



Republic of Korea

30 Research Equipment Reinforcement Project

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The objective was to promote advanced research and development activities in the areas of biotechnology, machinery, semiconductor analysis, and chemistry by installing state-of-the-art equipment at research institutes in these areas, and thereby contribute to human resource development and advancement of IT in South Korea.

Loan Amount/Disbursed Amount: 2,679 million yen / 2,644 million yen

Loan Agreement: June 1988

Terms and Conditions: Interest rate, 4.25%; Repayment period, 25 years (grace period, 7 years); General unsecured

Final Disbursement Date: August 1993

External Evaluator: Takeshi Yamashita (KRI International Corp.)

Field Survey: August 2003



Evaluation Result

In this project, research equipment was provided to the Genetic Engineering Center, the Korea Institute of Machinery and Materials, the Electronics and Telecommunication Research Institute, and the Korea Research Institute of Chemical Technology. Since each institute reviewed the list of equipment to be purchased in response to technological innovations, the number of equipment items procured was reduced from the planned 271 items to 191. The project period and project cost were almost as planned. The equipment provided to each institute is used in each research area. For example, the equipment for surface analysis of semiconductor materials installed at the Electronics and Telecommunication Research Institute is used to identify causes of defects generated during the production process of semiconductors, and the analysis equipment installed at the Korea Research Institute of Chemical Technology is used for the analysis of molecular structure, etc. in the process of developing new pharmaceuticals and agricultural chemicals. The numbers of patent applications filed and patents obtained by each research institute covered by this project have increased. In particular, the number of patents issued to these institutes has increased almost 4 fold from 334 in 1991-95 to 1,354 in 96-2000. There are many cases where

the research conducted using the equipment procured under the project lead to the development of products, or was put to practical use. This includes the development of an improved HIV virus reagent by recombining genes of antigens highly immune to HIV, and the improvement of seed potato variety, which can substantially reduce production cost thanks to its high resistance to disease and fast-growing feature. The project also contributed to the development of machinery industry, and the improvement of the trade balance structure by generating additional value to various technology and products of South Korea. The executing agency (each research institute) has no problem with the technical capacity, operation and maintenance system, and is in favorable financial condition.

Third-Party Evaluator's Opinion

Installment of equipment for research and development by the project was a very essential for the development of the industries in Korea as shown in the case of semiconductor memory chips.

Third-Party Evaluator: Mr. Keun Lee

Obtained a doctorate in economics from University of California. Presently holds the post of Professor of Economics, the Seoul National University, and Director of Center for Economic Catch-up at the East Asian Institute. Specializes in economy in East Asia.

Changes in the Numbers of Patents Obtained and Patent Applications Filed by Target Research Institutes

unit: case

	1981-1985		1986-1990		1991-1995		1996-2000	
	Patents Obtained	Patent Applications	Patents Obtained	Patent Applications	Patents Obtained	Patent Applications	Patents Obtained	Patent Applications
Electronics and Telecommunication Research Institute (ETRI)	2	3	7	159	252	769	1,104	1,213
Korea Research Institute of Bioscience and Biotechnology (KRIBB)	N/A	N/A	5	13	9	50	73	139
Korea Institute of Machinery and Materials (KIMM)	N/A	N/A	12	N/A	14	N/A	17	N/A
Korea Research Institute of Chemical Technology (KRICT)	5	7	35	56	59	147	160	233
Total	N/A	N/A	59	N/A	334	N/A	1,354	N/A

Source: Data by each institute

The numbers of patent applications filed and patents obtained by each research institute have increased substantially. The number of patents obtained in 1996-2000 is 4 times that in 1991-95.

Use of Procured Equipment



Fourier Transform Nuclear Magnetic Resonance Instrument (FT/NMR)



Automatic-control culture system

The Fourier transform nuclear magnetic resonance instrument (FT/NMR) provided to the Korea Research Institute of Chemical Technology is still used for analyzing approximately 20,000 compounds related to pharmaceutical and agricultural chemicals a year. The automatic-control incubator provided to the Korea Research Institute of Bioscience and Biotechnology played an important role in the development of the improved HIV virus reagent.