contract research for industry. By the 1980s its industrial contracts had diminished considerably, as large-scale industries in Korea began to do their own research, so KIST concentrated on longer-term research of national interest. In 1981, it merged with the Korea Advanced Institute of Science (KAIS), a graduate school for scientists and engineers established in 1971 to attract Korean scientists back from the United States and Europe, and to keep the most promising Korean students in the country.

The merged institution, the Korea Advanced Institute of Science and Technology (KAIST), has become a successful university based in the new science town of Daeduck, south of the capital. Its faculty has grown from 30 members in the 1970s to more than 300 now, and it currently turns out each year about 700 doctoral and masters scientists and engineers — 20 to 30 per cent

of South Korea's total output.

KIST — which in 1989 once again became independent from KAIST — has been equally successful, but in a different way. Several new institutes have been created from it, including the Korean Ocean Research and Development Institute, the Centre for Science and Technology Policy, the Systems Engineering Research Institute and the Genetic Engineering Research Institute in Daeduck.

There have been, however, a number of criticisms that KIST and KAIST are not serving the immediate interests of industry, and, partly in response to these complaints, the Korean government established the Korea Academy of Industrial Technology (KAITECH) in 1989. The academy, which currently receives government funds of about \$200 million a year, exemplifies an ongoing change in government science policy: ministries other than the Ministry of Science and Technology — which until now has had the role of being the lead science and technology ministry — are getting deeply involved in research and development policy.

"For twenty years we have tried to adopt the American way of doing research by setting up high-class academic research organizations like the Korea Institute of Science and Technology," says KAITECH president Young Wook Kim, but what is needed, as Japan has shown, is "produc-

tion engineering".

Kim complains that "80 per cent of PhDs in Korea don't contribute to industry. They just play with chalk on blackboards." Instead, he would like scientists to "take off their white coats, put on some blue overalls, and get down among the grease".

KAITECH is offering powerful financial incentives to entice Korea's PhDs to get their hands greasy. The academy will provide 70 per cent of funds, in the form of zero-interest loans, for near-market joint research by academics and industry on such projects as high-definition television. The remaining 30 per cent will come from the companies involved in the research.

If the research is successful in producing a commercial product, the company (or companies) has to pay back 70 per cent of the research funds received from the government. An unusual characteristic of KAITECH support is that forty per cent of these returned funds will go to the individual researchers involved in the successful research project in the form of grants to support the research of their choice.

The idea is to get academics involved in near-market research by offering them the incentive of obtaining research funds from industry for their own academic pursuits.

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