国際協力銀行

韓国の高度経済成長に果たした円借款の役割

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The Institution for Industrial Policy Studies (IPS)

Meta Analysis of Ex-Post Evaluation Reports by Country and Sector

Country Review Report

KOREA

Final Report

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1. Introduction

1.1 Background

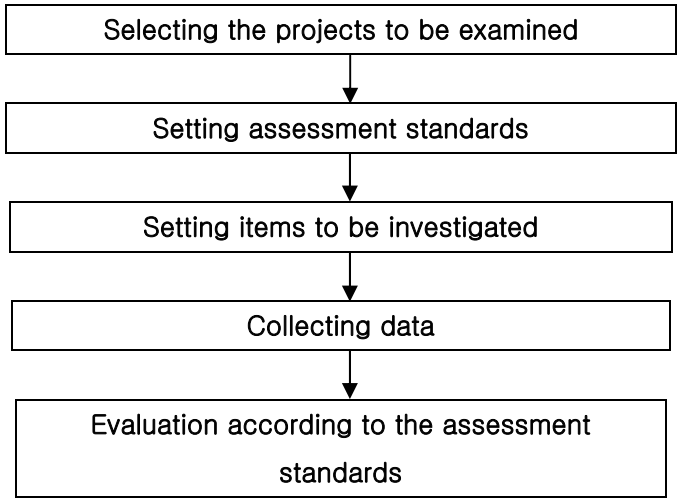
During the past few decades, Korea has recorded rapid economic growth which has attracted much attention around the world. Looking back, it is undeniable that Korea has received abundant and diverse developmental assistance from the international society for an extended period of time. Providing a solution to relieve Korea from chronic poverty and the vicious circle of underdevelopment in a short period of time, using only her own resources, would have been practically impossible. As such, Korea needed external assistance from the international society. It was necessary to actively utilize the loans provided by the international society, in order to overcome backward technology, poor capital resources and limited natural resources, to reconstruct the economy. This study will examine and evaluate the contribution of the JBIC loan projects, which took part in the development process of Korea since the 1960s, and highlight successful cases of economic cooperation between the two countries.

1.2 Study Framework and Methodologies of the Study

This study will proceed through the five stages listed below

-Selecting the projects to be examined
-Setting assessment standards
-Setting items to be investigated
-Collecting data
-Evaluation according to the assessment standards

<Figure 1-1> Study Procedure



Phase 1: Selecting the projects to be examined

Method: Documentation analysis

This phase concerns the selection of projects, among the thirty-six JBIC loan projects, that match best the characteristics concurrent with Korea's economic development stages. This phase provides the groundwork that elicits the effects of JBIC loan projects on Korean economic development, through the selection and assessment of the projects which are most representative to each economic development stage and conform to the Five-Year Economic Development Plans implemented since 1962.

Phase 2: Setting assessment standards

Method: Searching records, documentation analysis, brain storming

For the objective assessment of each JBIC loan project, this phase will lead to the development of objective assessment standards through discussion between chief researchers from the relevant fields.

Phase 3: Setting items to be investigated

Method: Searching records, documentation analysis, brain storming

Reducing trial and error during field investigation; designing an effective field investigation by creating an advance study item list for data collection efficiency; and finally, deciding on an item list in advance in order to later prepare a report that corresponds most relevantly, to the main purpose of this phase.

Phase 4: Collecting data

Method: Primary and secondary data, searching records, interviewing

This data collection phase is the necessary step in deriving fair and objective research results, concerning the evaluation of JBIC's loan projects in Korea, by collecting unprocessed (raw) primary and secondary data. The data collect on this phase may occur at any time of demand, and additional information may be gathered through interviews and additional record searching activities.

Phase 5: Evaluation according to assessment standards

Method: Primary and secondary data, interviewing, searching records, documentation analysis

Through the data collected in previous phases 1, 2, 3 and 4, this phase evaluates the JBIC loan projects objectively and impartially. By continuously reviewing the data, collected by all researchers participating in this study, this phase acknowledges the impact assessment

attributed by JBIC loan projects and the mechanism of Korea's economic development related to the JBIC loan projects.

<Table 1-1> Status of Collected Data

Department(Agency)		Ministry of Construction and Transportation	Ministry of Agriculture and Forestry	Ministry of Health and Welfare	Ministry of Finance and Economy	Ministry of Information and Communication	Ministry of Education and Human Resources Development	National Agricultural Cooperative Federation	Local Autonomous Entities	Korean Meteorological Administration	Ministry of Environment
Category	Item										
Social services	Waterworks Supply	0							0		
	Waterworks Demand	0							0		
	Drainage Disposal	0							0		
	Waterworks Purification	0							0		
	Electrical Generation	0									
	Number of Theses						0				
	Material Availability						0				
	Number of Hospitals			0							
	Hospital Vacancy Rate			0							
	Medical License Pass Rate			0							
	Environmental Index										0
	Technology Transfer Rate				0						
	Employment Creation				0				0		
	Cash Flow				0						
Tele-communication	Long-Distance Domestic Calls					0					
	Weather Forecast Prediction									0	
Agriculture· Fisheries	Agricultural Production		0						0		
	Farm Household Income		0						0		
	Farming Equip. Popularization		0						0		
	Pork Consumption		0					0			
Manufacturing	Industrial Structure				0						
Transportation	Ease of Transportation	0									
	Commuting Population	0									
	City Traffic Speed	0									
	Environmental Index										0

2. Economic and Social Trends in Korea

2.1 Politics, Society and Economy

(1) Politics

Although Korea gained independence on the 15th of August 1945, the Korean peninsula was divided along the 38th parallel and the two halves soon underwent the Korean War. The chaotic political situation in Korea after the Korean conflict was followed by two years and seven months of military administration which resulted from a coup d'eta by the military in 1961. Political stability was achieved after the inauguration of President Park, Chunghee, who was elected in the presidential election held in October 1963. In order to pursue the "grow-first, distribute-later" policy, President Park, Chunghee declared a state of emergency and invoked martial law on the 17thof October 1972, and announced the emergency measures of: dismissing the National Assembly; suspending political party activities; partially suspending the Constitution; and calling upon an emergency state affairs council. The Korean government organized 'the National Conference for Unification' and established the 'Constitution for Revitalizing Reform' through a popular referendum. A presidential election was held according to the new Constitution on the 15th of December, and Park, Chunghee was elected as the 8th President. In addition, promulgation of the 'Constitution for Revitalizing Reform' officially set off the 4th Republic. The governing structure of the 4th Republic was that of a dictatorial presidency, in which the all three branches of power: jurisdiction, legislative and administration were concentrated to the President. The political stability of the 3rd and 4th Republic formed the foundation for rapid economic growth. The gross national income in 1972 was $255, whereas, it increased by 5.8 times to $1,481 in 1980. With the success of the Five-Year Economic Development Plans lead by the government and diffusion of the Saemaul Movement, Korea developed into a heavy and chemical industry-based country from an undeveloped farming nation. However, foreign dependency deepened in the late 1980s for the Korean economy, because of the government's export-oriented political measures; and due to the 'grow-first' development policy, the income distribution gap continued to widen.

(2) Society

When Korea gained her independence, her economic foundations were weak, being based on farm production. After the Korean War, the stratum with vested rights collapsed and social flux increased, leading to high interests in education and desires to elevate social

standing. This led to the realization that human resources ought to be considered as a new 'growth engine' to the resource-poor country, and gave strength to the government-led "grow-first, distribute-later" economic development policy. In order to accomplish the "grow-first, distribute-later" policy, the Korean government imported loans, actively pursued the Saemaul Movement, and led a forced savings campaign, therefore, utilizing these financial resources and applying them to export-led industrialization throughout the end of the 1980s.

<Table 2-1> Statistics on Investment and Savings for Each Economic Development Plan Period

(Unit: Percent)

	1962-1966	1967-1971	1972-1976	1977-1981	1982-1986
Total Investment Rate	15.1	26.4	27.8	35.5	31.6
Domestic Savings	6.1	13.1	18.2	23.9	27.4
Foreign Savings	8.8	12.9	9.8	11.2	4.2
Foreign Assistances	7.3	10.7	-	-	-

Source: Facts and Figures on the Public Sector of Korea, Korea Development Institute

Nevertheless, the socio-economic system of the late 1980s structured by the "grow-first, distribute-later" policy started to collapse, due to rapid international and domestic environmental changes such as democratization, globalization, and the collapse of the Cold War. Correspondingly, labor-management conflict intensified, causing impervious reaction to international conditions, and resulting in a delay in necessary reform efforts.

(3) Economy

The Korean economy, which had gone through the 1950s recovering from the damage inflicted by the Korean War, began an intensive growth period in the 1960s. After the coup d'eta in 1961, the 3rd Republic established the Economic Development Plans under the slogan of "National Modernization," and actively sought overseas loans to help implement the Economic Development Plans. As a result, the Korea economy recorded marvelous growth, at an average rate of 8.8 percent per year, during the 1st(1962-1966) and 2nd(1967-1971) Five-Year Economic Development Plans. Moreover, during the terms of the 3rd(1972-1976) and 4th(1977-1981) Five-Year Economic Development Plans, the growth of the Korean economy continued on track.

<Table 2-2> Ten Major Events Changing the Korean Economy

	Problems Faced	Countermeasures (Political/Social/Economic)	Results
The Korean War(1950)	War damage, Destruction of Industrial Base North/South Confrontation and National Defense Defrayment	U.S. Support and Aid Competition between Political Systems	Dependence on the U.S. Increased Military Culture, Social Rigidity
Commencement of the Five-Year Economic Development Plans (1962)	Poverty, Order Restored, Social Training begins	Distribution Supervised by the Government Cooperation with Large Conglomerates Priority on Economic development	Basis for Rapid Growth Economic Value Priority Government Planned and Government-Led Finance
Normalization of Diplomatic Relations between Korea and Japan (1965)	Economic Recession/ Bottleneck in the Five Year Plan: Decline in Foreign Assistance and Lack of Financial Resources	**Agreement on the Normalization of Diplomatic Relations between Korea and Japan** **Induction of Foreign Capital (including right of claim)**	Partners in Economic Growth **Dependence on Japan Increases (facilities/importing parts)**
Oil Shock (1973, 1979)	War in the Middle East and Rise in Oil Prices Trade Deficit Increases	Pursuing a Low-energy Industrial Structure Overseas Construction Boom (Middle East Oasis)	Failure in Converting into an Energy-efficient Industrial Structure Overheating Real Estate Market
Investments in Heavy Industry (1977)	Limits of the Light Industry Exposed The North Korean Threat	Developing of Key Industries Politic Loans and Industrial Support	Industrial Structure Development Diversification by Conglomerates(Chaebol) Overinvestment Aftermath
10/26 Incident (1979)	Political Crisis and Social Disorder Overinvestment in Heavy Industries	Military Administration and Emphasis on Public Order Restructuring and Stabilization Policy	Recovery after Minus Growth Delay of Democratization/Systematic Reform
The Three Lows (1986-1988)	'Plaza' Agreement and 'The Three Lows' Golden Opportunity Changes in Market Conditions: the Rise of ASEAN	Acceleration in Investment and Rapid Development Import Liberalization Loss of Administrative Objectives	Dissemination of High costs and Economic Bubbles Failure in Surplus Management Rampant Real Estate Speculation
6/29 Announcement (1987)	Demands for Democratization	Laissez-faire Policies Priorities on Political Logic rather than Economics	Heightened Labor-Management Conflict Accumulated Inefficiencies: Express Railroad Construction
Civil Reformation (1993-1997)	Initial Economic Recession Limitations in the Rapid Growth Model WTO Regime and the Collapse of the Cold War	Economic Development and Facilities Expansion Inexperienced Economic Diplomacy Multiple Reforms	Accumulation of Insolvency and Defective Government Structure International Credit Rating Drops Conflict Continuance and Tardiness of Decision-Making

IMF Crisis (1997-2000)	Asia's Economic Instability, Currency Crisis Influence of International Financial Society Increases Critical State of Internal System Deficiencies	IMF-supported Finance and Directives Accepted Political Power Change and Reform Crisis Management and Restructuring	Downfall of the Middle Class Dissemination the Global Standard Reorganizing Corporations

Source: Samsung Economic Research Institute

2.1.1 Evaluation of Political, Social and Economic Trends in Korea

Even before Korea had the chance to fully enjoy independence from the Japanese, the Korean War broke out, which completely devastated the economy. However, South Korea, which had accepted the market economy system, persevered and went through noticeable change and development in the areas of politics, society and economy, achieved along with the rapid industrializing process during the ensuing half-century. These stages are organized below in chronological order.

<Table 2-3> Major Characteristics of Periods during the Past 50 Years in Korea

	Politics	Society	Economy
Period of Disorder (Indep.-5.16)	Conflict among Political Factions Government-led Administrative Economy	Capital Formation through Forced Savings Reconstructing Production Capabilities Reform of Agricultural Land Ownership	Economic Assistance Cartels Monopolizing Resources
Escape from Poverty (1962-1971)	Efforts to Legitimize Political Power (Park, Chunghee regime)	Impoverishment in the Rural Communities / Urban Problems Escape from Hunger and Poverty Dispatching Troops to Vietnam	Loan-based Economy (Korea Japan economic cooperation etc.) Emergence of Conglomerates Politico-economic Collaboration
Heavy Industry Investment Increases Need (1972-1979)	Seeking Political Stability and Emphasis on Self-supported National Defense	Aggravation in the Distribution Structure Construction of the Kyungbu Highway and Nuclear Power Plants	Fostering Heavy Industries Acceleration in Government-led Industrialization
Stability and Opening (1980-1987)	Efforts in Legitimizing Political Power (Chun, Doohwan regime)	Over-Consumption, Real Estate Speculation (Bubble economy)	Opening/Liberalization of the Economy Regulation of the Heavy Industries
Expression of Democratization (1987-1991)	Emphasizing Differentials from the Old Regimes Increasing Conflict Among Stakeholders	Demands for Democratization Boom in New City Development Worsening of Labor-Relations	Active Economic Support Policies Popularity-Based Economic Policy

			Failure in Surplus Management
Significant Reformation (1992-1997)	Credibility Loss in Government Policies Moral Hazard Problems	Real Name System in Finance/Real Estate Sectors Rapid Increase in Consumer Goods Importation	Acceleration of Insolvent Economy Globalization of Economy Slogan-Based Economic policies
IMF Regime (1998-present)	Emphasis on Coping with the Economic Crisis	Polarization of the Social Stratification System Surge in Perception of a National Crisis	Reform of the Economic System Industrial/Financial Restructuring Strengthening the Market and Competition System

Source: Samsung Economic Research Institute

2.2 National Economic Development Plans

Economic Development Plans were first introduced to developing countries after World War II. There were two types of Economic Development Plans invoked by many market economies: one was the developed-country type, and the other was the underdeveloped-country type. The developed-country type was a plan with countermeasures concerning estimates and function of the economy, whereas, the undeveloped-country type was a so-called development plan for undeveloped countries. The former plans the directions for business and financial activity to prevent economic recession, the latter utilizes effective and generalized resource allocation in order to achieve rapid economic growth. In other words, as an intentionally planned overall economic policy by the government, it aims to achieve rapid economic growth, and pursue industrialization and social modernization, along with strengthening the cooperative relationships with developed economies. It was in 1962 when Korea commenced her first Five-Year Economic Development Plan. The original plan was written by the Industrial Development Committee, affiliated with the Ministry of Reconstruction in 1958 as a Three-Year Plan of Economic Development. This plan was expected to be implemented in 1962, but was scrapped after the 4·19 Movement in 1960. However, this was the first individual comprehensive development plan for the Korean economy, presenting developmental objectives covering economic growth; investments; employment; and international trade balance etc., and greatly influenced the later Five-Year Economic Development Plans. This was an overall plan drafted with long-term views (7 years) starting in 1960, and it became the foundation of Korea's economic development planning, in ways that objectives were selected and the draft itself was drawn up.

The 1st Five-Year Economic Development Plan(1962-1966)

The 1st Five-Year Economic Development Plan set its fundamental objectives on correcting all socio-economic vicious circles and constructing a basis for achieving a self-supporting economy. Inspiring creative efforts to private firms based on the principle of free market competition was an important part of the plan. Another was, for the government to actively support economic development in terms of finance, banking and foreign exchange, and directly or indirectly participating in key industries and other important fields which private firms could not, thus focusing development on strategic sectors. So the plan set the overall economic growth rate and then, provided a total economic model which referred to production, investment, employment, and import/export figures, arranged individual business plans, and designed production goals and investment by category.

Though the expected average growth rate of GNP was 7.1 percent during the 1st Five-Year Plan, the actual rate was 8.5 percent. This was 3.1 percent higher that the annual average growth rate of 5.4 percent during the previous five years before execution of the plan. During the plan, GNP per capita increased from $82.60 in 1960 to $126 in 1966. The industrial structure in 1960, composed of 35.2 percent primary industries, 19.2 percent secondary industries, and 45.6 percent service industries transformed to; 31.7 percent primary industries, 25.7 percent secondary industries, and 42.6 percent service industries. As a result, the portion of primary and service industries decreased, whereas, the manufacturing industry increased. This elicits the fact that the rapid growth rate during the 1st Five-Year Plan was supported by the growth of the manufacturing sector.

The 2nd Five-Year Economic Development Plan(1967-1971)

The 2nd Five-Year Plan was based on long-term views, which looked at the internal and external economical conditions and market mechanisms, and was at a much larger scale. If we were to say that the 1st Five-Year Plan concentrated on constituting industrial conditions, we may also say that 2nd Five-Year Plan focused on reinforcing the base of industrialization. Although, the main objectives of the 2nd Five-Year Plan were about modernizing the industrial structure and enhancing the establishment of a self-reliant economy, some objectives were adjusted and reinforced. As an example, the target GNP growth rate was elevated from 7 percent to 10 percent.

Industrialization in Korea increased enormously during this period. Chemical fibers, combed wool products etc., which were not produced before 1966, were now being produced, and the manufacturing sector, including plywood, oil refinement, automobiles and machines etc., grew rapidly. The manufacturing sector growth rate was 20.2 percent

in 1967, and in the target year 17.3 percent. During the plan; a high growth rate of 19.9 percent was accomplished. The service industry recorded 14.6 percent growth in 1967 and 9.8 percent in 1971, recording an annual average growth rate of 12.7 percent; and compared with the annual average growth rate of 1.6 percent in the primary industry, the manufacturing sector recorded a growth rate of nearly 20 percent. Overall, the total growth rate of 6.6 percent in 1967 increased to 9.4 percent in 1971, and recorded a high annual average growth rate of 9.7 percent.

With export-led industrialization in full steam, the 2nd Five-Year Plan pursued policies promoting exports, reducing custom duties, easing restrictions on imports etc.; implemented policies on increasing consumer products exports and import-substituting intermediate goods; and set developmental priorities on attracting foreign loans and expanding basic social overhead capital. Exports increased rapidly, and the national economy's dependency on exports increased two-fold, from the 1st plan's average 8 percent to the 2nd plan's average 15.8 percent. During the period of the 1st plan, basic industries and industries for domestic demand, such as power generation, synthetic fertilizer, textile and cement, led economical growth; whereas, export industries, such as synthetic fiber, petroleum, chemical and electric, induced growth during the 2nd Five-Year Plan. Therefore, annual exports increased 38 percent, and the total export amount in 1971 exceeded $1 billion. Compared to the $320 million in 1967, this amount expanded more than three-fold.

This type of export-led industrialization also significantly influenced the industrial structure. The proportion of the mining and manufacturing industries in total GNP, increased from 15.1 percent in 1967 to 20.9 percent in 1971. During the same period, the primary industry declined from 37.5 percent to 28.8 percent, while the manufacturing sector increased by 5 percentage points.

Despite the fact that the industrial structure changed and that the proportion of manufactured goods increased in exports, industrialization brought about increased demands for investment funds to continue rapid economic growth. As a result, the national economy's dependence on imports intensified during the period of the 2nd plan, and the trade balance deficit increased. Although, the export drive of the 2nd Five-Year Plan contributed to rapid growth and industrialization, increased dependency on foreign capital funds caused a chronic disproportion to the trade structure. To be more specific, the deficit on trade balance grew to $469.60 million in 1966, and import dependency increased from 16.7 percent to 26.3 percent. This kind of import augmentation contributed greatly on economical growth, but also induced a great deal of imports.

The 3rd Five-Year Economic Development Plan(1972-1976)

The 3rd Five-Year Plan (1972～1976) emphasized qualitative factors to ensure continuous industrial growth. This was to drive economic growth, stability and balance, and stress rural development. It also aimed at promoting the heavy industries and lowering the export/import dependency on capital goods. Therefore during the 3rd plan, the objective annual average growth rate was set to 8.6 percent, which was lower that the rate of 9.7 percent in the 2nd plan. This type of arrangement was intended to balance growth and stability.

The 4th Five-Year Economic Development Plan(1977-1981)

The 3rd Five-Year Economic Development Plan (1977~1981) had its objectives in; establishing a self-guided growth structure; increased equity through community development; renovating technologies and improving efficiency. In 1977, imports reached $10 billion and GNP per capita recorded $944. However, numerous problems appeared in 1978: high commodity prices, real estate speculation, shortage of necessities, bottlenecks in production etc. Although, the second Oil Shock in 1979 brought crisis upon the Korean economy, and events of social unrest and failure of grain crops overlapped in 1980, causing minus growth, the economy recovered in 1981.

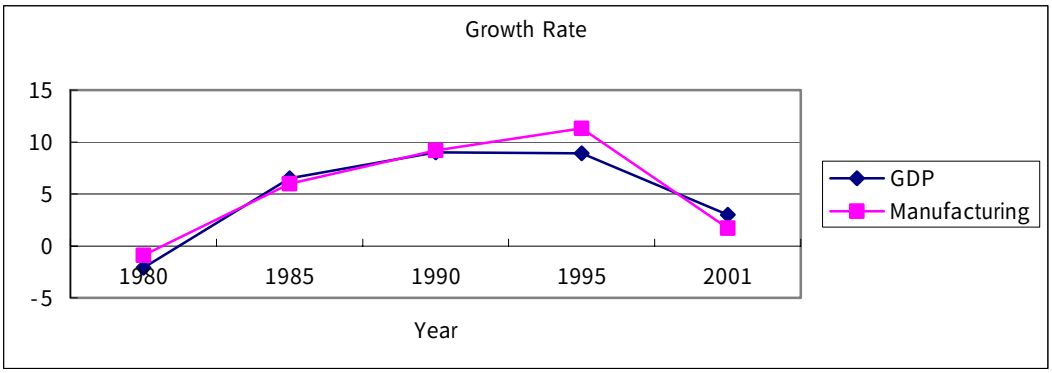
The 5th Five-Year Economic Development Plan(1982-1986)

The 5th Five-Year Economic Development Plan, excluded 'growth' which was always included in previous plans as a keyword. Instead it emphasized price stabilization/liberalization, intensified market competition, and development of rural and backward areas as important subjects, under the basis of stability, efficiency and equilibrium.

The 6th Five-Year Economic Development Plan(1987-1991)

The 6th Five-Year Economic Development Plan had its basic objectives of economic advancement based on efficiency and equity, and the promotion of national welfare. It was basically to establish the first step in entering an advanced society within the 21st century. Now with trade surplus, pressure for market liberalization and demands for income transfer intensified. As a way to cope with these matters, the following were considered as important assignments: establishment of order within the market economy based on self-regulation, competition, and liberalization; improvement in income distribution and enlargement of social development efforts; modification of the industrial structure towards one based on high technology.

<Figure 2-1> Growth Rate



As a result, the economical growth rate marked 10 percent, exceeding the objective of 7.5 percent; unemployment recorded 2.4 percent bringing secure employment; and the domestic savings rate reached 36.1 percent, more than expected. On the other hand, import dependency was 26.4 percent, lower than expected. However, expected commodity prices were only suppressed 3.3 percent, through higher than expected. In terms of international trade balance, exports increased faster than the plan, but imports grew even faster creating an $8.7 billion deficit, thus, failing to establish a trade surplus base. Referring to the industrial structure, the proportion of: manufacturing industries in 1991 decreased to 28.5 percent; and agriculture and forestry industries dropped to 7.7 percent; in contrast, service sections and the like increased a great number. Continuing efforts in sustaining equilibrium among regions, the rate of roads pavement was 76.4 percent, which was higher that the objective.

Important Outcomes of the Economical Development Plan

1st Plan('62～'66): Ulsan Refinery completion, establishing the goal of $100 million on exports

2nd Plan('67～'71): Opening of the Kyungbu, Kyungin, Honam Highways, direct dial phone connections between Seoul and Pusan

3rd Plan('72～'76): Pohang Iron and Steel Co., Ltd completed, opening of the Seoul Subway, opening the Yongdong, Donghae Highways

4th Plan('77～'81): Achieving the goal of $10 billion on exports

5th Plan('82～'86): Surplus in the International balance of payments

6th Plan('87～'91): Hosting the 24th Olympics in Seoul, new city development

3. Japanese ODA Loan Projects to Korea

3.1 Loan Conditions for Korea

Plans for cooperation and developmental support from JBIC to Korea was initiated in 1966 by the agreement between the Korean government and JBIC (formerly OECF), at a time when foreign funds were desperately needed for the country's economic development and soon after normalization in diplomatic relations between Korea and Japan took place. This cooperative endeavor ended on September 3rd1996, after three decades. Under the agreement between the two countries, there were ninety-one individual projects, using JBIC's cooperative funds, adding up to a total of 599,908 million Yen.

3.2 The Role of Yen Loan for Policy Change of the Korean government

Improving relationships with Japan for economic pragmatism

In the economic situation where foreign currency was short, unemployment rates were high and financial resources were at almost total exhaustion, due to domestic problematic economic situations, the government strongly felt the need to improve relationships with Japan for economic pragmatism. For the only chance to liquidate destitute of financial resources, needed for establishing fundamental grounds for industries, it was believed that this was only possible through normalizing diplomatic relations between Korea and Japan, thereby inducing foreign capital.

6·23 special colloquial with president Park, Chunghee
"Under the international society's competition we can no longer linger to cling onto the emotions of the past; therefore, no mater how much they are recalled as enemies of the past, if it is needed for our present and future, rather would it be wise for us to hold hands with them in order to achieve benefits for our nation and citizens"

In order to seek settlement on the issues of right of claims against Japan, after seven conferences, the government finally pronounced the agreement to normalize diplomatic relations between Korea and Japan on June 22, 1965.

Korea·Japan Diplomatic Relations Normalization Agreement

◆ Opening seven conferences to settle issues on the right of claim against Japan.
 -Korea requesting eight hundred million dollars, and Japan suggesting seventy million dollars, leading to continued breakdown of negotiations.
◆ Main agreements: the import of right of claim funds against Japan amounting five hundred million dollars
 -Payments of three hundred million dollars within 10 years without compensation
 -Providing loans of two hundred million dollars within 10 years, with annual interests of 3.5%, 20 years repayment period and 7 years grace period
◆ Providing with commercial loans of three hundred million dollars+ α

Through this, the government achieved stability for the administration and was able to secure foreign currency to promote the 1st Economic Development Plan, thus, giving an impetus to overall economic development.

Securing financial resources for economic development and establishing grounds for industrialization

The right if claim funds imported for 10 years since 1966, provided opportunities for Korea to escape from the previous system of economic cooperation, which was solely dependent on the US after independence. Also, the Japan loans introduced during this time corresponded with each phase of Korea's economic growth, which facilitated to meet demands for financial resources needed for her development. The Korean government well utilized these funds and applied them for the continuous acceleration of economic development policies. Despite trade balance deficit, the international reserves in Korea sustained expansion, and the annual growth rate exceeded to 8.5% compared with the initially estimated 7.1% through the years 1962~1966.
In addition, the right of claim funds gave diverse effects to the industrial structure. The secondary industry's share of total GNP steadily increased from 21.7% in 1962 to 23.5% in 1966, and as industries on producer's goods were promoted compared to consumer's goods, working grounds for industrialization were readily established.

Right of claim funds against Japan implemented on the Pohang Iron-mill

The arguments and attempts to construct a iron-mill, which was the key industry producing materials fundamental to other industries, continued on throughout the course of reconstructing the economy. However, such attempts were not easily accomplished, and until the end of the 1960s, Korea's steel industry sojourned at a small and conventional level. Afterwards, on January 1632, the "Steel Industry Promotion Plan" was decided on a vote to construct an iron-mill capable of producing one million tons annually. However, in the process of revising the 1st plan, which was planned with overwhelmed enthusiasm, the plans to construct the iron-mill had to be set aside once again. As unexpected situations occurred, in terms of political and economic matters, when dealing with promoting the integrated iron-mill construction; in June 1969, the Economic Planning Board established the "Integrated Iron-mill Project Committee" which reconsidered the iron-mill construction project from scratch and drew up new plans. The biggest problem of the issue was, obviously, about securing construction funds required for promoting the project. However, as it was judged that recruiting funds from the expected countries (US and Germany) would be problematic, Japan became a new partner. Accordingly, the government, which concluded that further requests for additional funds from Japan would be difficult, instead decided to utilize right of claim funds against Japan to support funds for the construction of the integrated iron-mill.
(Foreign currency of 168.09 million dollars were imported through the Establishment of Standard Agreement between Korea and Japan in December 1969.)

<Table 3-1> Changes in the Industrial Structure

(Unit: Percent)

	1966(Right of Claim)	1971	1975	1979
Light industry	65.9	61.9	54.1	47.9
Heavy chemical industry	34.1	38.1	45.9	52.1

Source: The Bank of Korea, National income account

Worsening of the economic structure's foreign dependency

By importing right of claim funds, the government elevated economic growth in the

short-term, but caused adherence to foreign dependency in the mid and long-term. In other words, it was inevitable for the government, which was absolutely short in capital, to concentrate on growth depending on foreign currency. However, this in return resulted in the vicious circle of import dependency. Between the years 1960~1970, import dependency in the overall industry rapidly increased from 8.4% to 13.3%, and caused the phenomenon of enlarging trade deficits against Japan from years 1962~1966 which recorded 710 million dollars to 2,610 million dollars from the years 1967~1971. Furthermore, due to the growth solely depending on foreign currency, Korea suffered a direct blow from the exterior economy, and disclosures showing that the Korea economy has a weak constitution continued on.

3.3 First Round to the Third Round of ODA Loans

At a time when domestic economic difficulties were abound with foreign capital short, unemployment rate high, and financial resources exhausted, in 1965; it was in this difficult economic situation for Korea when normalization in diplomatic relations between Korea and Japan took place. JBIC funds were provided as part of the right of claim on capital. These funds focused mainly on economic developed assistance, and were utilized in general sectors of agriculture, transportation, education, medicine, infrastructures etc., thereby, contributing to the establishment of sustained working grounds to the Korean economy and increasing productive capabilities.

1st Phase: Korea-Japan Cooperation through Right of Claim on Capital

The loans provided during this period composed $300 million of non-compensational, $200 million of compensational, and $300 million of private capital. Korea became the first JBIC program participating country, and after 30 years, it also became the first country to graduate from the JBIC cooperative funds. The funds provided during this phase were part of the right of claim capital, and was invested with a priority on various loan projects including compensational projects. The funds were mainly invested in social overhead infrastructures, including railroad facilities and industrial groundwork, and the very first and significant project was the reconstruction of the Han River Bridge, which was badly damaged during the Korean War.

2nd Phase: Korea-Japan Cooperation during the Rapid Economic Growth Period

As a result of the Korean-Japanese Ministerial Meeting in 1970, new memorandums which included funds for; agricultural modernization, promotion of small and medium-sized

enterprises, and constructing multipurpose dams, were exchanged. Throughout this phase, cooperative funds of ￥200 billion were invested in twenty different projects. During this period, the Korean government's domestic economic policy was emphasizing heavy and chemical industries, and correspondingly, the JBIC cooperative funds were invested heavily in twenty export-oriented industries, such as constructing an integrated steel works facility, and also supporting the development of industrial parks.

3rd Phase: Korea-Japan Cooperation in the Developed Period

Upon Japanese Prime Minister Yasuhiro Nakasone's visit to Korea in 1980, a new era of economic cooperation between the two countries was proposed. Loans amounting to ￥330 billion were invested in forty-one projects, reinforcing economic cooperation between the two countries. The significant projects during this period were: construction of subways; construction of sewage disposal plants; and construction of multipurpose dams, such as the Soyang River, Ahndong and Daechung dams.

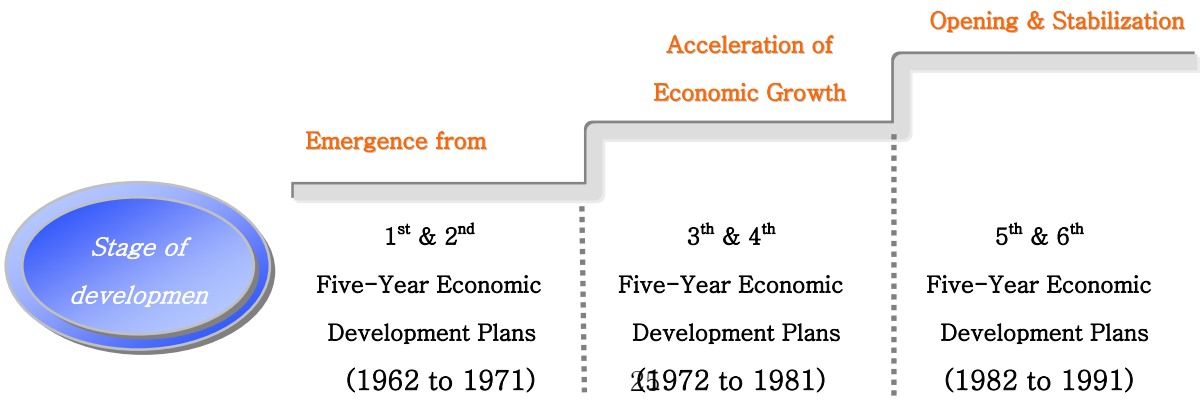
3.4 Trends in Economics Assistance to Korea

Korean Side

To grasp precisively a comprehensive and coherent view on JBIC's developmental assistance and cooperative projects to Korea, seems to be a difficult task. This is because the some of the cooperative projects were implemented as long as forty years ago, and that the projects were carried out by various agencies and enterprises, participating as donors and recipients.

As a result, various limitations are determined to exist; in understanding the impacts and effects brought by the general scope of JBIC development assistance and cooperative projects. Accordingly, in terms of evaluating the achievements aspirated from JBIC's developmental aid and cooperative projects, it is most desirable to find its meaning under the lines of Korea's economic growth.

<Figure 3-1> Korea's Five-Year Plan of Economic Development



Developmental Assistance and Cooperative Projects in the stage of Recovery from the Korean War and Economic Reconstruction (1949-1960)[1]

Since the country's foundation, until the 1950s, U.S. support focused mainly on emergency assistance and the military sector, for cooperative security reasons, until the 1950s. These supports were provided with foreign policy and national security objectives in mind.

The U.S. implemented various economic reconstruction plans in Europe and Asia, which nations were devastated in the World War II. These plans were processed with the full backing of the Foreign Assistance Act of 1949, which was part of the "Marshall Plan" initiative. Rather than considered as support for economic reconstruction, the policy emphasized international security and strategic importance, and provided needed assistance to its allies against the Soviet Bloc.

Developmental Support and Cooperative Projects in the Former Term of Economic Development (1961-1975)[2]

The assistance to Korea, when the development period began to unfold, showed different conditions, characteristics, offer methods etc. Although, most of the support during the 1950s was to provide some degree of economic stability, reconstruct emergency aid and restore the telephone network, support in the 1960s had two noteworthy characteristics. Kennedy's foreign assistance policy in 1961, changed the target of economic stability to economic development and growth, and changed grant assistance methods to credit assistance. Therefore, instead of the reducing grant assistance support of America in Korea the relative importance of Japanese support started to increase.

<Table 3-2> Comparison of American and Japanese Developmental Assistance

(Unit: million dollars)

Classification		1945-1960	1961-1975	1976-1990	1991-1999	Total (percent)
U.S.	Grant	2,464.7	1,524.0	16.0	0.2	4,004.9(72.3)
	Credit	52.3	982.1	496.0	7.0	1,537.4(27.7)
	Total	2,517.0	2,506.1	512.0	7.2	5,542.3(100.0)
Japan	Grant	-	335.1	267.6	750.6	1,353.3(26.8)

[1] Lee, Kyung Ku, Developmental assistance and cooperation to Korea, KOICA, p.35

[2] Lee, Kyung Ku, Developmental assistance and cooperation to Korea, KOICA, p.55

	Credit	-	744.8	1,943.2	1,010.5	3,698.5(73.2)
	Total	-	1,079.9	2,210.8	1,761.1	5,051.8(100.0)

Source: Foreign Assistance Statistics Data Book (Green Book)

On the other hand, with the export-led strategies implemented by the Korean government in the 1960s, expansion of social overhead infrastructures and development of key industries was needed, along with the need to secure enormous amounts of investment resources and technology for social·economic development. However, despite the investments for economic reconstruction and stabilization in the 1960s, the conditions of the Korean economy were extremely weak. JBIC supplied a large amount of developmental support with various forms of development and cooperation by satisfying the new investment requirements, and providing grant-type technology cooperation and credit loans.

<Table 3-3> Official Development Assistance (ODA) Offers in each Stage of Development

(Unit: million dollars)

Classification		Former Term (1961~1975)	Latter Term (1976~1990)
Offer Scope		3,941.4(100.0)	3,510.8(100.0)
Offer By Subject	U.S.	2,506.2(63.6)	512.0(14.6)
	Japan	1,080.0(27.4)	2,014.3(57.4)
	Others	355.2(9.0)	984.5(28.0)
Funds By Characteristics	Grant funds	1,999.0(50.7)	750.4(21.4)
	Credit Funds	1,942.4(9.0)	2,760.4(78.6)

Source: OECD/DAC

Developmental Support and Cooperative Projects in the Latter Term of Economic Development (1976-1990)[3]

From the early 1960s, through various types of credit assistance from JBIC and positive experience from three consecutive Five-Year Economical Development Plans, Korea laid down the basic industrial foundations to foster the heavy and chemical industries, reaching a stage where it new stands as a fully industrialized country. As Korea reached GNI per capita of $574 in 1975, it also exceeded the standards of being supported by the International Development Association (IDA) with soft loans, which was offered to countries

[3] Lee, Kyung Ku, Developmental assistance and cooperation to Korea, KOICA, p.66

with low income. Afterwards, Korea was classified in the category of newly industrializing countries.

On the other hand, as the agreement on property and the right of claim between Korea and Japan ended, opportunities for further developmental/cooperative relationships were sought out. Until the mid-1970s, demands for developmental funding, which were impossible to suffice exclusively only with domestic funds, were indiscriminately supported by capital assistance and cooperation in all sectors of the economy. However, beginning the late 1970s, developmental and cooperative projects were more promoted under the scrutiny of their potential impact and the qualitative terms of the funds. This was due to the world economic recession resulting from another oil shock in the late 1970s strongly affecting the Korean economy. In addition, this change also occurred because anxiety about foreign loans had become a very sensitive socio-economic issue.

Along with the drive of economic stabilization policies, harmonizing growth and stability, economic policies in the late 1970s focused on improving the industrial structure of the nation. Inequality between sectors resulting from rapid economic growth was readjusted and policies restructuring whole industries were implemented. With these changes, emphasis on loans for individual projects in the past, were changed to developmental cooperation: sector loans and restructuring loans, which were aimed at overall development of a specific sector, as well as the regulation of the economic and industrial structure.

-Assistance for escaping poverty as well as socio-economic and politic stabilization
-Forming the basis of economic development
-Effective support in funds and human resources according to each step of Korea's economic development.
-Catalyzing the import of advanced technology in each industrial field
-Assistance for establishing a self-regulated economic foundation
-Catalyzing liberalization and unlimited competition
-Enhancing friendship between Korea and Japan.
-Contributions in reorganizing regional industrial composition of the Northeast Asian economy

Japanese Side

The JBIC loan projects implemented since the 1960s rendered accomplishments, not only to the recipient country, Korea, but also to the donating country, Japan. In terms of the international society, the noticeable economic growth of Korea, who was the first recipient

of JBIC, also gave a variety of socio-economic impacts to Japan. The following shows the achievements in detail.

Uplift in Japan's Reputation in the International Society

In the 1960s, polarization in areas of Northeast Asia were heading forward to the peak of the Cold War era, and the concepts of political ideology was given the most priority compared to the concepts of economic ideology, than any other region in the world. Resulted from the strategic and geopolitical importance of Korea, the U.S. had been pursuing grants and credit loans to Korea from early stage. However, in the 1960s, in order to escape from economic poverty and to establish an autonomous economy, Korea needed to recruit more funds. Accordingly, Japan was opted to become the first partner in international cooperative projects. It has been already known that Japan had carried out the most efficient international cooperative projects shown by Korea's successful economic growth. This fact led developing countries to consider these projects as model examples, and contributed to Korea and Japan's recognition as pivotal countries within the northeast Asian region.

Contributing to Japan's Domestic Economy

Through the total ninety-one JBIC loan projects proceeded in Korea since the 1960s, many Japanese enterprises provided working grounds for further advancement. As loan projects were implemented in a total of eight sectors, Korea procured a variety of materials from Japan, thereby, taking part in expanding export markets for Japan. The importance of Korea, as a stable overseas market, was enhanced among Japanese enterprises, especially when they were abundant in capital during the Jinmu(神武) boom. These footings eventually helped establish stronger systems of economic relationships between Korea and Japan.

<Table 3-4> Japan's Major Economic Indexes

	1970	1976	1977	1978	1979	1980	1985	1990	1995
Gross National Income ($)	1,948	4,976	6,069	8,457	8,736	9,257	11,423	24,966	42,559
GDP Growth Rate(%)	-	-	-	-	-	2.9	5.1	5.2	1.9

Inflation Rate(%)	7.7	9.3	8.2	4.2	3.7	7.8	2	3.1	2.8
Unemployment Rate (%)	1.2	2	2	2.2	2.1	2	2.6	2.1	5.6

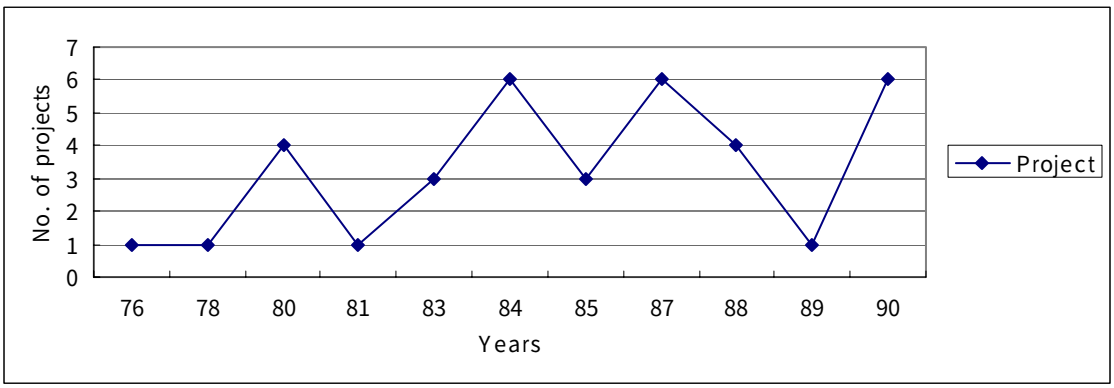
Source: OECD/IMF

4. Performance Analysis

4.1 Outline of projects under review

Needless to point out which sector, the JBIC loan projects were unfolded actively in all areas. Particularly, the individual 36 projects subjected to evaluation in this study were localized in the latter part of Korea's development. So to speak, this was a period when the introduction of: industrial facility replacement funds for industrial rationalization; funds for promoting small and middle size industries; agricultural credit loans for expanding support on agricultural funds; and public loans for developing special sectors such as transportation, communications, water resource development etc.; were greatly expanded. Meanwhile, after the early 1970s, the recruitment of public funds, to invest on regional development, increased in order to alleviate the gaps between differentiated regions; and as the latter period of development arrived, investment funds were introduced to a diversity of areas such as the environmental sector. Another type of development cooperation project using public loans is the case in which its purpose is to stabilize the economy and support restructuring, in terms of macroeconomic applications. To be more specific, introduction of public loans began in the latter period of development, not only to readjust the unbalance between industries and regions, which was resulted from the government's unbalanced development strategies aiming on the development of limited areas, forming rapid growth; but also to improve structural flaws caused by the government's economic intervention such as price and structural distortion. Therefore, respectively, it would meaningful to evaluate the characteristics of loan projects in accordance with each stage of economic development.

<Figure 4-1> Number of Project Implemented by Year



Source: JBIC appraisal report

<Table 4-1> Number of Projects by Sector

Sector	Sub-sector	Number of Projects
Social Services	Water Supply·Sewerage·Sanitation	11
	Education	3
	Public Health·Medical Care	9
Telecommunications	Telecommunications	2
Agriculture·Forestry·Fisheries	Agriculture·Forestry·Fisheries	7
Mining·Manufacturing	Manufacturing	1
Transportation	Railways	2
	Ports	1
Total		36

Source: JBIC appraisal report

4.2 Analysis of the Five Primary Evaluation Criteria

The table below sets the standards for evaluating each individual project's accomplishment. The five categorized standards are the essential elements for analyzing the projects. Feasibility and analysis measures are processed according to the DAC, as advised by the OECD. These five standards are **Relevance, Efficiency, Effectiveness, Impact and Sustainability**; and for detailed evaluation, these standards are sub-divided into four subdivisions. Therefore, evaluation on project accomplishment is conducted by examining a total of twenty items.

***Primary check criteria, seventeen evaluation check items**

1.Relevance

1-1. Conformation of development policy and priority issues

Does the project correspond with the government's development policy and priorities?

1-2. Project plan

Was the plan (scope/methodological approach) for actual project implementation appropriate?

1-2-1. Degree of accuracy in planning

Was the project precisely executed according to the plan itself?

1-2-2. Degree of accuracy in the forecast of demands

Did the demands after project completion coincide with the forecasts made during planning?

2.Efficiency

2-1. Output

Was the project finished according to plan?

2-2. Implementation period

Were there any delays in implementation?

2-3. Project costs

Were there overruns compared to the original plan?

2-4. Implementation system

Were problem solving methods/decision-making/monitoring processes appropriate?

3.Effectiveness

3-1. Output utilization

Are project outputs being utilized sufficiently?

3-2. Project goal realization

Were effectiveness and project objectives adequately realized?

3-3. Technical assistance

Was educational training/technical guidance sufficiently transferred?

4.Impact

4-1. Socio-economic impact

What were the effects on the local socio-economy?

Were the effects positive or negative? (immeasurable scales included)

4-2. Contribution to goal achievement

How much did the plan contribute in achieving the project goal?

4-3. Environment

What were the effects on the local environment?

Were the effects positive or negative? (immeasurable scales included)

5.Sustainability

5-1. Administrative and maintenance system

Does the project need to be continued in the future?

5-2. External factors

What were the most important external factors influencing project results and project sustainability? (environment, government, policy, market etc.)

5-3. Financial resources

Are there enough financial funds to manage and maintain the project?

4.2.1 Relevance

(1) Conformation of development policy and priority issues

Thirty out of the thirty six projects seemed to conform well with the Korean government policy's objectives at the time of implementation and the Five-Year Economic Development plans. The JBIC Loan Project contributed a great deal, to the main objectives of each stage(Escape from poverty and constructing a basis for economic development in the 1960s, Promoting the heavy and chemical industries in the 1970s, Economic stability and quality of life improvement in the 1980s) of the Korean government's Five-Year Economic Development Plans by concentrating on: agricultural and basic facilities in the 1960s; key industries and health & sanitation sectors in the 1970s; education, subways and medical fields in the 1980s.

(2) Project plan

Seventy-nine percent of the projects seemed to have strong relevance. The rest of the projects were cases where data was not available and where the content of the collected material was inaccurate, and these cases were scrupulously evaluated.

1) Degree of accuracy in planning

Many cases of slight deviations from the original plan were found in the study of the thirty six projects. Delays and overrun of costs were found, although they did not affect achievement of the project objectives in any major manner. The following example is a unique case where the plans were changed due to cultural factors.

<Case> A change of project planning due to cultural factors :
Chuam Multipurpose Dam Construction Project(1984)

As part of the Balanced Regional Development Policy by the Korean government, and for the purpose of providing city and industrial water supply and electric generation to the eastern part of Jeonlanam-do Province, the Chuam Dam was to be built in Daekwang-ri, Chuam-myun, Soonchun City, Jeonlanam-do Province, and was planned to be completed by December 1989. However, as the diversion tunnel was originally scheduled to be built through religious holy grounds, it was redrawn to pacify resistance. As a result, the project period was delayed for one year and four months, and the dam was finally completed in April 1991. Costs in terms of domestic funds exceed the budget allocate as well. This is a case, in which cultural factors were not sufficiently considered in the planning stage of dam construction, therefore, leading to impediment of the project's efficiency in the early stages.

2) Degree of accuracy in the forecast of demands.

Construction plans for water works, communication facilities, and a meat processing plant were pursued in order to meet expected future demands in a flexible manner. Because the selection of project plans were based on future demand forecasts, it is very likely to observe differences in actual demand and the forecasts. However, cases where effective adjustments were made on the demand forecast made during the project planning stage, such as the communications facilities expansion project, are observed; whereas, precise forecasting on demands are also observed, as found in the case of construction plans for a meat processing plant.

<Case> Meat Processing Plant Construction Project(1990)

During the rapid growth of Korea's economy in the 1980s, the dietary patterns of Koreans changed quite a bit. Consumption of grains decreased, while the consumption of meat products increased. Accordingly, the Korean government forecasted future demand in detail, and by utilizing the JBIC Loan Project a meat processing plant was built. Through this project, livestock farming was preserved and meat price stability was maintained.

<Table 4-2> Forecast of Pork Demand

Year	1986	1987	1988	1990	1991	1996	2001
Pork consummation	320	373	425	505	531	679	925

Secondary processed products	15	19	33	48	58	144	360
Production of primary and secondary processed products	–	–	–	–	–	23 MT/DAY	87 MT/DAY

Source: NACF Statistics Data

4.2.2 Efficiency

(1) Output

Based on this study, all projects accomplished their planned output objectives. Twenty three social service projects, two telecommunication projects, seven agricultural projects, one manufacturing project, and three transportation projects; a total of thirty-six projects were executed from 1976 to 1990. A moderate number of projects have not had their repayment term expired yet. No delays in principal and interest payments are reported.

(2) Implementation period

Of the thirty-six projects, only thirty-six percent (ten projects) finished on time, whereas, fifty-four percent of the projects were delayed for a year or two. These delays arose for various reasons: delays in budget distributions, delays in selecting agencies and change in project plans during implementation, difficulties in supplying raw materials due to price increases, exchange rate problems, and natural disasters.

<Case> Private Hospital Medical Facilities Expansion Project(1988)

Although, Korea was going through rapid economic growth in the 1980s, the level of medical education was inferior to other developing countries. Medical education was not led by national universities. Private medical schools were relatively more competitive. As Korean medical schools began to reach limitations in financing medical facilities, JBIC loans were welcomed. This project aimed at improving and expanding medical facilities, and also improving the quality of medical education. However, changes occurred during the projects implementation stage, due to a change in the Korean government's budget disbursement policy. Ehwa Women's University originally planned to import 1,103 units of 803 sorts, but actually received 83 sorts. Hanyang University received 161 units of 77 sorts in medical equipment, Korea University received 201 units of 86 sorts, and Donga University received

438 units. Figures listed in the following table show the planned numbers and the actual results.

<Table 4-3> Project Completion Figures of each Hospital

School Name		Opening	Location	Pyŏng	Departments	Beds
Ehwa Women's University Mokdong Hospital	Plan	1989.10	Kangseo-ku, Seoul	31,700	15	500
	Actual	1993.9	Yangcheon-ku, Seoul	34,773	22	544
Chungang University Hospital	Plan	1990.5	Kwacheon City, Gyeonggi Province	26,000	20	500
	Actual	-	-	-	-	-
Hanyang University Guri Hospital	Plan	1990.5	Kangseo-ku, Seoul	34,000	19	500
	Actual	1995.5	Guri City, Gyeonggi Province	34,000	20	454
Korea University Anam Hospital	Plan	1991.1	Seongbuk-ku, Seoul	44,836	23	460
	Actual	1991.7	Seongbuk-ku, Seoul	48,650	29	716
Donga Hospital	Plan	1989.5	Nam-ku, Pusan City	38,534	21	749
	Actual	1990.5	Daeshin-dong, Pusan	20,800	22	459

Source: Executing Hospitals(Ehwa, Hanyang, Korea, Chungang, Donga University)

(3) Project costs

According to the study, more than eighty percent of the projects exceeded costs. Although, this occurred because of change in project planning, fluctuation in exchange rates, and rising raw material costs etc., the amount of JBIC ODA loans disbursed did not change. Explanations of each sector follows.

Projects implemented in the Water Supply·Sewerage·Sanitation sector were subject to

increasing raw material costs. Large scale projects, such as multipurpose dams and solid waste incinerators, which have long construction periods, tended to record cost overruns which were supplemented with more domestic funds.

Projects in the Education and Agricultural sectors faced difficulties in importing equipment exactly as planned, due to rising exchange rates. As a result, adjustments were made by reducing the sorts of equipment or by increasing the proportion of domestic funds to meet the original objectives of the plan.

(4) Implementation system

Each agency that was selected to execute the JBIC loan project had to undergo a thorough evaluation from the government ministries on their individual project in order to proceed. Each executing agency formed a task force taking full responsibility, and endeavored to prevent any problems while executing the JBIC Loan Project. For example, The Korean Water Resources Corporation (KOWACO), the executing agency for the construction of multipurpose dams (Chungju, Imha, Hapcheon, Chuam), is well recognized for its water resource development and maintenance capabilities worldwide, and has extensive experience. As such there were no noticeable issues in contractor selection and construction of the dam.

<Table 4-4> Cost overruns, Changes in Scope, and Changes in Period

(No. of projects)

Type of Change		76	78	80	81	83	84	85	87	88	89	90
Cost Overruns	Domestic currency	1	1	2	1	2	5	3	5	3	1	5
	Foreign currency	–	–	–	–	–	–	–	–	–	–	–
Changes in Scope	Major Change	–	–	–	–	–	1	–	–	–	1	1
	Minor Change	1	1	3	1	1	5	3	2	2	–	3
Changes in Period	Major Change	–	1	–	–	–	1	–	–	–	1	2
	Minor Change	1	–	3	1	2	5	3	6	4	–	4

Source: JBIC appraisal report

4.2.3 Effectiveness

(1) Output utilization

According to the study, the operational rates of completed and imported facilities, supported by the JBIC Loan Project, were slightly lower than the original plans. Not only has it been long since the projects were completed, but now some of the equipment are old and non-operational, especially in the field of research and development. However, this is rather normal, because this study is being conducted ten or more years after the completion of the loan projects.

<Case> Research Equipment Reinforcement Project(1988)

In the 1980s, Korean industries emphasized exporting goods by importing and learning foreign technology. As a result, private firms had a tendency to refrain from heavy investments in basic research and development activities. Correspondingly, the Korean government pursued such projects in order to catalyze research and development activities to enhance the overall technical proficiency levels. The Korea Institute of Machinery & Materials (KIMM) imported the following equipment. These days, due to superannuation, some of the equipment has been replaced or the operation rate reduced.

<Table 4-5> The Korean Institute of Machinery & Materials (KIMM)

Name	Usage	Frequency/State
Nd-Yag Laser System	Precision laser welding	400 hours per year/good
Structure Experiment System	Structure intensity experiment	Not in use
X-ray Diffraction Meter	Metal substance crystal orientation analysis	5 hours per day/good
High Combination Rolling Mill	Superconductive wire processing	20 hour per week/good

Source: Korea Institute of Machinery and Materials

(2) Project goal realization

According to studies, seventy-five percent of the projects were found to be effective. Achievements of the projects categorized into hardware and software, are shown below. However, the remaining twenty-five percent of the projects are either in situations where the effect cannot be measured, or need to be evaluated at a later term due to conditional characteristics.

Projects executed in the Water Supply·Sewerage·Sanitation sectors can be explained in terms of hardware and software. In terms of hardware, through collaboration with a Japanese sewerage facilities firm, trial and error could be reduced by importing highly durable raw materials from Japan. In terms of software, through the smooth transfer of human resources and technology from the collaborative investment, Korea was able to improve its own technology in designing effective sewage systems.

Among the projects executed in the Education sector, the importation of basic experimental equipment to improve basic sciences and technologies was a major accomplishment. Basic scientific equipment was imported through the National Institute of Science Technology project and the Research Equipment Reinforcement project, and greatly helped Korea achieve some degree of self-reliance in science and technology. On the other hand, by sending Korean engineers to America and Japan for training, advanced technologies were transferred to Korea, a major accomplishment in the software field.

The hardware view of accomplishment of projects in the Public Health/Medical Care sector includes the expansion of city-supported and province-supported hospitals in areas previously thinly covered. This is consisted with the objectives of the Five-Year Economic Development Plan of the time. Construction of hospitals in rural areas, which were lacking medical service, brought about an increase in the number of both inpatients and outpatients. Accomplishments in the software view include, JBIC loans being concentrated on private hospitals which helped produce highly-qualified medical technicians and doctors.

In the Manufacturing sector, the government's economic policy to support small and middle-sized businesses with financial, administrative and management resources, liguified the concentration of economic power by the conglomerate-based industrial structure.

Studies indicate that the projects executed within the Transportation sector effectively achieved the objectives of relieving transportation and environmental problems created by overpopulation in the capital city which, resulted from rapid economic growth. The

expansion of the subway system eased up traffic congestion within the metropolitan Seoul area providing, easy access to the city center, and promoting regional economic development.

(3) Technical assistance

According to studies, eighty percent of the thirty-six projects received technical support either directly or indirectly. The most noticeable projects are listed below.

<Case> Multipurpose Ocean Research Vessel Construction Project

<Figure 4-2> Multipurpose Ocean Research Vessel

By importing a research vessel, various research equipment and affiliated training maritime talents to operate such a vessel and its equipment were obtained. The acquisition of advanced maritime research technology was made possible and self-research capabilities were enhanced. Afterwards, through cooperative research with Malaysia, Vietnam and Indonesia, Korea was able to transfer some of its own technologies.

<Case> Urban Sewerage Treatment Plant Construction Project(1980)

<Figure 4-3> Jeonju Sewerage Treatment Plant

This project had the objectives of importing a sewerage treatment plant to improve the living environment of small townships, and train competent human resources to operate it. Through close cooperation between Korean and Japanese sewerage treatment firms, not only was the sewage system built, but also technology transfer occurred, when the Korean workers were trained and educated to manage and maintain the facility. Upon completion of this project, Korea also gained designing capabilities for constructing such facilities on its own.

<Case> Chemical Research and Metrology Research Equipment Reinforcement Project

The industrial technology standards were established by Korean government policy, which aimed at reorganizing the industrial structure to a higher value-added one in the 1990s by improving product quality. In addition, this project also contributed to the product competitiveness of major export items by sending 151 engineers abroad for advanced studies and, thereby, importing advanced technology.

4.2.4 Impact

(1) Socio-economic impact

The socio-economic impacts of the JBIC loan projects are considered to be enormous. However, it is not easy to track the impact clearly because most of the plans were executed in various areas. Therefore, this study will divide the impact from the JBIC loan projects into areas of: industrial technology development, living standards improvement, economic development, and environmental protection.

1) Contribution to industrial technology development.

Among the JBIC loan projects, three plans from the education field (Educational facilities expansion project (1), (2), Research equipment reinforcement project) helped the Korean economy transform itself from a simple processing industry based on low wages to an improved economic system based on technological superiority. In particular, they greatly contributed to the development of semi-conductors, genetic engineering (microbiology, molecular biology, biochemistry, cell culture), mechanical engineering research (automation technology, machine part, material part technology, ship/marine structure), and chemical substances(applied biology, organic/inorganic chemistry, polymer chemistry).

<Table 4-6> Electronic Telecommunication Research Institute (ETRI)

	1981-1985	1986-1990	1991-1995	1996-2000
Number of researches	-	-	346	879
Number of published paper	156	1,923	6,785	6,150
Number of patents applied	14	796	3,846	2,850
Number of patents approved	8	33	1,259	1,429

Source: ETRI Foreign Cooperation Branch

2) Improvement of living standards

In the 1970s and 1980s, new urban problems such as overpopulation in the large cities, housing shortages, and traffic jams started to arise as a result of rapid economic growth. A total of eleven projects in the Water Supply, Sanitation, and Sewerage sector were pursued to ensure a stable clear water supply to inhabitants in the cities and improve residential living conditions. This included sewerage work, improvement in sanitation and flood prevention facilities, which were quite successful. Also, enhancing weather forecasting equipment in the sector of Telecommunications made weather forecasts more accurate and lead improvement in living standards for the general population. Building better transportation systems by extending the subway system also increased accessibility for urban residents.

3) Regional economic growth and activation

Although the exact figures cannot be calculated, it may be assessed that through the extension of the subway system, the economy of the region where extended subway lines passed through, improved immensely, inducing the increasing of migrating population.

(2) Contribution to goal achievement

All plans satisfied their basic objectives. The impact of multipurpose dam construction to the regional economy was enormous in terms of stable water supply to the adjacent cities, generating high-quality electric power, preventing floods and developing tourist attractions. Also, it is evaluated that management by KOWACO was proficient enough that no major problems were reported after completion of the project. However, in the Ulsan City Development Project, the railroad was moved to the outskirts of the city for balanced regional development of Ulsan City, but chronic traffic jams continued, making it still hard to access.

(3) Environment

No negative environmental problems were reported in most of the JBIC loan projects. In particular, it is reported that the improvement of sewerage treatment facilities of the Water Supply/Sewerage sector greatly contributed to much improved residential living conditions.

<Case> Urban Solid Waste Treatment Facilities Project (Sungnam, Daegu)

Environmental pollution due to concentration and increase of population, and continuing economic growth of Daegu city was a major concern. Accelerated soil pollution due to disposal of toxic wastes in the ground was especially troubling. As much, this Waste Treatment Facilities Project greatly contributed to creating a better living environment by decreasing the total quantity of waste to be buried, and attaining better sanitation by exhausting much lower than the recommended standards.

<Table 4-7> Exhaust measures(Average as of 2001)

Category	Sulfur Oxides	Nitrogen Oxides	Hydrogen Chloride	Dust	Carbon Monoxide	Dioxin
Permitted exhaust standard	300	200	50	80	600	0.1
Exhaust	5.4	9.8	6.5	6.7	15.1	0.013

measures						

Source: Sungseo Incineration Facility, Daegu City

Also, the Seoul Subway Construction project resulted not only in the improvement of traffic speed in the downtown area, reduction of car accident rates, and regional economic development, but also in effects to reduce air pollution.

<Case> Seoul Subway Construction Project-2

Rapid population influx into Seoul because of the rapid economic growth caused housing shortages, unemployment, traffic jams, and environmental pollution. In order to alleviate worsening traffic congestion, the Korean government initiated the Seoul subway extension project. A number of positive results including energy conservation, traffic jam relief, and regional economic development were realized, but most importantly, air pollution was decreased due to the reduction of downtown traffic.

<Table 4-8> Air Pollution Status in Seoul

Category	SO_2	CO	NO_2	Dust
Environmental standard	0.03	9	0.05	150
1991	0.043	2.8	0.033	121
1994	0.019	1.5	0.032	78
1996	0.013	1.2	0.033	85

Source: Environment Section, Seoul City

However, among the medical facilities expansion projects in the Public health/Medical Care sector, it was reported that some provincial medical institutions did not follow medical waste treatment law.

4.2.5 Sustainability

(1) Administrative and maintenance system

Most of the projects supported by JBIC to Korea were very successful in many aspects. Although we cannot claim that all JBIC loan projects were perfectly successful, there has not been any obvious failure reported either.

As certain amount of time has passed since the development assistance and cooperative

projects had started, and the socio-economic environment has changed a great deal, there were some changes in the circumstances which surrounded the projects during implementation. However, this reflected flexibility toward the rapidly changing environment while executing, rather than any major problems, and this should be assessed in a positive light.

<Case> An example of project dealing with environmental changes in a flexible manner : Telecommunication Facilities Expansion Project 2 (1976)

The objective of this plan was to provide better telecommunication service by automating toll lines through expanding the toll line network as part of the "4th Five-Year Telecommunication Plan." Originally, the plan was scheduled from November 1976 to December 1980 (50 months), but actually started in January 1977 and ended in September 1981 (57 months), being delayed for about nine months. However, this delay was due to the additional purchase of testing equipment for flexible and sensitive correspondence to the surging telecommunication demand. This change actively reflected the basic objective of providing better service through telecommunication network expansion. Also, this project is a point where the operation capability of KT, the executing agency, can be regarded highly.

We have already covered the importance of JBIC loan projects in the economic development of Korea in previous sections.

The JBIC loan projects kept up with Korean socio-economic development, and provided valuable assistance in a very timely manner. All kinds of equipment and raw materials that were offered during the economic rebuilding and development phases of Korea were very important and crucial for economic and social development. JBIC loan projects greatly contributed in filling the gaps in technology, necessary resources and capital during the take-off phase of Korean economic growth.

The reason why the JBIC loan projects can be assessed successful is because the impact, continuity, and other general aspects of the plans that were implemented appeared to be excellent. In particular, the results from the eight plans referred above appeared to be very successful. The positive results from the JBIC loan projects and cooperative efforts could be confirmed by examining the individual plans in detail.

<Case> Chuam Multipurpose Dam Construction Project

<Figure 4-4> Chuam Multipurpose Dam

KOWACO is in charge of managing the Chuam multipurpose dam, and because it has extensive experience, there are no problems with the operations.

The Chuam multipurpose dam control office (namely Control Office), which is subordinate to the KOWACO dam control Headquarter, is in charge of managing the main dam, regulation dam, and generator. There are 38 technicians of staffs; they work in three shifts.

The power generation section of the control office is in charge of maintenance and managing power generation. When maintenance is needed, an entrusted company from KOWACO checks it on a weekly and monthly basis, and KOWACO confirms the status.

Spare parts are secured, and an emergency supply system (from a local company) is in place. There has not been any report of any problems with maintenance or repair.

<Table 4-9> Organization (3 sections 9 branches)

		Administration	Engineering	Electric	Machinery	Electrical Communication	Environmental	Cook	Crew	Repair	Beautification	Total
Regular government service	1st class	–	–	1	–	–	–	–	–	–	–	1
	2nd class	1	1	1	–	–	–	–	–	–	–	3
	3rd class	2	2	2	1	1	1	–	–	–	–	9
	4th,5th class	3	4	5	7	2	2	–	–	–	–	23

	6^{th}·8^{th} class	1	–	–	–	1	2	–	2	1	–	7
Total		7	7	9	8	4	5	–	2	1	–	43

Source: Chuam Dam Management Group, KOWACO

The point that there was no single delay of payment or debt adjustment on loan repayment offered to Korea, shows that the JBIC loan project and cooperation between the two governments was indeed very successful. A considerable amount (599,908 million Yen) has already been repaid, and repayment of the rest of the loan is proceeding smoothly.

(2) External factors

The progress of plans is often affected by external factors such as government policies, laws and regulations, changes in economic structure, fluctuation in the prices of raw materials and industrial products. Seven out of thirty-six plans, between 1970 and 1980, experienced a delay or exceeded their budgets due to a sudden increase in prices of raw materials and industrial products.

We can plainly see that the thirty-six projects that were investigated had closely followed the change in Korea's economy development priorities. Dam construction, waterworks and sewerage construction were the main focus of the early 1980s, and projects improving human welfare were held priority in the late 1980s. Also, it is said that the 'Small and Medium-Size Industries Modernization Project', which was strongly carried out by the Korean government since 1987, helped stem the concentration of economic power in the hands of a few large conglomerates, hence improving the industrial structure of the Korean economy.

(3) Financial resources

Our investigation reports that most projects are not experiencing any lack of funds in management and maintenance. The following shows the financial resource status by project sector.

KOWACO, which is managing and maintaining the Water Supply projects, is sustaining profits by generating high quality electrical power and does not have any financial problems involving its future dam construction projects.

Sewerage and sanitation facilities construction was carried out by the Ministry of Construction and Transportation, however but each city's self-governing Sewerage·

Sanitation Division is currently conducting the management and maintenance. Although It is true that self-governed bodies are not completely independent of financial means, any potential financial difficulties are subsidized by the central government due to the importance of environmental protection.
There are no problems in the education sector either, because most of the educational plans are being carried out by government-financed research facilities. The science and technology research area is sustaining greater interest from the general public and the government, and therefore expects a significant increase in financial assistance.

Public Health·Medical Care projects are managed and operated by several institutions. There are no obvious financial problems because the facilities and equipment obtained are mostly concentrated in the large hospitals (city/province size hospitals and university hospitals) which are relatively well managed.

Korea Telecommunications carried out the telecommunications projects. Korea Telecommunications was privatized and has become the 5th largest corporation in Korea in terms of asset scope. Also, Korea Telecommunications is considered a superior corporation because of solid management practices, continual research and development as well as strong competitiveness against other corporations in the same field.

Agriculture·Forestry·Fisheries projects are largely managed by the National Agricultural Cooperative Federation and National Livestock Cooperative Federation. After the National Livestock Cooperative Federation merged with the National Agricultural Cooperative Federation in 2001, more effective management and maintenance on projects could be pursued with rigor.

The Railway sector consists of the Seoul Metropolitan Rapid Transit Corporation and the Seoul Metropolitan Subway Corporation. There exists a chronic financial problem due to high construction costs. Increasing fares is not considered an option because of the negative impact on the general population. The financial problem is not expected to be solved anytime in the near future but it does not seem to be a unique problem to Korea either, considering that this condition exists all over the world.

4.3 Issues unique to Korea

The general problem that occurred from the JBIC loan projects is the sudden increase in

consumer prices due to the success of the Five-Year Economic Development Plans since 1962. The success resulted in an eight percent annual growth rate between 1970 and 1980, but also caused individual loan projects to exceed their financial budgets.

1) Increase in Consumer prices

Between 1969 and 1990, when JBIC loans were disbursed, there was a sudden rise in consumer prices. The price index increased more than twenty percent between 1974 and 1981 causing the price of consumer products and industrial products to double. A few projects took inflation into consideration but it was difficult to fully anticipate the rapid increase in prices. Twenty projects exceeded their domestic budget limit, during implementation, due to inflation.

<Table 4-10> Increase in Consumer Prices

(Unit: percent)

	Nationwide	Seoul	Busan	Daegu	Incheon	Gwangju	Daejeon
1974	24.3	23.7	24.6	23.7	24.8	25.2	25.9
1975	25.2	26.3	23.8	23.7	26.3	21.6	25.8
1976	15.3	15.4	14.9	16.6	13.4	14.9	15.6
1977	10.1	10.3	9.2	10.0	11.1	10.4	11.0
1978	14.5	14.3	12.9	14.7	16.9	16.5	16.2
1979	18.3	18.1	17.8	19.7	19.1	16.8	18.9
1980	28.7	28.6	29.3	29.2	28.9	26.6	28.1
1981	21.4	21.3	20.5	21.6	21.3	24.1	21.7

Source: Korea National Statistical Office (2003)

<Case> Plans that exceeded their domestic financial budgets: Chung-ju Multipurpose Dam Project (1978)

The Chung-ju Multipurpose Dam is the largest gravity concrete dam in Korea, located in Chung-ju city. The construction of the dam started on 3rd June 1978 and was completed 7 years and 7 months later on 20thDecember 1985. The completion of the dam resulted in a decrease of floods and increase of water supply to nearby households and factories. It also contributed to tourism development in the area. The plan was initially estimated to cost 190.262 billion Won, but due to the sudden increase in prices (1973 - 1981: annual increase of twenty percent), it took 555.138 billion Won to complete the project. That is 2.9 times more than what was originally expected.

5. Impact Assessment of Japan ODA Loans in Korea

5.1 Performance Analysis

Looking back on the performance record of the projects cooperatively funded by the JBIC loans during the past thirty years, considerable contributions were made in the following seven sub-sectors.

<Table 5-1> Current Status of Public Loans Introduced in Thirty-Six Projects

(Unit: one hundred million Yen)

Sector	Sub-sector	Number of Projects	Japanese ODA Loans
Social Services	Water Supply·Sewerage·Sanitation	11	81,621 (29.2%)
	Education	3	16,590 (5.9%)
	Public Health·Medical Care	9	56,744 (20.3%)
Telecommunications	Telecommunications	2	10,800 (3.8%)
Agriculture/Forestry/Fisheries	Agriculture·Forestry·Fisheries	7	26,675 (9.5%)
Mining/Manufacturing	Manufacturing	1	6,200 (2.2%)
Transportation	Railways	2	76,440 (27.3%)
	Ports	1	4,100 (1.47%)
Total		36	279,170 (100%)

Source: JBIC appraisal report

As shown above, eleven projects (amounting to 81,621 hundred million Yen) were executed in the Water Supply·Sewerage·Sanitation sub-sector, recording the largest number amongst the thirty-six implemented projects (279.170 hundred million Yen) from 1976 to 1990 which have been selected for this study; therefore, accounting for 29% of the total number of JBIC projects studied. Projects belonging to the Water Supply·Sewerage·Sanitation sub-sector were carried out from 1978 to 1989. The projects commenced during the 1960s were hastily executed in order to repair war-related damages or to reconstruct the devastated economy. In contrast to the 1960s, the projects implemented after the 1980s were those focused on expanding capacities of existing facilities, or to sensitively cope with increasing electricity demands resulting from the strong desire for higher living standards of the general population.

There were three projects executed in the Education sub-sector (amounting to 16,590 hundred million Yen). These projects accounted for 5.9% of the JBIC projects studied. The interesting fact is that these Education sub-sector projects were concentrated during 1987~1988. In other words, the projects related to education and research commenced when the Korean economy was facing a lack of technology competitiveness, and human resource shortages in the field of research, due to the rapid growth derived from the successful execution of the Five-year Economical Development Plans. Therefore, it is adequate to state that these projects can be seen as touchstones for helping establish technology competitiveness of Korean businesses.

A total of nine projects were executed in the Public Health·Medical Care sub-sector (amounting to 56,744 hundred million Yen). Concerning project costs, this sub-sector recorded third place, just after the Water Supply·Sewerage·Sanitation and Railways sub-sectors which were first and second, respectively. However, in terms of the largest section itself, the Public Health·Medical Care sub-sector recorded second. In fact, a vast range of JBIC projects were unfolded in this sub-sector. The Public Health·Medical Care projects dealt in this study were Implemented during 1980~1990. The Public Health·Medical Care projects from the 1950s implemented with the help from the U.S., differ in characteristics with those implemented with JBIC loans.

The Public Health·Medical Care projects implemented with U.S. assistance in the 1950s were aimed at emergency relief and to simply satisfy basic demands for the war-torn nation. The sixteen nations which fought in the Korean War under the U.N. flag provided basic medical aid activities and social services, such as supplying basic medical supplies and dispatching medical personnel.

The JBIC projects from the Public Health·Medical Care sub-sector played an important role in satisfying basic medical demands in the major cities of Korea. Especially, these projects exerted major influences on the Korean Family Planning Program, and the Maternal and Child Health Care Program, strongly implemented by the Korean government.

The JBIC projects from the Public Health·Medical Care sub-sector between the 1980s and the 1990s were promoted in two directions.

First, projects to expand regional medical facilities in order to cope with the increasing demands of rural citizens, unable to receive medical service due to the heavy concentration of medical facilities in the major cities, were pursued. As a result, medical services of higher quality were provided to residents in the provinces who had previously received little medical attention.

Second, these projects promoted not only quantitative, but also qualitative improvements in

the field of medicine, by actively supporting the expansion of medical education facilities and the training of medical personnel, thereby, offering medical services of higher quality and providing a steady supply of medical manpower.

Only two projects were executed in the Telecommunications sector (amounting to 10,800 hundred million Yen). Although it accupies only four percent of the total number of projects, the impacts and effects of these projects exceeded that of all others. As part of the 4th Five-Year Communications Plan in 1976, by expanding regional communication networks and making it possible to promptly and flexibly cope with communicational demand increases, the telecommunication infrastructures were quickly established. As such, it provided the groundwork for Korea to grow as a major nation in the fields of information and telecommunication technologies.
The meteorology system modernization project conducted in 1984 made it possible for more accurate weather forecasts, therefore, making it possible to minimize damages from natural disasters (flood prevention), reduce social opportunity costs, and uplift the efficiency of human resource management.

Projects in the Agriculture·Fisheries sector accounted for a total of seven projects (amounting to 26,675 hundred million Yen). Accounting for 9.5% of the total number of JBIC loan projects under this study, it is noteworthy that these projects differed in many ways from the previous projects in the agricultural sector.
The projects implemented in the Agricultural sector from the 1960s to the early 1980s focused mainly on increasing production to cope with increasing demands for agricultural products; while the projects initiated after the mid-1980s were instrumental in transforming the structure of the agricultural industry. In the 1980s, because of the ill-effects of rapid economic growth, Korea's farming households were facing major challenges: severe labor shortage due to farmers flocking to the major cities; decreases in per capita grain consumption; increased demand for processed meat products, etc. The JBIC loan projects enabled the Korean government to improve efficiency in the Agricultural sector and to sensitively cope with national demands for processed meat products.

There was one project implemented in the Manufacturing sector (amounting to 6,200 hundred million Yen). This project only accounts for 2.2% of the total number of JBIC loan projects that were evaluated in this study. While the project was in process, Korea's industrial structure was centered on a few large conglomerates. This project was pursued in order to financially support small and medium-size enterprises so that they could import

new equipment and technologies, and to increase employment in the related fields, therefore, contributing to balanced industrial development.

Three projects were executed in the Transportation sector (amounting to 80,540 hundred million Yen). These projects accounting for twenty-eight percent of the total JBIC loan projects studied in this research were centered on relieving traffic problems, improving the living conditions, and saving energy, which became as major social issues in the late 1980s. As a result of the successful completion of these projects, the average speed of cars in the city center increased, energy use became more efficient, and the quality of life improved.

As shown below, in the table of the total thirty-six JBIC loan projects organized in chronological order, two groups of clusters roughly appear in consideration with the commencement years of the projects.
Projects in the Water Supply, Public Health·Medical Care, and Telecommunications sectors were implemented from the late 1970s to the 1990s, forming the first cluster; whereas, projects in the Agriculture, Manufacturing, and Transportation sectors were implemented throughout the late 1980s, thus forming the second. These two clusters are thought to be closely related with, and considerably on the same track with the relevant stages of Korea's economic development. In other words, it is possible to assert that the projects in the Water Supply, Telecommunications, and Public Health sectors, as infrastructure-building milestones, were carried out throughout the 1960s, 1970s, 1980s, and until the 1990s, thus providing the cornerstone for Korea's social development and stability. Projects carried out after the 1980s (subway project, industrial structure neutralization project) were designed to improve the living standards for average citizens in a nation undergoing rapid economic growth. Considering the circumstances under which the projects were commenced, it may be concluded said that the JBIC loan projects were timely and that they closely matched the needs for Korea's socio-economic development at the time.

<Table 5-2> Status of Public Loans by Sector

Sector	No. of Projects	76	78	80	81	83	84	85	87	88	89	90
Water Supply Sewerage Sanitation	11		1	1		2	3		2	1	1	
Education	3			1					1	1		

Public Health Medical Care	9			2	1	1	1	2		1		1
Tele-communications	2	1					1					
Agriculture Forestry Fisheries	7						1		2			4
Manufacturing	1								1			
Railways	2									1		1
Ports	1							1				
Total	36	1	1	4	1	3	6	3	6	4	1	6

Source: JBIC appraisal report

5.1.1 Cowbell Effect

5.1.1.1 Impact on Transportation

<Case> Kyungbu Highway Construction Project

<Figure 5-1> Kyungbu Highway

1. Project background

As the 1st Economic Development Plan gained a steady pace and industrial development. followed, industrial cargo volume began to rapidly increase in the 1960s, and the task of expanding industrial transport capacities became vital.

The plans for constructing a key highway connecting Seoul and Busan were not reflected in the initial 2nd Five-Year Economic Development Plan. Although, investigational reports on the transportation sector by the NEDECO investigational party, initiated through the service agreement with the IBRD during the establishment of the 2nd Economic Development Plans, pointed out the urgency and need for improvement and expansion of the underdeveloped road system and advised the turnover of railroad-focused investments to roads, no other specific suggestions were presented about the construction of a highway. Nevertheless, some suggestions were made on building highways to be during the 3rd Development Plan, including the construction of highways connecting Seoul~Incheon and Seoul~Suwon.

As the construction of the Kyungbu highway appeared in election platform during the presidential election in 1967, specific discussions began. The Kyungbu Highway Construction Project, introduced as a presidential election pledge, was a political judgment and concept, stating that fasten in roads were necessary for modernization and industrialization, and that the modernization of agricultural communities could be made possible by constructing this highway, thereby, shortening time distance. Construction of the Kyungbu Highway, which initially faced negative opinions from foreign and local sources, was promoted with the assistance from political leadership.

2. Particulars of the Project and Circumstances for its Promotion

The plans to construct the Kyungbu Highway, presented as a pledge in the presidential

election of April 1967, were designed to pave a key highway with Seoul as the hub connecting Incheon, Gangneung, Busan, and Mokpo. Right after the election, preparations were promptly made to construct the highway system.

In December 1967, the National Key Highway Construction Promotion Committee, with the President as chairman, was organized with members composed of personnel from different fields. An investigative party for highway construction planning was organized to conduct overall investigation and establish initial plans.

On the other hand, a policy was formulated to utilize and recruit only local funds and technologies for the highway construction project. The consensus at the time, formed by leading supportive countries such as the U.S. and the IBRD, was that the construction of such a highway in Korea was too early. Under these circumstances, it was concluded that, promoting the highway construction project by securing developmental assistance funds was impossible. It was inevitable to pursue the project with local funds, as the International Development Association, recognized as the most prospective organization competent of granting development loans for such highway construction, refused capital support.

Except for the procurement of some construction equipment and construction materials from abroad using a portion of the funds provided by the right of claim against Japan, the highway construction project was to proceed with local technologies and domestic funds. Therefore, the investigations on project validity and establishment of project plans on the highway construction project were delegated to domestic technical faculties, and thereafter, the project was commenced in February 1968 starting with the Seoul~Suwon section.

The highway was a massive national project with a budget of more than thirty billion won, when the Government's budget scope was only about thirty hundred billion won. Fundamentally, the project was to be promoted with local funds and technologies only; however, it was inevitable to import, key construction equipment and materials that were not available domestically, and building materials that were locally short of supply. Estimated construction costs to procure these items, based on financing plans, indicated a total of thirty-three billion won; therefore, the actual financing plans were set at thirty-six billion won. The foreign costs considered during this time were to be prepared using a proportion of the loans from PL480 and funds from the rights of claim against Japan. Although, the project was not an assistance project with a clear donor, problems with investment finance and core technology deficiencies were to be solved through methods utilizing partial aid.

On the other hand, the actual construction costs totaled 42.9 billion won. The cost overrun in budget was caused majorly by the compensation for real estate acquisition and

additional construction costs.

<Table 5-3> Investments on the Kyungbu Highway Construction Project

(Unit: million won)

Item	Plan (1968)	Actual (1970)	Difference
Land compensation	1,224	1,963	719
Construction cost	28,294	37,390	9,096
Testing equipment	55	44	-11
Equipment	-	492	492
Materials	2,194	1,892	-302
Foreign services	110	86	-24
Incidental costs etc.	1,123	1,106	-17
Total	33,000	42,973	9,973

Source: Highway Construction Journal, Korea Highway Corporation, July 1974

Although, the project was initially executed with local funds and technologies, it was necessary in several cases to utilize foreign resources. It was necessary not only to procure equipment and materials not manufactured in Korea, but also to procure materials which were in short supply due to limitations in production capacities. At the time, construction materials such as cement were in short supply domestically. In addition, the procurement of foreign construction machinery was inevitable to ensure a prompt and efficient construction. Assistance funds were used to procure these construction equipment and special materials.

Because negotiations with the Asian Development Bank (ADB) were already in progress for the construction of the Kyeongin Highway, no other alternatives but the funds from the Right of Claim against Japan existed for the Kyungbu Highway Construction Project. Therefore, it was necessary to modify the previous plans of using Right of Claim funds, which were already fixed. The total scope of foreign funds invested in this construction project was $8,450 thousand, occupying ten percent of overall construction costs.

<Table 5-4> Foreign Capital Utility Status of the Kyungbu Highway Construction Project

(Unit: thousand dollars)

Classification		Amount	Item
Right of Claim Funds against Japan	3rd year project	326.9	Management and maintenance equipment,

(Compensational funds)			Radio equipment
	3rd year project	2,671.6	Construction materials: guard rails etc.
	Sub-total	2,998.5	-
	4th year project	748.8	Paving equipment
	4th year project	3,148.6	Construction materials: iron reinforcement bars etc.
	Sub-total	3,897.4	-
	Total	6,895.9	-
ADB Loan		872.7	Paving equipment
KFX Fund		681.5	Construction equipment
Total		8,450.1	-

Source: Highway Construction Journal, Korea Highway Corporation

The highway construction project was completed after two years and six months in July 1970, eleven months earlier than schedule.

3. Project achievements and lessons learned

The Kyungbu Highway Construction Project was initiated under the criticism that it was premature, not only by international development agencies, but also parts from the local society. Although, there were a multitude of difficulties, such as procuring project funds etc., the project was later evaluated success, thus, contributing to the catalysis of industrialization and regional balanced development.

Though the project was implemented based on technologies and funds accumulated during the early stage of Korea's economic development, it is also possible to make assessments that the project contributed to upgrading the economy, enhancing quality and promoting integrity through the pertinent utilization of international development cooperation on technical and physical elements.

Presenting quantitative measurements on the aftermath and the derivatives due to this project is not a simple matter. However, there is no doubt about the positive effects and impacts the Kyungbu highway construction project had on Korea's socio-economic development. Despite initially feeble conditions, the active promotion of such a key project at an early stage of economic development, not only established a significant and positive spillover of social overhead infrastructure necessary to promote industrialization, but also provided a sense of confidence in promoting other large-scale projects. The 『 Kyungbu

Highway Construction Journal,』 published four years after project completion, explains in detail the economic and non-economic effects. Saving travel expenses, shortening travel time, reducing cargo damage, enhancing traveler convenience, and reducing traffic accidents were some of the direct effects from the construction of the highway. In addition, an endless list of indirect effects were mentioned: catalyzing regional development, developing farming and fishing communities, reducing regional differences, expanding markets, promoting resource development etc.

Also noteworthy was that the Kyungbu highway construction project was a showcase example of the people's potential providing a solid result. For the promotion of such a large national project, which had no prior comparison, a specialized temporary organization was established. This organization operated with flexibility, allowing for effective project management and efficient project performance by providing necessary input at the appropriate time and place.

Meanwhile, the successful completion of this massive project improved national credibility from the international society, thereby providing the turning point for more achievements of international development cooperative projects in the future. The subsequent Daejon~Cheonju Highway Project, commenced just after the Kyungbu Highway Construction Project, was also completed smoothly with domestic funds and technologies. Therefore, international development funding organizations, including the IBRD, modified their previous positions and began to actively grant funds on Korea's highway construction projects.

Source: Edited and compiled from materials obtained from "KOICA"

<case> Seoul Subway Construction Project-2(1990)

<Figure 5-2> Seoul Subway Line #4

(1) Project Background

The Seoul subway system currently consists of nine lines carrying approximately 4.5 million passengers every day, and represents about forty percent of Seoul's daily transportation volume. JBIC agreed to extend a loan to cover the extension of subways lines #3 and #4 and the new construction of line #5.

(2) Project Objectives

The objectives of this plan was to pursue Phase 2 of the Seoul Subway Construction and National Railway Electrification Project, and covers the extension of Lines #3 and #4 and the construction of Line #5.

<Table 5-5> Seoul Subway Development Plan

Phase	Planned Sections	Extension
Phase 2 1990-1992	Line #3(Extension Line) : Yangjae-Suso	8km
	Line #4(Extension Line) : Sanggye-Tangkogae	1km
	Line #5(New Line) : Panghwa-Youido	17km
	Line #5(New Line) : Kodok-Wangshimni	15km

Source: Seoul Metropolitan Subway Corporation

(3) Project Evaluation

Relevance

From the second half of the 1980s, Korea entered a period of fast economic growth exceeding ten percent per annum, and Seoul played a central role both in the political and economic arenas. Not only Seoul itself, but also the surrounding areas became increasingly urbanized, the metropolitan area kept on expanding, and various problems emerged, including congestion, environmental pollution, unemployment, and housing problems.

<Table 5-6> Economic Growth Rate of Korea and Seoul

		1980-1985	1986-1990
Economic Growth Rate	Korea	8.4 (annual rate)	10.0 (annual rate)
Population (1000 people)	Korea	7.0	6.1
	Seoul	15.2	10.1

No. of automobiles (1000 cars)	Korea	114.9	168.3
	Seoul	110.7	205

Source: National Statistics Office

Among Seoul's social problems, that of transportation was particularly severe, and to increase the average speed of traffic, many systems were tried out, however meeting limited success. In accordance to the government's policy of energy conservation and living standard improvement for citizens, the Seoul Subway Expansion project was actively pursued.

Efficiency

This project was implemented according to the original plans. There were minor delays, but the overall project was conducted quite efficiently, considering its large scale.

<Table 5-7> Chronology of the Seoul Subway Project

Period	Event
August 1989~October 1989	Completion of Feasibility Study for Subway Construction
January 1990~October 1990	Visit to Korea by the JBIC Appraisal Mission
October 1993	Commencement of Extensive Construction on Line #3
April 1994	Commencement of Extensive Construction on Line #4 Establishment of the Rapid Transit Corporation (managing company of Subway Line #5~#9)
August 1996	Completion of Procurement for Line #5
30 December 1996	Commencement of Operation on Line #5

Source: Seoul Metropolitan Subway Corporation, Seoul Metropolitan Rapid Transit Corporation

Effectiveness

Reducing Traffic Congestion

Currently, the Seoul Subway takes part in alleviating traffic congestion within the city by transporting some 4.5 million passengers every day with its Lines #1~ #8.

<Table 5-8> Operational Performance of Seoul Subway (as of December 1997)

Lines	Seoul Metropolitan Subway Corporation (SMSC)					Seoul Metropolitan Rapid Transit Corporation (SMRTC)			
	Total	Line #1	Line #2	Line #3	Line #4	Total	Line #5	Line #7	Line #8
Operational Distances (km)	134.9	7.8	60.2	35.2	31.7	84.2	52.1	19.0	13.1
Number of stations	115	9	49	31	26	83	51	19	13
Number of cars	1,944	160	834	480	470	834	608	136	90
Number of operations (number/day)	1,556	617	988	427	524	1,328	545	344	349
Number of Passengers (100 prns/day)	3,712	503	1,697	678	834	773	525	159	89
Degree of congestion(%)	201	156	242	178	227	166	168	213	117

Source: Seoul Metropolitan Subway Corporation, Seoul Metropolitan Rapid Transit Corporation

Development of the Regional Economy

During the planning stages for the Subway, economic, cultural, and relational elements were reflected in drawing up the Lines. This was considered an important factor, so as to maximize economic impact and spillover effects among cities connected after the completion of the Subway.

Impact

The following shows project effects and impacts measurable in the short-run and mid/long-run.

-Development of regional economic activity (active promotion of development to commercial and residential areas).

-Alleviation of traffic congestion in Seoul and other neighboring areas.
(Reduction in the number of bus and car users, streamlining of bus routes, etc.)

<Table 5-9> Number of Cars and Average Traffic Speed in Seoul

	1992	1994	1995	1997
Number of registered cars	1,563	1,945	2,043	2,249
Car traffic speed (km/h)	19.28	20.04	18.25	16.85

Source: Seoul Statistical Yearbook

-Prevention and control of environmental pollution through gas exhaust reduction and traffic accident prevention.

<Table 5-10> Number of Traffic Accidents

Year	1991	1994	1995	1996
Number of traffic accidents	56,528	46,479	42,100	46,031

Source: Seoul Statistical Yearbook

<Table 5-11> Air Pollution Status of Metropolitan Seoul Region

Item	SO_2	CO	NO_2	Dust
Environmental standard	0.03	9	0.05	150
1991	0.043	2.8	0.033	121
1994	0.019	1.5	0.032	78
1996	0.013	1.2	0.033	85

Source: Seoul Statistical Yearbook

-Securing transportation means for the socially-needy (aged persons, children, women, disabled)
-Obtaining technologies in constructing metropolitan subways

Sustainability

No particular problems are currently reported, regarding the maintenance and management of the trains by the SMSC and SMRTC.

Both SMSC and the SMRTC's financial status are weak. They are shouldering the loan burden they took over from the Office of Subway Construction, Seoul Metropolitan Government, and they are unprofitable due to low passenger fares. Their revenues and expenditures in fiscal year 1997 are shown in the following table. However, because the unavoidable buildup of dept is similarly found in the subways of Japan and other counties as well, this matter is not unique to Korea.

<Table 5-12> Revenues and Expenditures for Fiscal 1997 of SMSC and SMRTC

(Unit: one million Won)

Classification		SMSC		SMRTC	
Revenues	Total	1,243,000	100%	499,000	100%
	Operational income	650,459	52	160,519	32
	Seoul City's investment	184,900	15	172,400	34
	Loan	387,329	31	112,892	23
	Others	20,312	2	53,189	11
Expenditure	Total	1,243,000	100%	499,000	100%
	Operational income	499,149	40	208,304	42
	Capital expenses	167,309	13	12,950	2
	Debt redemption	542,314	44	258,589	52
	Face amount	395,501	32	118,542	24
	Interest	146,813	12	140,047	28
	Reserve cost	34,228	3	19,157	4

Source: Seoul Metropolitan Subway Corporation

<Table 5-13> Comparison of Original Plan and Actual Scale

Item		Plan	Actual

Project Scale	Line #3 (Extension Line) : Yangjae-Suso	8km	8.2km
	Line #4 (Extension Line) : Sanggye-Tangogae	1km	1.26km
	Line #5 (New Line) : Panghwa-Youido	17km	16.6km
	Line #5 (New Line) : Kodok-Wangshimni	15km	15.34km
	Total	43.4km	43.8km
Project Period	Line #3, #4 (Extension Line)	12/1992	04/1994
	Line #5 (New Line)	12/1992	12/1996
	Land Acquisition	01/1990-12/1991	01/1990-12/1994
Project Cost	Foreign Currency	72,000 million Yen	59,135 million Yen
	Local Currency	891,800 million Yen	2,018,868 million Yen
	Total	262,845 million Yen	320,588 million Yen

Source: Seoul Metropolitan Subway Corporation

Case summary

The foundational objectives of the Kyungbu Highway Construction Project and the Seoul Subway Construction Project(2) were to reduce social costs and to improve the living standards of citizens in accordance to Korea's socio-economic development. The two aforementioned projects, in terms of projects costs, constitute the largest portion among all JBIC loan projects. As much as they did, it is suspected that the impacts on the Korean society were much greater than any other project, and the Cowbell effects on the Transportation sector are as follows.

Regional economy development

The Kyungbu Highway was constructed throughout five provinces and helped the

development of regions falling behind in the economic growth process. Development of these areas was catalyzed by the construction of the highway. Regional market expansion from farming and fishing community' development and resource development acceleration of each region were achieved.
In the same light, the Seoul Subway Construction Project (2), reflected objective elements of balanced regional economy development, linked connections between underdeveloped areas and popular vicinities, thus inducing population transfer.

Uplifting rationality to the transportation system

In order for Korea to establish rapid economic development in the 1970s, securing an efficient transportation system was imperative to connect the capital region, concentrated with factories, and the Busan harbor, which was the gathering point for raw materials. The Kyungbu Highway, constructed with these objectives in mind, rendered not only the effects of shortening transport time between Seoul and Busan, but also the effects of reducing cargo damages, advancing traveler's convenience, and diminishing traffic accidents.
By implementing the Seoul Subway Construction Project(2)-expanding additional lines to the Seoul Subway allotted with more than forty percent of Seoul's total traffic caused by increases in population concentration-effects from inducing car drivers to use the subway rendered social cost reduction, such as alleviation of traffic congestions, reduction in traffic accidents, and decline in oil costs.

Reducing environmental pollution

The construction of the Kyungbu Highway not only enhanced the accessibility to all areas nationwide, but also improved the efficiency of road usage, thus optimizing transport distance, and therefore reducing environmental pollution.
Likely, by further developing a environment-friendly public transportation method such as the subway, the Seoul Subway Construction Project (2) promoted the effects of reducing environmental pollution and saving energy.

Background

As industrial development successfully proceeded after the 1st Five-Year Economic Development Plan started in 1962, a heavy influx of the population into the large cities started to occur. However, due to insufficient road and traffic systems, land-based transport soon reached its limits. For these reasons, among the many urban problems, including housing shortages, traffic congestion, and environmental pollution, the issue of solving traffic problems was most urgent.

In order to resolve traffic congestion problems and to enhance balanced regional development between cities, the Korean government, utilizing JBIC loans, promoted and carried out projects for highway construction, public transportation expansion, and traffic systems improvement.

Purpose and Scope of Evaluation

By evaluating the effects and impacts of the subway project, which was pursued in order to fundamentally resolve municipal traffic problems, this study analyzes the contribution of the JBIC loan projects in terms of regional economic development and reduction of traffic congestion for the urban citizens.

Approach and Methodology

The loan projects implemented since the 1980s in the transportation sector were carried out by the Ministry of Construction & Transportation, the Seoul Metropolitan Subway Corporation and the Seoul Metropolitan Rapid Transit Corporation. In reviewing project accomplishments in this sector, it was possible to collect assorted progress-related data (document records) and conduct interviews with the managers at the Korea Highway Corporation, Seoul Metropolitan Subway Corporation and Seoul Metropolitan Rapid Transit Corporation. In addition, the study was supplemented by conducting detailed interviews and surveys with personnel who had participated in the project at the time.

Impact Assessment Study

By continuously promoting economic growth policies to industrialize, Korea recorded rapid growth exceeding ten percent per annum until the 1980s. As a result, industrial cargo traffic increased immensely and heavy concentration of the population to the cities occurred. The government tried to solve the problem by constructing the Kyungbu Highway, and getting involved in housing, unemployment, traffic congestion, and environment pollution problems. In order to settle traffic congestion problems, which emerged as a severe social issue, the government endeavored in many ways to improve traffic system efficiency and to continuously build traffic-related infrastructures by inducing foreign funds. However, at the time the Korean government, facing tasks of improving traffic efficiency; saving energy; and improving living standards, was short on financial resources. Nevertheless, they pursued projects for highway construction and subway system expansion. Through these projects, the Korean government was able to establish diversity in traffic systems, and as a result, these improved the quality of life and balanced regional development in different parts of the country. The following elicits each case in detail.

Regional economy development

The projects of this sector, in terms of funds allocated, are the biggest among the projects studies. As important as these projects were, the regional economic impacts anticipated from constructing the highway and subway system were taken into consideration from the initial planning stage, and accordingly, it was found that increased population flow between neighboring areas, and more active commercial transactions etc., had occurred as a result. However, the quantitative measurement of these effects follows many difficulties. The subway line passes through many autonomous districts; therefore, making it impossible to determine solely, which area has benefited most from increased business transactions. However, considering some objective figures such as rise in land value, increased population flow, and population influx, no one can deny the significant effects from the construction of the subway system.

Reducing traffic congestion

Due to rapid economic growth, car-ownership exploded. This became the main cause of chronic traffic jams, which agonized urban citizens during rush hours. Although the number of cars and volume of cargo increased significantly due to rapid economic growth, the road system could not cope with those demands. The government facing limitations in expanding overland road systems, therefore, promoted the expansion of subway lines to improve the urban transportation system. As a result, the subway now occupies around forty percent of the total rush hour transportation in Seoul. Due to the increase in subway users, the project contributed to the reduction of traffic accidents, reduction of social costs from traffic congestion, and the support of the socially needy.

Reducing environmental pollution and energy consumption

Currently, Korea's energy consumption per capita is one of the highest in the world. As the energy consumption in Korea became almost completely dependant on imports, it was necessary for the country to focus on the issue of energy conservation. In addition, in order to resolve problems of pollution, which had worsened especially in the major cities, the government needed to expand environmentally-friendly highways and public transportation. By providing high-quality public transportation services through the highway and subway construction projects, which were promoted precisely for these reasons, citizens were actively induced towards using these facilities. Consequently, the objectives of reducing energy consumption and environmental pollution were achieved by significantly decreasing the volume of traffic and by shortening travel distances.

5.1.1.2 Impact on Manufacturing

<Case> Pohang Steel Company (POSCO) Construction Project
<Figure 5-3> Pohang Steel Company

1. Project background

There had been constant debates and attempts on the construction of an iron mill, which is a national key industry fundamental to other manufacturing industries, since the beginning of the economic restructuring progress. However, such attempts were not realized, and the Koreans steel industry remained outdated and at a rather small scale until the 1960's.

The first attempted iron mill construction plan was to receive three million dollars from ICA in June 1957, and build a mill in the Mook Ho area. Nevertheless, this plan was abandoned as the U.S doubted its economic viability.

Consequently, the Ministry of Commerce and Industry planned to build an integrated iron mill in Yang Yang, with a production capacity of two hundred thousand tons of pig iron, in August 1958, and sought to raise foreign capital worth 37.45 million dollars, but that attempt was also unsuccessful.

In 1960, when the Second Republic was inaugurated, plans for constructing an iron mill was included in the 5-year Economic Development Plan which was then in preparation. The plan was to invest thirty-two million dollars worth of foreign capital and three hundred billion Hwan of domestic funds to build an iron mill with a production capacity of two hundred fifty thousand tons of pig iron, but the plan was abandoned due to the short-lived rein of the Second Republic. Meanwhile, even in the Third Republic, there were attempts to establish joint ventures with the DKG group from Western Germany and the U.S. investment Association in the early 1960's, but both were not realized.

In contrast, various nations, including the EC, started to build their own iron and steel industries since the 1950's, but the trend remained around one hundred thousand tons in the early 1960s and around the level of five hundred thousand tons in the early 1970s. Still, with an industrialization-based economic development strategy actively pursued in the early 1960s in Korea, the demand for iron and steel, which formed the foundation of other manufacturing industries, tended to increase considerably and the necessity for the

development of the iron and steel industries became crystal clean.

Of course, from the perspectives of other countries who could readily supply the necessary capital and technologies to Korea's new iron and steel industry, it was rather national to be skeptical about the development of Korea's iron and steel industry. With Korea's economic conditions and reality at the time, it was hard to justify an investment on such a massive, yet fundamental industry which required huge amounts of capital and accumulated technology objectively.

Even under such difficult circumstances, the country's political leaders at the time had strong passions for modernizing the country through industrial development. Clear visions for 'economic autonomy' and strategic consideration for 'independent national defense capabilities' were taken as strong intentions to actively promote the development of iron and steel industries.

2. Particulars of the project and circumstances for its promotion

The unyielding plan for construction of an iron mill was scrutinized and reflected as part of the "Development Plan of the Tae Baek Mountains" in the 1st Five-Year Economic Development Plan, which was announced in January 1962.

As part of these long-term comprehensive plans, the 'Iron and Steel Industries Development Plan' was decided in the Economic Ministers' Meeting of December 1964, and basic policies for the construction of an iron mill, whose output was estimated to be one million tons per year, were established.

However, the iron and iron mill construction plan was put off as a project for the following five year period in the editing process of the first term Five-Year Plan, which was initially overly ambitious.

On the other hand, in the 2nd Five-Year Economic Development Plan, which was set up in July 1966, a scheme to build an integrated iron mill with a production capacity of five hundred thousand tons by 1971 was included, and preparation for the project such as raising foreign capital began. thirty million dollars from the Yawata Iron Mill of Japan, 30 million dollars from AID loans from the U.S. and twenty million dollars of development loans from Western Germany were introduced, and a program to promote the project began.

A consortium, was organized by the Koppers Company of the U.S., in December 1966, after various efforts to introduce more funds for the construction of the iron mill. A group called KISA (Korea International Steel Associates) was established, where representatives of seven companies from four countries including the U.S., Germany, UK and Italy met to consider and support the construction of an iron mill in Korea, and it was at this meeting

whereby a multi-party conference for an integrated iron mill construction project was set-up.

The consideration and support for the integrated iron mill seemed to proceed smoothly, and the second session of KISA was held in January 1967. The representatives of KISA visited Korea in April 1967 to conclude a provisional agreement about the integrated iron mill. Also in October 1967, progress was made when a basic agreement about the construction of the iron mill was reached and signed between the Korean government and KISA. However, the U.S. and the International Development Organization started to express negative views about the project, and the promotion of the project came to a standstill. In April 1969, the contract with KISA was abandoned and the construction of iron industry was back to square one.

Due to unexpected results related to the construction of the integrated iron mill project, the Economic Planning Board established the "Integrated Iron-mill Project Committee" which would reconsider the integrated iron mill from scratch and draw up a new plan. The most severe problem was, as expected, securing the huge construction funds needed to move forward with the project.

It was decided that it would be difficult to depend on countries like the U.S. and Germany for funding, so the new target became Japan. However, it was concluded that inducing a separate investment fund from Japan would be difficult. The new project scheme, prepared by the Integrated Iron-mill Project Committee in July 1969, was to expand the initial establishment scope to the international standard of one million tons, and in the meanwhile, to consider using Korea's right of Claim fund against Japan as the initial construction seed money fund.

Accordingly, in the third Korea-Japan Ministerial Conference held in August 1969, Korean proposed the integrated iron-mill construction plan to the Japanese and started consulting with Japan on the matter. After progress was made by the governments of Korea and Japan, the "Basic Agreement on Raising Construction Funds for the Pohang Integrated Iron-mill" was signed in August 1969, and based upon this, the iron mill construction project was actively pursued. The main content of this basic agreement stated that regarding the construction scope, details of equipment, and construction process of the integrated iron mill, these would be in accordance with the reports from the Japanese investigation commission who would make necessary comments on the initial proposals from the Korean side, and that Japan would supply 1.237 billion dollars of right of claim funding as construction funds for an integrated iron mill based on the "Agreement between Korea and Japan regarding Properties and Right of Claim" and related documents.

To show active support for the Pohang Integrated Iron-mill Project, the Korean government enacted the "Steel Industry Promotion Act" in January 1970, and commenced the historical construction of the integrated iron mill in April 1970.

Three years later, the first phase of the iron mill was completed in July 1973. It could produce up to 1.03 million tons of steel and soon after, the second, third and fourth phases of new construction were executed. In January 1982, when the second part of the fourth phase project was completed, the mill was fully equipped with an integrated iron and steel manufacturing capability and was able to produce 9.1 million tons of crude steel.

On the other hand, the second iron mill construction project was conceived as part of the Korean government's heavy and chemical industries promotion policy of the early 1970s, and was located in Gwang Yang Bay. The Kwan Yang works began construction in 1982, and was completed in October 1992 with a production capacity to produce 1.14 billion tons of crude steel.

Various project plans were set up during several trials of the integrated iron mill construction plan and its implementation process. The project plan that was pursued upon the agreement with Japan in 1969 was based upon the plan originally prepared by KISA, modified through suggestions prepared by technological evaluation teams from the UNDP, the Battle Memorial Institute and Japan.

The original plan by KISA was to build facilities that would eventually have a production capacity of 500 thousand tons over two phases, but the results from the UNDP and Japanese evaluation team suggested that constructing a facility with one million tons production capacity at once would be more efficient economically, and that the Korean government involvement and support in providing social overhead infrastructures related to the construction of the iron-mill was inevitable.

Under such a background, the blueprint of the iron-mill whose initial productive capacity planned to be one million tons was drawn. A Japanese technology appraisal team from the IBRD concurred on the viability of the project. The initial scale was 1.03 tons per annum, and the basic agreement regarding the iron mill construction between the two governments, Korea and Japan, was concluded.

The integrated iron-mill with five hundred thousand tons capacity was to cost a total of 227 billion Won including sixty-seven million dollars of foreign capital and forty-eight billion Won from domestic sources over 1968-1971. However, the actual amount invested was much greater as the scope of project was increased to 1.03 million tons and because almost two years had already progressed smoothly.

According to the investment plan at the beginning of the construction in May 1970, the

plan was to cost 137.7 million of foreign capital and 253.89 billion Won for the construction project, but the scope of some of the mill-related facilities were expanded, and increasing prices and exchange rates affected the actual amount. A total of 1.06783 trillion Won was invested including 168.1 million dollars of foreign capital and 39.56 billion Won from domestic source. Foreign capital was used to import factory equipment and parts which could not be supplied domestically, accounting for sixty-three percent of the total amount invested, whereas domestic funds were needed for construction and related expenses including basic machinery and materials, land purchases, site improvements, ocean fare, insurance and engineering services, which could be supplied domestically. Meanwhile, equipment or basic material which was supplied from domestic sources in the first batch of the iron-mill equipment was ninety-four billion Won out of a total of 792 billion Won, or 12.5%. On the other hand, social overhead infrastructures such as electricity, roads, ports and industrial water works related to the construction of the integrated iron-mill industrial complex were financed by the Korean government. Investment in basic facilities such as ports and railways by the government, along with financial support to the steel industry as well as special tax and tariff considerations, is a subject which raises the question of equity from the perspective of a free market economy. Through the opinions rendered by the USAID about the Pohang Integrated Iron-mill Construction Project, the U.S. pointed out that although in reality, government support is needed for an infant industry in a developing country, the Pohang integrated iron-mill completed through special support from the government through financial support and special tax considerations would disturb the market price structure and would cause problems for the world iron and steel market. In contrast, investment support from the government would be one of the most important ex-ante conditions from the perspective of the parties concerned with the construction of Pohang integrated iron-mill, since it would be difficult to secure economic and financial viability for the project, if one could not get the support in social overhead infrastructure investment during the infant stage. The Japanese inquiry team, which visited Korea in September 1969 and carried out an appropriateness evaluation about the Pohang integrated iron-mill, suggested that supporting measures such as tax considerations by the government would be needed to assure economic efficiency of the project.

The issue of basic social overhead facilities investment, supported by the government, was also raised by the IBRD inquiry team which visited Korea in October 1969. Their logic was that the investment required for ports, railways and dredging work should be included as construction expenses covered by the company, but the Korean government demanded that it should be considered investment in social overhead capital investment,

considering the special circumstances of the iron and steel industry being built in a developing country.

A total of 148.66 billion Won was invested, including 114.42 billion Won for the construction of ports, 15.53 billion Won for industrial water facilities, 715 million Won for the railway facilities, and 11.56 billion Won for urban planning, during the first phase of construction.

<Table 5-14> Investment During the 1st Construction Project Phase

Classification	5 Year Plan	Construction Plan	Actual Investment
Capacity (thousand tons)	500	1,030	1,030
Domestic fund (million won)	4,824	25,389	39,560
(Rate engaged, %)	(21.3)	(31.5)	(37.0)
Foreign capital (thousand dollars)	67,333	137,714	168,058
(Rate engaged, %)	(78.7)	(68.5)	(63.0)
Total (Million Won)	22,694	80,475	106,783

Source: "10 Year History of the Pohang Iron Mill", 1979

Foreign capital, which accounted for two-thirds of the first phase construction project cost of the Pohang integrated iron-mill, came mostly from Korea's Right of Claim against Japan and from business loans. The money raised through Korea's Right of Claim against Japan, was either interest-free or at very favorable low interest rates compared to regular business loans.

<Table 5-15> Foreign Capital used during the 1st Phase Construction of the Pohang Integrated iron-mill

(Unit: thousand dollars)

Classification of funds		Amount	Conditions	Particulars of procured facilities
Korea's Right of Claim fund against Japan	Grants	30,800	Free	Raw material treatment facility, steel works, etc

	Loans	46,428	3.5% interest per annum 7 years grace period; repayment in 13 years	Sinter plant, iron manufacturing plant, heavy oil facility, etc
	Total	77,228	–	–
Business loan	Export-import bank of Japan	54,498	5.875% interest per annum; 1 year grace period; repayment in 11.5 years	Oxygen factory, electric power distribution equipment, heat treatment plant, etc
Supplier's credit	Japan oriental cotton	13,987	6.5% interest per annum; 1 year grace period; repayment in 10 years	Cokes factory facility
	VOEST company of Austria	24,345	6.5% interest per annum; 3.4 year grace period; repayment in 8.5 years	Heavy Iron Plate factory facility
	Total	38,323	–	–
Grand total	168,058	–	–	–

Source: "20 years history of Pohang iron mill", Dec. 1989

3. Project achievements and lessons learned

The Integrated Pohang Iron Mill Construction Project is one of the representative examples of the recipient taking the initiative and carrying out successfully foreign assistance. It is considered a wonderful success as a result of hard work and determination in extremely negative initial reviews both domestically and internationally at the time of preparation. A more suitable project plan was prepared after many trials in the stage of project promotion and energy to continue on with the project was provided. The

Pohang Integrated Iron-mill Construction Project, having been successfully completed after overcoming many obstacles, provides us much insight related to the promotion of international development cooperation projects.

The Pohang Integrated Iron-mill Construction Project is a good show case, whereby even if the recipient country's capital and accumulation of technology in the related fields are insufficient; with careful project preparation and promotion, viability and economic efficiency could be achieved through introductive application, absorption and improvement of technology provided through international development cooperation. That is, not only lack of technology but also lack of capital could be overcome by acquiring foreign capital through international development cooperation.

The capital and technology gap, that was initially huge, gradually narrowed beginning with the first phase of the Pohang Iron-mill Construction Project of the early 1970s to the iron mill improvement projects which continued into the 1990's. The Pohang Integrated Iron-mill Construction Project, even during the second phase of construction, relied on foreign capital for almost two-thirds of the entire funds, but this decreased to less than fifty percent during the second part of the fourth phase of construction.

In the 1980s, most of the investment funds came from domestic funds such as the company's own funds and bonds. We may assume that as domestic funds account for a larger share, the capital gap becomes reduced.

For reduction of technological gap, we need to observe the localization ratio of equipment required in facility investment.

Localization of the equipments was no more than 12.5% for the first phase of the Pohang Integrated Iron-mill Project, but by the completion of investment in equipment for the Gwang Yang Iron-mill in the early 1990s, it can be seen that a higher than sixty percent localization ratio was achieved.

<Table 5-16> Transition for Localization of Iron-Mills

(Unit: billion Won)

Classification	Pohang Iron mill					Gwang Yang Iron mill			
	1st term	2nd term	3rd term	4th term	2nd part of 4th term	1st term	2nd term	3rd term	4th term
Output	103	260	550	850	910	270	540	810	1,140
Total amount of	75.2	161.4	446.9	446.4	184.8	939.0	510.5	1,070.2	1,213.8

facilities									
Domestic facilities	9.4	25.0	100.8	156.7	76.6	464.2	282.6	655.9	765.8
Rate of localization	12.5	15.5	22.6	35.1	41.5	49.4	55.5	61.3	63.1

Source: "Pohang Integrated Iron Mill and the National Economy"

If we evaluate this trend from the new point of macroeconomic investment and management of the economy, an outward-looking and open investment policy would provide greater chances of success rather than an inward-looking and passive investment policy based on the domestic market and a static technology level. That is, an outward-looking and open investment policy is more likely to report a bigger success. The Pohang Integrated Iron-mill Construction Project, which obtained excellent results starting from scratch, is one example that speaks for the importance of the basic materials industry and the necessity for future-oriented investment.

Based on the accumulated profits and technology from the domestic iron and steel industry so far, the Pohang Integrated Iron-mill is expanding investments on other industrial sectors and has endeavored to transfer capital and technology overseas by taking part in overseas investment. Now, the Pohang Integrated Iron-mill is free from the capital and technology gap and is taking active part in various investments to reduce capital and technology gaps in other developing countries. The Pohang Integrated Iron-mill has invested 1921.3 million dollars to establish thirteen steel production corporations in seven countries including China, Vietnam etc. as of June 2003.

Source: Edited and compiled from materials obtained from "KOICA"

<Case> Small and Medium Industries Modernization Program 1,2,3 (1987)

(1) Project Background

In the 1960s, Korea underwent rapid economic growth by exporting industrial products. However, the basis of the government's industrial policy in the 1960s was biased towards the heavy and chemical industries centered around a small number of large conglomerates. As a result, the industrial structure of Korea became increasingly concentrated in the hands of these conglomerates, and the government realized the necessity of supporting small and medium-sized firms in order to achieve balanced

industrial development. Accordingly, as a policy to support small and medium-sized firms, the Korean government initiated support programs in finance, tax, technology, management, etc. The agency responsible for this project was the Korea Development Bank and the Kook-min Bank.

(2) Project Objective

This project aims to provide financial support to small and medium-sized firms that wish to procure new equipment or technology, hence catalyze modernization of their equipment/management, and promote employment in the manufacturing sector.

(3) Project Evaluation

Relevance

This project is closely related to the government policy of improving the industrial structure of Korea, which has heavily concentrated financial and human resources in the hands of a small number of conglomerates during Korea's rapid economic development.

<Table 5-17> The Status of Small and Medium-sized Firms in the Manufacturing Sector

	1984	1983	1985		1987	
	Korea	Japan	Korea	Japan	Korea	Japan
No. of Business Establishments	97.4	99.2	97.5	99.1	97.6	99.5
No. of Employees	57.6	71.9	56.1	71.8	57.1	74.4
Valued-Added	37.5	37.9	37.6	54.8	39.5	52.6
Production Value	-	-	35.4	50.6	37.9	56.4

Source: Ministry of Finance and Economy

Efficiency

The amount of ODA loans introduced by this project was almost identical with the originally planned amount during appraisal, and the process of loan disbursement (finance consultation-establishment of credit limit-firm appraisal-credit inquiry-loan approval-fixation of loan-post management) to small and medium-sized firms was assessed to be accord with the original plan.

Effectiveness

Through this project, 637 cases of more than twnety types of loans were processed to small and medium-sized companies, and distribution of the loans to different regions around the country contributed to the balanced regional economic development.

Impact

It would be impossible to grasp and understand the full impacts of this project in a short period of time, because of difficulties in collecting data, exist as industries utilizing the recruiting loans vary in environment and type of business etc. However, through elaborate evaluations, the following results could be found.

-Easier access for small and medium-sized firms to financial resources.

-Regional economic development due to finance support with consideration of distribution by region.

-Increased opportunities for employment due to the promotion of industrial activities

-Improving the industrial structure nationwide.

<Table 5-18> The Status of Small and Medium-sized Firms in the Manufacturing Sector

	Size of Industry	1980	1990	1992
Number of Business Establishment	Small and medium Firms	29,779 (96.6)	67,692 (98.2)	73,657 (98.6)
	Large Firms	1,044 (3.4)	1,193 (1.8)	1,022 (1.4)
Number of employees	Small and medium Firms	1,000 (49.6)	1,864 (61.7)	1,845 (65.8)
	Large Firms	1,015 (50.4)	1,156 (38.3)	957 (34.2)
Value- added	Small and medium Firms	4,168 (35.2)	31,994 (44.5)	45,662 (47.6)
	Large Firms	7,688 (64.8)	39,890 (55.5)	50,336 (52.4)

Source: Ministry of Finance and Economy

Sustainability

The executing agencies of this project were the Kookmin Bank (1st, 2nd and 3rd phase) and the Korea Development Bank(1st and 3rd phase). Loans were disbursed through impartial

processes (specialist consulting, industry inspections), and even after the establishment of loans, the projects were closely monitored.

<Table 5-19> Executing Agencies

Executive organ	Kookmin Bank (KB)	Korea Development Bank (KDB)
Established	January 1963	August 1961
capital	78.5 billion won	167 billion won
Outstanding finance balance	112.2 billion won	236.5 billion won
Branch network	Local: 481, Foreign: 8	Local: 246, Foreign: 8
No. of staff	14,701	7,300

Source: Kookmin Bank, Korea Development Bank

<Table 5-20> Comparison of Original Plan and Actual Scope

(Unit: Million Yen)

Item	Loan	Plan		Actual	
		KB	KDB	KB	KDB
Project Cost	KO-43	3,100	4,650	3,100	4,650
	KO-51	6,200	-	6,200	-
	KO-59	4,320	7,200	4,318	7,200
	Total (3 Projects)	13,620	11,850	13,618	11,850
		25,470		25,468	

Source: Kookmin Bank, Korea Development Bank

Case summary

The Pohang Steel Company (POSCO) Construction Project and the Small and Medium Industries Modernization Program(1,2,3) implemented in the Manufacturing sector, was in accordance with the stages of Korea's economic development and greatly contributed to the transformation of the industrial structure.

The construction of the Pohang integrated iron-mill, enabling the production of steel materials fundamentally needed in all industrial sectors, meant the take-off of an industrialized nation. The controversy of executing this project began since the 1960s

when ideas of reconstructing the economy were provoked, and its plans continued to falter through difficulties in financing.

Finally in 1970, the construction of the iron-mill was conducted in full-scale owing to President Park, Chunhee's strong leadership. Although, there was a disapproval from the conventional friendly countries, US and Germany, which stalled the project execution; with the import of financial loans provided by Japan, the project could be carried out in full throttle.

The constructed integrated iron-mill can evaluated as a result of sensitively coping with increasing demands for steel in the 1970s, and as motivation to promptly advance Korea's industrial structure. It can also be evaluated that the sustained production of steel products, brought about by steel industry development, provided opportunities to catalyze the development of related industries such as motorworks, shipbuilding and construction.

The Small and Medium Industries Modernization Program was promoted to balance Korea's skewed industrial structure controlled by a small number of large conglomerates. The previous policy had been pursued by the government in order to promote rapid economic growth.

By selecting and actively supporting small and middle-sized industries, enterprises which were undergoing financial and management difficulties, but had strong growth potential, this project facilitated the alleviation of the industrial structure centered around conglomerates, and greatly improved the competitiveness and survival of small and medium-size firms.

Background

The basic industrial policy of the Korean government in the 1970s gradually changed towards heightening her industrial structure, by concentrating on heavy and chemical industries which inevitably centered around larger enterprises. This resulted in an industrial structure heavily concentrated on a small number of large corporations. This type of industrial structure contributed to rapid economic growth, but at the same time, created an awkward situation where a few large conglomerates controlled large portions of the national economy. The government realized that for balanced industrial development and avoidance of over-dependence upon specific industrial sectors, support for promotion of small and medium enterprises were needed. The government began to provide financial, tax, and technological support as a part of policy that supported small and medium-sized firms through JBIC loans.

Purpose and Scope of Evaluation

We would like to examine the impact of the JBIC loan project on the manufacturing sector by evaluating the loan projects, which was pursued to provide financial support to small and medium-sized firms in the 1980s, when the industrial structure was indeed very skewed. New equipment and technologies were introduced, equipment was modernized, and management of small and medium-sized firms improved, leading to increased employment in the manufacturing sector. The overall competitiveness of small and medium-sized firms improved noticeably as a result.

Approach and Methodology

Manufacturing-related loan projects after the 1980s were implemented by organizations such as the Kookmin bank, and the Korea Development Bank under the guidance of the Ministry of Finance and Economy. In conducting the study, interviews with the final beneficiaries of JBIC project loans was compulsory. However, there were simply too many final beneficiaries of JBIC project loans. Some enterprises went out of business, and the industries which received project loans was very diverse. This limited the possibility for quantitative analysis of how much the JBIC loan projects actually affected the industrial structure of the Korean economy. The study on the manufacturing sector had to rely on interviews and research surveys to the staff members and businessmen who were involved at the time.

Impact Assessment Study

Korea achieved rapid economic growth by exporting industrial products. However, the basic industrial policy of the government in the late 1970s heavily favored heavy and chemical industries which centered on a small number of large enterprises. This resulted in an industrial structure heavily concentrated in the hands of a few conglomerates. The government realized that for balanced development of industries, support for small and medium-sized firms was needed. The government started to provide financial, tax, and technology management support to small and medium-sized firms with JBIC loans. However, to grasp the full effect of this project is rather perplexing. Resources supported by this loan project were provided to various enterprises in different situations, and accurate field data could not be secured due to the time lag of at least thirty years since disbursement. Still, through this research, the general influence could be confirmed. The financial, management and technological support to small and medium-size enterprises in the 1970s helped relieve the heavy concentration of economic power in the hands of a few conglomerates.

5.1.1.3 Impact on Water Supply·Sewerage·Sanitation

<Case> The Chung-ju Multipurpose Dam Project

<Figure 5-4> Chung-ju Multipurpose Dam

(1) Project Background

The Chungju Multipurpose Dam is located nine kilometers northeast of Chungju city which is located upstream of the North Han River. The left river basin lies along Jongmin-Dong, Chungju city, whereas the right riverbank lies along Dongryang-Myun, Chungju city. As the largest concrete gravity dam within the nation, the measurements of its height, length and body volume are 97,5m, 447m and 902,000m^3, respectively.

Starting construction on the entry driveway on June 3rd1978, the dam was completed on December 20th 1985, after a period of seven years and seven months. As of fiscal year 1985, the total cost including both domestic and foreign funds reached ₩555,139 million. The completion of this project contributed to improving flood control, meeting the increasing demands of domestic, industrial and agricultural water supply in the capital and central region, and furthermore, contributed to aquatic tourism around the area utilizing the Chungju reservoir.

(2) Project Objective

The Chungju Multipurpose Dam was built in accordance with the National Development Plan for the four main rivers of Korea. Objectives of this large-scale National Development Plan included: providing urban, industrial and agricultural water supply, flood control, and power generation to the capital city region, by developing the water resources from the Han River water system.

(3) Project Evaluation

Relevance

As the economy grew rapidly in the 1980s, steady electric and water supply to the capital region and the Kyungin area located within the Han water system, became a high priority for the Korean government. This project, aimed at the construction of the Chungju Dam and consequently, satisfying the needs of water and electricity to the neighboring cities,

is found quite relevant to the Korean government's industrial development policy of the time.

Effectiveness

The executing agency reports that the project reduced damage from flooding and satisfied increasing urban, industrial and agricultural water supply demands in the central region including the capital. Furthermore, the project contributed to aquatic tourism in the region utilizing the Chungju reservoir.

Efficiency

This project was completed on August 1985, with a twenty months delay from the original project plan, and total cost increased 2.9 fold from the ₩190,262 million forecasted, at the time of project review, to ₩555,139 million.

Impact

Flood Control

As the Chungju Multipurpose Dam was built, cities, industrial facilities and farmland in the lower Han basins of the South Han and Paldang areas were relieved from the threat of floods. The Han River had gone through continuous property damage and loss of lives from the annual floods during the summers of July and August, causing large setbacks to regional economic activities. However, thanks to the flood water control capacity of 616 million cubic meters, the Chungju Dam keeps the water level below one meter from flood level and prevents flooding downstream by adequately regulating the water level.

Water Supply

The annual water supply capacity of the Chungju Dam is 3,380 million cubic meters, enough to cope with the city and industrial water supply demands of the capital region including Seoul, Incheon, Suwon and even Pyeongtaik, and also enough for the regular supply of agricultural water to the Han basin areas, such as Chungju, Yeoju, Incheon etc., thus contributing towards farmland expansion and increasing yield in agricultural production.

Power Generation

The Chungju hydroelectric power plant not only contributes to saving foreign currencies by generating an annual electric power generation output of 844.1Gwh, which is worth about five hundred million dollars annually, but also undertakes peak demand, therefore,

significantly contributing to the provision of sufficient electricity nationwide.

Socio-Impact

By the increased usual flow rate of the Chungju Multipurpose Dam: pollution from urbanization and industrialization could be reached, back current from the estuary blocked, and 197 thousand tons of food production was increased as a result of irrigation water alleviation and reclamation of forty-eight thousand ha of land, located downstream of the dam, which used to be susceptible to annual flood damage. In addition, the construction of this dam promoted the resettlement of 7,105 households from the sixty-nine km^2 parameter which became the large reservoir from Chungju to Danyang. This formed a collective tourist area including the Chunju Dam itself, the Wolak Mt. National Park and the Danyang-Palkyung, thereby improving the area's potential for tourism. It also catalyzed inland navigation and also contributed a great deal to the Han River Development Project carried out by the City of Seoul and the South Han Inland Navigation Development Project (a project to provide more leisure space and form more tourist areas).

Sustainability

The Economic Internal Rate of Return was a little less than of appraisal that in the original plan (13.9%). The maintenance and management of the dam was delegated to KOWACO upon completion. Having plentiful experience in this field, KOWACO reports no problems concerning managing the facility.

<Table 5-21> Structure (4 divisions 1 team 16 departments)

Personnel	General employee			Legal staff	Total
		Regular staff	Petition Officer		
Quorum	75	5	20	1	101
Present	72	5	20	1	99
Variation	-2	-	-	0	-2

Source: Chung-ju Dam Management Group, KOWACO

<Table 5-22> Project History

Term	Event

1966.4-1976.12	Investigation of the Han River Basin
1975.12-1977.3	Investigation for adequacy of the Chungju Multipurpose Dam
1978.1.20	OECF Agreement Contracted Loan Amount: ￥14,000 million Interest Rate : 3.5%/annum
1982.4.2	Concrete Hardening Inauguration
1984.11.1	Freshwater Inauguration
1985.12.20	Ceremony for the completion of the Multipurpose dam attented by the President
1986.10.13	Official Announcement of Completion Approval (107th official announcement by the Ministry of Construction)

Source: Chung-ju dam management group, KOWACO

<Table 5-23> Comparison of Original Plan and Actual Scope

Item		Plan	Actual
Project Scope	Type	Concrete Gravity Type	Same as left
	Dam length	452m	447m
	Dam height	87m	98m
	Generation capacity	270MW	412MW
Project Period	-	1978.2-1983.12 (71 months)	1978.6-1985.8 (87 months)
Project Cost	-	109,842(million won)	124,796(million won)
Population	-	48,119 persons	28,381 persons
Flood Warning System	-	Telemeter system	Installed

Source: Chung-ju dam management group, KOWACO

<Case> Urban Solid Wastes Treatment Facilities Project (Seongnam, Daegu)

<Figure 5-5> Sungseo Urban Solid Wastes Treatment Facilities

(1) Project Background

The volume of industrial solid wastes in Korea increased at a rate of ten percent per year as Korea went through rapid economic development. Especially, as sixty percent of the population lived in cities, the issue of solid wastes disposal became increasingly serious. In the past, methods for treating solid wastes were by just simply burying them, and this created severe environmental problems. Under this situation, the Korean government understood the severity of these solid waste problems, and decided to invest four hundred billion Won in the environmental sector, including it as a part of the 6th Five-Year Economic Development Plan (1987-1991).

(2) Project Objectives

This project aimed at building an industrial solid wastes disposal facility in Daegu and Seongnam, thereby improving living standards and relieving environmental problems.

(3) Project Evaluation

Relevance

Pertaining to the 6th Five-Year Economic Development Plan (1987-1991), the government invested four hundred billion Won in the fields of environmental protection. Industrial solid wastes treatment plants were to be built in Korea's third largest city, Daegu, with a population of two hundred million, and in Seoul's largest suburb, Seongnam.

<Table 5-24> Status on Waste Development and Treatment of Daegu City's Solid Wastes

(Daily average)

Classification	2002	2001

Amount of Waste		2,642 ton	2,640 ton
Treatment Method	Land filled	1,242 ton	1,049 ton
	Incinerated	409 ton	483 ton
	Recycled	991 ton	1,108 ton

Source: Sungseo Incineration Field, Daegu City

Efficiency

Although the project was originally planned to start in October 1987 and to be completed in the same month in 1990, due to problems in budget disbursement, the project actually began in April 1989 and finished in December 1992. These problems were a result from internal department affairs and should not be considered too much of a problem. In terms of costs, the projects were completed within the limits of the ODA loan without any particular problems.

Effectiveness

Through this project, an incinerator of a capacity of two hundred ton/day was installed, and related equipment was procured. These procurement results closely followed original plans, and the implementation was thought to be efficient.

Impact

Preserving the Environment

At the point where Daegu's population agglomerated and increased, the issue of environmental pollution due to rapid economic development became significant. Especially, as more industrial development occurred and toxic wastes were all buried, the pollution became more severe. This project contributed to the fostering of a better quality of life by reducing solid wastes for burial, reducing waste accumulation, and sanitation stabilization.

<Table 5-25> Discharge Measurements (2001 average)

Classification	Sulfates	Nitric Oxide	HCl	Dust	CO	Dioxin
Allowable Discharge Standard	300	200	50	80	600	0.1
Actual	5.4	9.8	6.5	6.7	15.1	0.013

Discharge Level						

Source: Sungseo Incineration Field, Daegu City

Sustainability

The operation and management of the project facility is carried out by the respective city government (Daegu/Seongnam). In case of Daegu, the office consists of thirteen engineers with three or more years of experience, and does not have any difficulties in operating and managing the facility.

Case summary

Projects in the Water Supply·Sewerage·Sanitation sectors were executed one after another since the JBIC loans were first introduced. The following are the Cowbell Effects of these projects which were promoted to sensitively cope with demands such as the increasing of living standards of citizens due to rapid economic growth.

Flood control and water resource efficiency

Through the multipurpose dam construction projects, the government reduced flood damages which often occurred due to the heavy downpours during the summer months attributed by Korea's climate, thus reducing a great deal in social costs.

Additionally, by reserving these heavy rains during the summer and supplying them steadily as city agricultural and industrial water supplies, contributions were also made to agricultural yield increase and industrial development.

Electric generation

In order to cope with the rapidly increasing demands of electrical power, the government was able to generate the needed qualitative electricity by carrying out these multipurpose dam construction projects. As a result, crude oil replacement effects were obtained and contributions were made to conserving foreign currency.

Socio-impact

It has been evaluated that the multipurpose dams: help clean-up polluted water from urbanization and industrialization by fixing the water flow level throughout the year; elevate development values as a tourist attraction; and also contribute to the alleviation of transport difficulties in inland mountainous areas.

Improvement on public sanitation

The Urban Solid Wastes Treatment Facilities Project (Daegu, Seongnam) reduced air and soil pollution by treating increased amounts of urban solid wastes due to urbanization with modernized facilities, and contributed to the improvement of living standards to urban citizens.

In addition, it has been evaluated that the continuous supply of waterworks·sewage facilities brought great contribution to the improvement of public sanitation by preventing various infectious diseases.

Background

The water supply and drainage construction project was pursued in full-scale as a part of the 2nd Five-Year Economic Development Plan (1967-1971). Improvements on waterworks facilities and the expansion and construction of new facilities first began through foreign assistance in 1954. The JBIC loan project in this sector was promoted by the Korean government, which felt the necessity for sewage disposal and stable supply of water resources to Seoul and smaller towns in the neighboring provinces due to rapid urbanization and population concentration in the cities. This project ensured a high-quality water supply and contributed to better health and living conditions on the general population. By evaluating the projects carried out ex-post, we would like to review the socio-economic impact of this project.

Purpose and Scope of Evaluation

The electricity, water resource, and sewage system projects were important projects for the social and economic development of Korea and closely matched the needs which arose in the different stages of economic development in Korea. The study attempts to analyze the effects on the living standards of people and economic development by evaluating the projects in the water supply, sewerage, and sanitation sub-sector.

Approach and Methodology

The projects in the water supply, sewerage, and sanitation sub-sector are projects that were completed a long time ago. The data needed for the research were acquired from the local authorities who were in charge of the project at the time, and there were numerous difficulties in this process as the administrative team that took part in the projects were mostly disbanded, making it quite difficult to interview the person who was actually in charge at the time. As such, the research was conducted by reviewing the documents and through

interviews with the current staff members.

Impact Assessment Study

The result of the JBIC loan projects can be largely divided into multipurpose dam construction and water works·sewerage construction projects. After economic development started to take place in the 1960s, the Korean government needed a stable and constant supply of water resources and electricity for the increasing industrial needs. The government planned to solve these problems by constructing multipurpose dams on water systems near the major cities. Sewerage improvement projects were carried out on a national scale to improve the standard of living for urban residents, and achieved results as summarized below.

Stable supply of water resources

The government reviewed the viability of constructing multipurpose dams in valleys to provide stable water resources to industrial parks or major cities nationwide. Based upon the review, construction of multipurpose dams began. This contributed to a stable supply of water resources to industrial parks and major cities. New equipment (chemical treatment processing facilities, water quality management facilities, filtering facilities) were introduced through a water works expansion project which improved the quality and quantity of stable water resources.

Prevention of flood

The multipurpose dam constructed in the main drainage waterways reduced natural flood damages to residents from the heavy rainfall concentrated during the summer months in Korea. The multipurpose dam located in the upstream of waterways held maximum water capacity during floods to control the inflow of water into nearby cities and helped reduce flooding of houses and farms, therefore reducing social costs which would have resulted.

Development of the Local Economy

After the construction of multipurpose dams, some provinces developed plans to promote industries like aquatic sports to increase local economic activities. This would help prevent local residents from leaving the area, and actually induce population inflow by developing the local economy.

Improvement on Public Sanitation

Thanks to construction of waste processing facilities in Daegu and Seongnam, solid waste

processing moved toward incineration, and by modernizing the facilities, air and soil pollution concerns were greatly reduced.

The increased coverage ratio of water works and the reduced number of reported patients with infectious diseases related to digestive system, in general, suggests improvement in public sanitation related to water works. In the case of Daejeon, no general infectious diseases occurred after 1990, attributed by the improvement of public sanitation, according to an in-depth interview at the Daejeon Metropolitan Waterworks.

<Table 5-26> Sewage Processing in Daejeon

(Unit: thousand m^3/ day)

Year	1987	1989	1992	1994	1995	1997	1998
Clean water treatment capacity	400	429	629	629	829	1,029	1,029
Sewage treatment capacity	0	150	150	300	300	600	900
Sewage treatment plan	-	1st term	-	2nd term	-	3rd term	4th term

Source: Drainage System Bureau of Daejeon

5.1.1.4 Impact on Public Health·Medical Care

<Case> National Medical Center Research Equipment Modernization Project

Korean society lacked modern medical services and medical technology following the Korean War. Aid from the Scandinavian countries helped establish the National Medical

Center, which contributed in the nurturing of medical talents and advancement of medical technology, and of course, provision of higher quality medical services to the Korean people. Later, the National Medical Center was able to provide additional support, with assistance made available through the JBIC loan projects and continued investments on the recipient's part. As a results, improvement of training for much needed medical personnel was accomplished, thus playing an important role in improving public medical services.

<Table 5-27> Number of Beds per Thousand Persons in OECD Countries

(Unit: bed/ thousand)

Name of country	Number of Bed per Thousand Persons (2000)
Switzerland	17.9
Japan	16.5
Germany	9.1
Australia	7.9
Korea	6.1
England	4.1
U.S.	3.6
Mexico	1.1

Source: WHO (2000), The World Health Report 2000, pp. 200~203.

<Table 5-28> Number of Beds by Year and Region

(Unit: Number / %)

Classification		Year (Growth rate with 1985 as the base year)				Region	
		1985	1990	1995	2001	City	District
Hospitals and Clinics	General Hospitals	49,394 (100.0)	66,625 (134.9)	96,865 (196.1)	108,224 (219.1)	104,828 (96.9)	3,396 (3.1)
	Hospitals	17,965 (100.0)	19,425 (108.1)	33,425 (186.1)	63,813 (355.2)	50,669 (79.4)	13,114 (20.6)
	Clinics	23,861 (100.0)	33,011 (138.3)	44.610 (187.0)	76,976 (322.6)	69,225 (90.0)	7,721 (10.0)
Special Hospital		6,356 (100.0)	12,451 (195.9)	16,763 (236.7)	31,101 (489.3)	23,472 (75.5)	7,629 (24.5)

Dental Hospitals and Clinics	Dental Hospitals	54 (100.0)	66 (122.2)	81 (150.0)	58 (107.4)	58 (100.0)	- (0.0)
	Dental Clinics	11 (100.0)	-	29 (263.6)	33 (300.0)	33 (100.0)	- (0.0)
Chinese Medicine Hospitals and Clinics	Chinese Medicine Hospitals	596 (100.0)	1,276 (214.1)	3,498 (586.9)	7,774 (1304.4)	7,605 (97.8)	169 (2.2)
	Chinese Medicine Clinics	21 (100.0)	14 (66.7)	168 (800.0)	519 (2471.4)	471 (90.8)	48 (9.2)
Hospitals with Affiliation		674 (100.0)	872 (129.4)	577 (85.6)	317 (47.0)	317 (100.0)	- (0.0)
Maternity Hospitals		1,018 (100.0)	436 (42.8)	216 (21.2)	137 (13.5)	119 (86.9)	18 (13.1)
Total		99,950 (100.0)	134,176 (134.2)	196,232 (196.3)	288,952 (289.1)	256.857 (88.9)	32,095 (11.1)

Source: Ministry of Health and Welfare, "Annual Report on Statistics of Health and Welfare"

<Case> Medical Facilities Expansion Project

<Figure 5-6> Hanyang University (Kuri Hospital)

(1) Project Background

When the project was under planning in 1986, Korea was experiencing demands for improved medical sewices. However, medical standards were not high when compared to those of developed countries. In the field of medical education, the more education facilities were needed as well. Particularly at private universities where more than sixty percent of all physicians were educated and trained, it was difficult to finance, with their

own funds, procurement of medical equipment required for the newly constructed (or relocated) university hospitals, which were the basic facilities for medical education and research through clinical practice. As university hospitals played the role of regional medical institutions, it was deemed highly necessary to support these university hospitals.

(2) Project Objective

The project aimed at improving the standard of medical education by providing more medical equipment and facilities required for five newly constructed or relocated private university hospitals, in order to upgrade the facilities for medical education.

Outline of Loan Agreement

Loan Amount/Disbursed Amount	5,624 million Yen/3,886 million Yen
Exchange of Notes/Loan Agreement	April 1988 / June 1988
Terms and Conditions	Interest Rate: 4.25%, Repayment: 25 years (grace period: 7 years)
Final Disbursement	November 1995

(3) Project Evaluation

Relevance

At the time of project planning, Korean medical standards were not so high when compared to those of developed countries. Furthermore, there was a shared concern about the relative weakness of public medical institutions (national hospitals, city and provincial hospitals, etc). In particular, since nineteen out of twenty-seven medical colleges were private as of 1986, private universities were expected to play a major role in supplying physicians. It was imperative to have affiliated hospitals as practical training venues for the education of physicians in clinical medicine. The purpose of this project was to improve the facilities for much needed medical education and upgrade the standard of medical education by procuring the medical equipment required for five university hospitals that were to be newly constructed or relocated.

As shown below, the project was quite relevant considering the need of the country at the time of project appraisal.

<Table 5-29> Number of Physicians per 100,000 persons

Country	1993	1998
Korea	127	168
Japan	177	189
USA	245	268
World Average	122	-

Source: Human Development Report 1999, UNDP

Efficiency

While the total number of equipment for Ewha Woman's University Hospital, according to the original plan, were 1,103 units in 803 types, the actual figures were eighty-three types, 161 units in seventy-seven types for Hanyang University, 201 units in eighty-six types for Korea University and 438 units for Dong-A University Hospital. The following shows the comparison of planned and actual figures of each university hospital.

<Table 5-30> Comparison of Plan and Actual by University Hospital

Name of University and Affiliated Hospital		Opening Year	Location	Gross floor area	Clinical Department	Beds
Ewha Woman's University (Mokdong Hospital)	Plan	Oct.1989	Seoul, Ganseo-gu	31,700	15	500
	Actual	Sept.1993	Seoul, Yangcheon-gu	34,773	22	544
Chungang University	Plan	Mar.1990	Kyonggi-do, Gwacheon-si	26,000	20	500
	Actual	Cancelled	-	-	-	-
Hanyang University (Kuri Hospital)	Plan	Mar.1990	Seoul, Gangseo-gu, Mokdong	34,000	19	500
	Actual	May.1995	Kyonggi-do, Guri-si, Gyomun-dong	34,000	20	454
Korea University (Anam Hospital)	Plan	Jan.1991	Seoul, Seongbuk-gu, Anam-dong	44,836	23	460
	Actual	July 1991	Seoul, Seongbuk-gu, Anam-dong	48,650	29	716
Dong-A University Medical Center	Plan	Mar.1989	Busan, Nam-gu, Dongdaesin-dong	38,534	21	749

	Actual	Mar.1990	Busan, Nam-gu, Dongdaesin-dong	20,800	22	459

Source: Respective Hospitals

Effectiveness

Number of Beds per Medical Student

According to a survey at the time of appraisal, the ratios were 3.1 beds per medical student for public university hospitals, and 6.1 beds for private university hospitals. Meanwhile, the number of beds per intern and resident were 3.0 beds for public university hospitals and 4.5 beds for the private university hospitals. At the time of ex-post evaluation, improvement in the education environment of private university hospitals could be observed.

<Table 5-31> Number of Beds per Medical Student for Year 2001

	Ewha Woman's University	Hanyang University	Korea University	Dong-A University
Number. of students in a class	90	140	91	39
No. of beds	1,013	1,497	1,435	952
Number of beds/student	5.6	7.1	9.5	-

Source: Respective Hospitals

Space of Education and Research

Wider space was needed for better medical education and research. Most university hospitals secured space that met or exceeded the planned size. In particular, Anam Hospital allocated more than thirty percent of the gross floor area for strengthening education and research activities for the future.

<Table 5-32> Space for Education and Research in 2001

	Ewha Woman's University	Hanyang University	Korea University	Dong-A University

Gross Floor Area	36,918	34,000	48,650	20,800
Areas spared for Education and Research Purpose	2,127	722.8	15,631	1,437.7

Source: Respective Hospitals

Impact

Impact on Supply of Medical Services

According to the reports from all four hospitals, the number of in- and outpatients has increased. Except for the year 2000, the number of inpatients has been stable in the long run, while the number of outpatients has been on an increase. In case of Ewha Women's University, reports show that the number of patients exceeded the original forecast. Furthermore, the sickbed occupancy ratio for all four hospitals has been above seventy percent, and in particular, Korea University Hospital exceeded ninety percent.

Impact on Supply of Medical Personnel

The following table compares the number of medical school graduates from each of the respective universities with the number of applicants for the national licensing examinations for physicians. These figures can be considered as contributions made by this project.

<Table 5-33> Number of Applicants and Successful Applicants for National Licensing Examinations

	1997	1998	1999	2000
Ewha Woman's University	90	81	92	90
Hanyang University	89	91	117	149
Korea University	123	125	125	109
Dong-A University	52	58	57	47
Total from the four	354	355	391	395

Source: Respective Hospitals

Sustainability

Operation and Maintenance

After project completion, operations and maintenance have been carried out by specialized sections of the respective university hospitals.

<Table 5-34> Sections in Charge of Maintenance and Repairs at the respective Hospitals

University Hospital	Section in Charge of Maintenance and Repairs
Ewha University	Biomedical Engineering Section, The Equipment Department
Hanyang University	Medical Manufacture Room, Management Section
Korea University	Buying Management Section
Dong-A University	Biomedical Engineering Team

Source: Respective Hospitals

Financial Conditions

The financial conditions of the university hospitals are shown below. In particular, the Korea University Hospital has reported exceptionally good financial conditions, and has not had any noticeable problems with the equipment and facilities procured by this project.

<Table 5-35> Balance Sheet of Each Beneficiary Hospital

(Unit: million Won)

University Hospital	1997	1998	1999	2000
Ewha Women's University (Mokdong Hospital)	2,357	76	442	-
Hanyang University (Kuri Hospital)	-1,462	-1,178	-32	-2,397
Korea University (Anam Hospital)	-	1,503	2,287	5,034
Dong-A University Medical Center	-	3,072	-637	-1,509

Source: Respective Hospitals

<Table 5-36> Comparison of Original Plan and Actual Scope

Item		Plan	Actual
Project Period	Ewha Women's University	April 1988- March 1989	December 1989- September 1993
	Hanyang University	April 1988- February 1990	May 1991- May 1995
	Korea University	May 1987- November 1990	May 1987- November 1991
	Dong-A University	May 1987- January 1989	February 1987- February 1990
Project Cost	Ewha Women's University	4,727 million Yen	5,432 million Yen
	Hanyang University	5.285 million Yen	4,826 million Yen
	Korea University	5,083 million Yen	6,113 million Yen
	Dong-A University	5,789 million Yen	13,,208 million Yen

Source: Respective Hospitals

Case summary

The projects implemented in the Health·Medical Care sector are typical amongst JBIC projects in that they were carried out consistently since the 1960s. However, it may be observed that these projects were in accordance with the stages of Korea's economic development, and that their characteristics changed correspondingly. The achievements made by these projects in the Health·Medical Care sector are as follows.

Nurturing medical talents

Under the trends of Korea's rapid economic development, requiring higher standards of medical services and improvement of the medical environment, the modern facilities and equipment procured by the JBIC loans achieved the strong of improvements in the

medical education environment. Resultingly, it was possible to provide medical services of a higher quality to the community through nurturing medical talents under better training conditions.

Improvement on medical service environment

The projects: solved the chronic shortages in medical services due to rapid economic growth; specialized facilities concerned with short-term treatment and appropriately dispositioning them, thus providing quality medical services to regional citizens; and were effective in expanding special hospitals according to sickness, providing steady medical employment, and expanding serviceable areas.

Background

Korea has received continuous international support which contributed greatly to the advancement of medical skills, expansion of medical facilities, even improvement in maternal welfare, and promotion of basic health medical activities such as family planning. Hence, we intend to evaluate the results of the JBIC loan projects by reviewing the performance of the medical welfare sector.

<Table 5-37> Status of Assistance Receptiveness in Social Health Welfare

(Unit: million dollars)

Granting Body	1947~1965	1966~1970	1971~1975	Total
Japan(JICA)	-	234.6	2,307.7	2,542.3
U.S(USAID)	11,824.5	73,130.8	7,885.4	92,840.7

Source: Statistics on International Development, OECD/DAC

Purpose and Scope of Evaluation

Medical health and welfare-related projects implemented after the 1980s exhibit considerable differences with the previous JBIC loan projects in their characteristics. The aim of the medical health and welfare-related projects promoted before 1980 was to expand medical facilities and acquire medical services, but after 1980, objectives changed in accordance with the stages of economic development in Korea, nurturing medical talents and expanding medical services to small local towns. We attempt to review the impact of the JBIC loan projects in the medical health and welfare sector by evaluating ex-post the medical health and welfare-related projects.

Approach and Methodology

Nine projects in the medical health and welfare sector out of the thirty-six projects under review are targeted by this research. The project implementation period and the subject area of the projects are widely spread out. Moreover, many of the medical equipments introduced by the projects are now outdated or have been replaced, so it was difficult to pinpoint the effects accurately. However, this research was conducted through in-depth interviews with the persons in charge of the project at the time.

Impact Assessment Study

Projects in the medical health and welfare sector showed an increasing trend in the number of medical facilities and the number of beds for the past years. However, most of the increase were in facilities for acute short-term treatment and concentrated in the capital city. The government actively took part in loan projects to solve these problems. However, the loan projects were in various fields, implemented in various ways, therefore difficult to grasp all the project details in the medical health and welfare sector, due to insufficiency of related materials.

However, the following results were confirmed through interviews with the people in charge to better understand the impact of the projects in the medical sector, extensively stretched over a long period of time better.

Improvement on Medical Service Environment

The projects on modernization of medical and health institutions and expansion of medical facilities are considered a big success. The projects contributed greatly in improving the previously poor medical service environment and meeting the increasing demand for medical services, due to urbanization and concentration of population in the cities caused by rapid economic growth. They also influenced the establishment of more professional hospitals for all sicknesses, and the increase in medical manpower and expansion of areas with medical services.

<Table 5-38> Number of Hospital Beds per 100,000 Persons

Region	1978	1989	1999
Seoul	214	337	513
Busan	198	344	638
KyongsangnamDo	98	303	550
Cheju-Do	129	269	403
Average	142	301	545

Source: Medical Yearbook Ministry of Health and Welfare

<Table 5-39> Utilization Ratio of Medical Equipment

National Medical Center	1978	1985	1995	2000	2001
Operation (times)	3,935	-	5,828	5,028	-
X-rays (times)	78,802	97,833	127,939	127,532	138,000
Examinations (times)	443,707	894,230	1,956,045	1,699,181	1,580,000

Source: National Medical Center

Nurturing Medical Talents

The government sought drastic solutions to provide medical services of higher quality to the citizens as demands for a better medical service environment and more medical services increased along with population concentration in the cities, due to the rapid growth of the Korean economy. The JBIC loan projects helped nurture medical talent, reinforce food inspection for improvement in medical and health services, provide additional medical equipment for private universities, and modernize medical equipment for the National Medical Center, hence, improving medical manpower in both quantity and quality.

5.1.1.5 Impact on Telecommunications

<Case> Telecommunication Facilities Expansion Project 2 (1976)

(1) Project Background

As part of the 4th Five-Year Telecommunications Development Plan, this project took part in expanding regional communication networks, the communication cable carrier system (5,428 circuits) and the PCM carrier system (4,464 circuits).

(2) Project Objectives

As part of the 4th Five-Year Telecommunications Development Plan for expanding Korea's telecommunications network, the objective of this project was to expand regional communication networks, thereby, improving communication services through

automation and improved processing.

(3) Project Evaluation

Relevance

Although demands increased faster than the original forecasts during implementation, the executing agency, Korea Telecom, coped with the situation flexibly and completed the project by one year, increased the number of installed circuits to 14,228, and made arrangements to change construction areas. These changes led to a budget overrun, but in view of the planned objectives and the priority placed on the project, the changes were considered appropriate.

Effectiveness

As part of the 4th Five-Year Telecommunications Development Plan, this project was designed to improve communication services through automation and improved process speed of the nation's regional communication network. Specifically, the coaxial cable carrier, cable carrier, and PCM carrier of the priority carrier system, were to be expanded.

Efficiency

According to previous plans, the project was to be implemented from November 1976 to December 1980 (fifty months); however, the actual project took place between January 1977 and September 1981 (fifty-seven months), resulting in a nine month delay. Nevertheless, the carrier system itself was completed within thirty six months (January 1977~December 1979), and the remaining time was consumed in procuring additional testing equipment. Therefore, it can be concluded that the actual construction period was curtailed by fourteen months. As previously mentioned, it is because plans for coping with increasing demands were implemented rather swiftly.

<Table 5-40> Chronology of the Telecommunications Project

Subject	Plan	Actual	Delay
Coaxial Cable	1976~1980.12	1977.1~1979.12	-12 months
Cable	1976.11~1979.12	1976.1~1979.12	No changes
PCM	1976.11~1979.12	1977.1~1979.12	No changes
(Testing Equipment)	-	1977.1~1981.9	-
Total	1976.11~1980.12	1977.1~1981.9	+9 months

Source: Korea Telecommunications

The following is a comparison of the original plan and actual project costs, with a cost-over balance manifested in the domestic portion of the budget. The domestic cost run-over was caused by the increase in the number of circuits, and also the increased proportion of domestic products such as equipment. As for this cost run-over balance, the total amount (￥2,239 million) was matched by the executing agency's internal funds. Project postponement due to this cost-over balance was not considered as a delay. For foreign costs on additional PCM carrier and testing equipment, the use of ￥562 million out of the contingency funds amounting to ￥606 million were acknowledged.

<Table 5-41> Comparison of Plan and Actual Project Costs

	Item	Plan(A)		Actual(B)		(A-B)	
		Foreign	Domestic	Foreign	Domestic	Foreign	Domestic
Expenses	Coaxial Cable Carrier	3,819	11,013	2,523	8,930	1,296	2,083
	Cable Carrier	1,110	4,528	1,047	5,251	63	-723
	PCM Carrier	1,065	863	2,809	6,353	-1,744	-5,490
	Testing Equipment	-	-	177	-	-177	-
	Contingency Funds	606	863	-	-	606	1,891
Total		6,600	18,295	6,556	20,534	44	-2,239
	Loan Funds	6,600	0	6,556	0	44	-
	Own fund	0	18,295	0	20,534	-	-2,239

Source: Korea Telecommunication

Impact

As part of the 4th Five-Year Telecommunications Development Plan, attempting to expand Korea's telecommunications capacity, this project was designed to improve communication services through automation and actually improved process speed of the nation's regional communication network. Although the executing agency, Korea Telecom, reexamined the communications project and coped with speed and flexibility as priority changes arose because this project faced surplus demand compared to original forecasts, these changes have already been expected and the effects were achieved

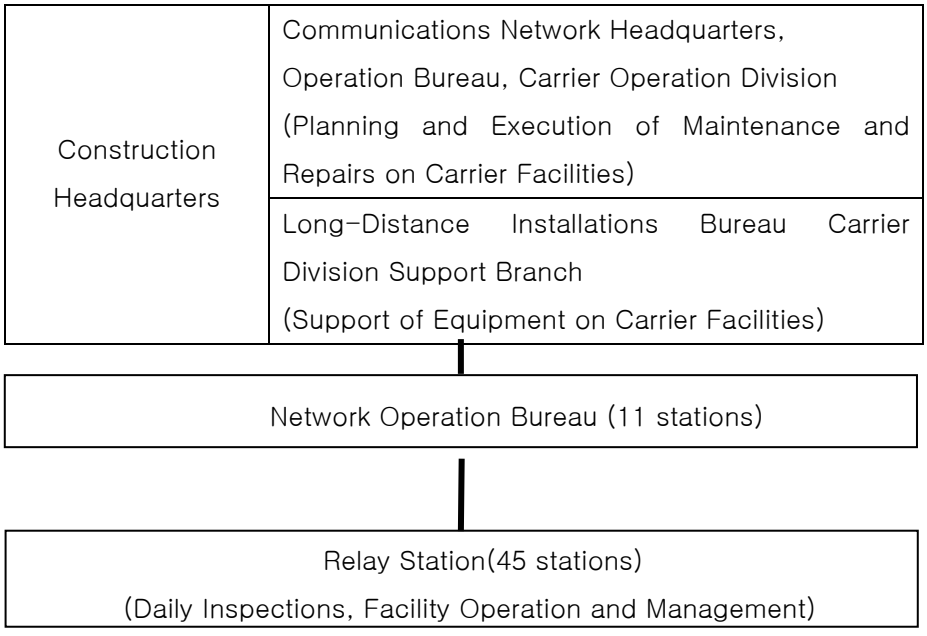
according to plan. With this in mind, under the same conditions as the inspection, the FIRR was calculated as 17.8% (whereas during the inspection it was 16.0%).

Even after completion, the telecommunications network attained satisfactory performance. This operational confidence contributed to successful completion of the 5th and 6th Five-Year Plans. The indirect effects of nurturing the telecommunication industry and expanding employment opportunities from technology transfer can also be acknowledged.

Sustainability

The carrier terminal equipment construction, which was implemented with the JBIC loan was directly managed by Korea Telecom (with no consultants employed). This agency was held responsible for cable facility construction, and the Ministry of Information and Communication was responsible only for the technically delicate cable jointing construction and testing.

The Ministry of Information and Communication coped with unforeseen rapid increases in demand and changing priorities regarding construction areas, and dealt with these situations with swiftness and flexibility by reexamining the regional telecommunications network plans under diverse conditions. Therefore, its implementation capabilities were very competent, based on the findings that there were no noticeable problems during the sudden increase in the number of circuits and that the construction period had been reduced.



<Table 5-42> Comparison of Original Plan and Actual Scope

Item		Plan	Actual
Project Scope	Coaxial Cable Carrier	10,980 circuits	12,720 circuits
	Cable Carrier	5,428 circuits	6,756 circuits
	PCM Carrier	4,464 circuits	15,624 circuits
Project Period	-	1976.11-1980.12	1977.1-1981.9
Project Cost	-	Foreign : ￥6,600 million Domestic : ₩18,295 million Total : ₩28,855 million	Foreign : ￥6,556 million Domestic : ₩20,534 million Total : ₩35,702 million
Effect	FIRR	16%	17%

Source: Korea Telecommunication

Case summary

As part of the 4th Five-Year Telecommunications Development Plan in 1970, the projects implemented in the Telecommunications sector were strongly promoted by the government. In order to cope with rapidly increasing demands on the telecommunications sector caused by economic growth, and to foster this industry as a major industry of the future; improvements were made in services by the automation and modernization of telecommunication facilities. This provided the groundwork for today's advanced development in Korea's IT sector.

The Meteorological Equipment Modernization Project implemented in this sector, helped provide a more precise weather forecast, which enhanced the living standards of citizens and reduced social costs from weather-related damages.

Background

The telecommunication facilities in Korea were completely destroyed during the Korean War. The telecommunication sector was a sector emphasized during the post-war rehabilitation and reconstruction period, and one in which an official development loan in the form of

credit loans was extended for the very first time. A telecommunication facilities fund was introduced by the DLF (Development Loan Fund; an American development loan fund) for the first time in the 1960s. Afterwards, large investments were provided through JBIC loans in the 1970s, which were without precedence, considering that it was a large scale public loan for satellite communication facilities and electronic exchange facilities construction in a developing country. Therefore, evaluation is to be made based on the actual results of the JBIC loan project through accurate impact assessment.

Purpose and Scope of Evaluation

JBIC loan projects relating to the telecommunications sector since the 1970s exhibited a different set of characteristics with former projects. The nature or focus of the projects changed in accordance with the stages of economic development that Korea was under going at the time. We will review the projects under such circumstances.

Approach and Methodology

The projects in the telecommunications field are considerably wide in scope. Moreover, many of the equipment introduced by the projects have become outdated or have been replaced, so it was a difficult job to grasp the effects accurately. However, focusing on the business effect from introducing the latest equipment in each field at that time, the research conducted in-depth interviews with the equipment managers and supervisors.

Impact Assessment Study

These projects were a part of the 4th Five-Year Telecommunications Development Plan pursued by the Korean government to improve telecommunication services for the nation due to the sudden increase in demand for telecommunication following rapid economic growth the after 1970s. They can be divided into the expansion of telecommunication facilities, in which the long-distance communications network was expanded to improve telecommunication services by providing prompt and automatic long-distance communication; and modernization of meteorological observation equipment, where the latest meteorological observation equipment were introduced to improve the accuracy of the weather forecasts, thus, leading to a better quality-of-life. Especially, during the telecommunication facilities expansion project, telecommunication demand increased more rapidly than expected, which resulted in a need for drastic and speedy investment due to its short technology development cycle. The government achieved the basic objective of improving the national telecommunication service and developing a strategic industry for the future through the JBIC loan projects. The sector is expected to become more competitive in

the future as Korea Telecommunication, the execution agency of this project, became privatized. Also, through continuous governmental assistance, the Korea Meteorological Administration is expected to improve the quality of life of the average citizens by introducing the latest meteorological equipment and by training much needed meteorologists.

5.1.2 Human Resource Development

5.1.2.1 Impact on Education

<Case> Fisheries and Maritime Education Facilities Expansion Project

(1) Project Background

The fisheries and maritime industries are important industries even for the export-led Korean economy. However, the increase in the number of maritime workers(average increase of 2.4% per year) have not kept up with the sharp increase in maritime cargo volume (average increase of 13.4% per year) at the time of appraisal (1988). On the other hand, while the fisheries was an important sector, occupying the number eight position in the world by the volume of fish caught (3,371000 M/T in 1987), the fishery industry was growing slowly because of unscientific fishing methods and other miscellaneous reasons. As in the case with the maritime industry, it was also necessary to nurture seafarers by enhancing their competency, especially in utilizing advanced technology in the fishing industry.

For this reason, in Korea, it was necessary to extend the shipboard training period from six months to one year.

However, five of the eighteen training vessels owned by seven national fisheries and maritime schools were old and the schools could not provide enough ocean navigation training due to frequent troubles. Consequently, these schools were able to conduct on board training for only thirty four percent of all students using the existing training vessels, and they contracted with private enterprises for on-board training for the rest of the total number of students. However, problems occurred in on-board training activities by private enterprises, due to the fact that students participated as regular crew members of the private enterprises. It was impossible to conduct efficient and systematic training under a unified curriculum, and safety measures for on-board training were not sufficient. As such, the Korean government gave high priority to the construction of seven training vessels to be used in fishery and maritime schools.

(2) Project Objectives

The project aimed at supplying the necessary equipment and facilities in fishery and maritime schools so that each school can carry out on-board training, with a view to enhance the level of fishery and maritime education and to satisfy the requirement for the STCW (Standards for Training Certification and Watch Keeping) Treaty.

Outline of Loan Agreement

Loan Amount/ Disbursed Amount	2,160 million Yen/ 2,159 million Yen
Exchange of Notes/ Loan Agreement	September 1990/ October 1990
Terms and Conditions	Interest Rate: 4.0%, Repayment: 25 years (grace period: 7 years)
Final Disbursement Date	January 1996

(3) Project Evaluation

Relevance

The project is part of the "Maritime Sciences Education Project in the Republic of Korea" by the Asian Development Bank that aims at improving the quality of fishery and maritime education and strengthening the research capability in maritime science technology. This ADB project was considered to be important in the Five-Year Economic Development Plan of Korea at the time of appraisal. The objective of the project was to supply with equipment, seven training vessels constructed as part of the ADB project. It was originally planned that this portion would be financed fully by the ADB loan. However, Korea became ineligible for further ADB loans to finance this project. Became of cost overruns caused by the rise in construction cost for the vessels after 1988, equipment and facilities were financed with

Japan's ODA loan.

Although the share of the fishery sector in total GDP and the number of workers in the sector showed a downward trend after the 1990, Korea produced 3,116,0900 tons of marine goods per year (five-year average; 1995 to 1999) and was still in the twelth place in the world (1997) in terms of production volume.

On the other hand, examining the maritime sector, the number of entry and departure vessels changed from 274,000 in 1995 to 325,000 in 2000, and the total tonnage of vessels increased from 1,232 to 1,760 million tons.

As training to improve the quality of seafarers is considered very important in observing the STCW treaty, the project was and still is very much relevant.

Efficiency

There were some changes in the items procured by the project in four schools: Pukyong National University, Korea Maritime University, Mokpo National Maritime University, and Yosu National University. The reasons for the changes were: changes in the curriculum and reinforcement regulations.

At the time of appraisal, the project was planned to be completed within two years by 1992. However, afterwards, the project completion was delayed owing to a delay in the construction of vessels due to cost overrun, in the portion financed by the ADB, and also owing to the changes on the procurement items. Regardless of some changes in the procured equipment items, the actual project cost was 2,563 million Yen, within the limits of the planned cost of 2,592 million Yen.

Effectiveness

As the project was implemented, the equipment procured in 1990 had no problems and are in still good operational condition. As a result, although the situation of shipboard training differs for each school, the effectiveness of the project is visible based on the fact that the coverage rate of students in training vessels increased, and that the project enabled schools to train their students by ocean navigation. Therefore, the project contributed to meeting the STCW treaty standard.

<Table 5-43> On-Board Training on Training Vessels of Maritime Schools

Type	School	Item	1995	1996	1999	2000
ㅅ ㅎ	Pukyong	Passengers capacity	139	139	139	89

	University	Coverage rate	116%	116%	116%	74%
	Cheju National University	Passengers capacity	136	129	112	112
		Students for shipboard training	484	436	431	404
		Coverage rate	28%	30%	26%	28%
	Yosu National University	Passengers capacity	254	254	254	129
		Students for shipboard training	360	360	240	240
		Coverage rate	71%	71%	106%	54%
	Kunsan National University	Passengers capacity	200	200	160	100
		Students for shipboard training	710	670	694	559
		Coverage rate	28%	30%	23%	18%
	Pohang Fishery High School	Passengers capacity	260	260	260	260
		Students for shipboard training	200	200	200	200
		Coverage rate	130%	130%	130%	130%
	Total	Passengers capacity	989	982	925	690
		Students for shipboard training	1,874	1,786	1,685	1,523
		Coverage rate	53%	55%	55%	45%
Maritime Schools	Korea Maritime University	Passengers capacity	326	326	326	326
		Students for shipboard training	400	400	400	400
		Coverage rate	82%	82%	82%	82%
	Mokpo National Maritime University	Passengers Capacity	400	400	400	400
		Students for shipboard training	256	342	331	333
		Coverage rate	156%	117%	120%	120%
	Total	Passengers Capacity	726	726	726	726
		Students for shipboard training	656	742	731	733
		Coverage rate	111%	98%	99%	99%
Grand Total		Passengers Capacity	1,751	1,708	1,651	1,416
		Students for shipboard training	2,530	2,528	2,416	2,256
		Coverage rate	68%	68%	68%	63%

Source: JBIC appraisal report and respective school

Impact

The impacts of this project contributed to human resource development in the fishery and the maritime industries, and increased employment and acquisition of foreign currency by

boarding foreign vessels.

<Table 5-44> Employment of Navigation Officers

Item		1988	1998	1999	2000
Vessels of Korean Nationality	Navigation Officers	17,784	17,624	18,560	17,,223
	Sailors	49,876	30,687	33,071	28,574
	Sub-total	67,659	48,311	51,631	45,797
Foreign Vessels	Navigation Officers	14,449	4,825	4,714	4,381
	Sailors	26,187	2,866	2,473	1,994
	Sub-total	40,636	7,691	7,187	6,375
Total		108,295	56,002	58,818	52,172

Source: respective school

Sustainability

Each school reported that vessels and equipment are maintained by qualified personnel such as navigation officers, navigation engineers, and communication officers etc, and there is no problem with the number of staff or with technical matters. The budget for the operation and maintenance of vessels is allocated by the central government or local government. Some schools reported that this budget has decreased recently and therefore bringing the decrease in number of cruising days for training; however, in general, they answered that no critical problem is seen in terms of the budget for operation and maintenance.

<Table 5-45> The Trend of Governmental Budget

(Unit: 100 million won)

Item	1998	1999	2000
Total Government budget	746,412	842,806	887,736
Education and Human-Resources Development	120,564 (16.2%)	110,361 (13.1%)	126,513 (14.3%)

Budget for Seven Schools in the Project	2,795 (2.3%)	2,800 (2.5%)	3,039 (2.4%)

Source: JBIC appraisal report and respective school

<Table 5-46> Comparison of Original Plan and Actual Scope

Item		Plan	Actual
Project Scope	-	Necessary equipment is supplied for seven training vessels procured under the loan financed by ADB for seven fishery and maritime schools.	Same as planned
Project Period	-	May 1990-February 1992	May 1990-January 1996
Project Cost	Foreign Currency	2,160 million Yen	2,159 million Yen
	Local Currency	432 million Yen	404 million Yen
	Total	2,592 million Yen	2,563 million Yen

Source: JBIC appraisal report and respective school

<Case> Research Equipment Reinforcement Project (1988)

(1) Project Background

In the 1980s, Korea's industries concentrated on exporting products based on foreign technologies. As a result, investments in research and development activities were often set aside in private businesses. As Korea's economy developed, the gap in research and development levels worsened.

According to studies by the Korea Development Bank, production process technologies were relatively strong compared to key industrialized countries, whereas, R&D for new products were falling further behind. In terms of product development technologies, analytic skills were relatively strong, whereas, design capabilities, particularly in the field of systems designing technology which requires accumulative technology and advanced software, were markedly underdeveloped.

As such, the Korean government pursued new industrial policies including trade policies to

regulate imports, foreign exchange policies, tax system/finance/foreign currency policies to facilitate the import of foreign technologies, etc., in order to reform the industrial structure while maintaining a high growth rate. Among these policies, the government efforts were concentrated on upscaling research and development capabilities.

(2) Project Objective

This project targeted R&D activities in the fields of bioengineering, machinery, semiconductors, chemical substances; by procuring and installing R&D equipment at the Genetic Engineering Center (GEC), Korea Institute of Machinery and Materials (KIMM), Electronics and Telecommunications Research Institute (ETRI), and the Korea Research Institute of Chemical Technology (KRICT).

Outline of Loan Agreement

Loan Amount/Disbursed Amount	2,679 million Yen/2,644 million Yen
Exchange of Notes/Loan Agreement	April 1988 / June 1988
Terms and Conditions	Interest Rate: 4.25%, Repayment period 25 years (grace period: 7 years)
Final Disbursement	August 1993

(3) Project Evaluation

Relevance

-The aim of this project was in accordance with the Koran government's policy to promote science and technology in the late 1980s.

<Table 5-47> A Comparison of R&D Costs and GDP by Year

(Unit: one hundred million Won)

Year	1985	1990	1995	2000	2001
R&D Costs	12,371	33,507	94,419	138,485	161,105
Percentage of GDP (%)	1.52	1.87	2.50	2.65	2.96

Source: National Statistics Office

<Table 5-48> Government Investments in Bioengineering

(Unit: one hundred million Won)

Year	1994	1996	1998	2000	2001	2002	2003

Amount	536	1,234	1,115	2,462	3,238	4,497	5,393

Source: National Statistics Office

When the institute was established, the importance of bioengineering technology was fully recognized in Korea; however, in reality, human resources, research funds, basic technologies etc., were all sorely lacking. In view of this situation, the project procured the necessary equipment at the initial stage for the field of bioengineering, therefore, significantly contributing to the facilitation of research and development activities in that field.

<The Genetic Engineering Center's Initial Research Direction>
- Designating three areas: (1) concentration on health/medicine, agriculture/food, energy/resources, environment etc.; (2) early adoption of technologies through international cooperation; (3) resolving technological bottlenecks in the field.

<Research Objective>
- Concentration on developing key technologies in genetic engineering: genetic recombination, cell fusion and nuclear transfer technologies etc.
- Applicative development of related technologies: culturing and purifying micro organisms, enzymes and cells
- Expansion of fundamental research activities in specific fields

Efficiency

It has been reported that this project proceeded smoothly with efficiency.

<Table 5-49> Project Costs

	Plan			Actual		
	Foreign Currency (million Yen)	Local Currency (million Won)	Total (million Yen)	Foreign Currency (million Yen)	Local Currency (million Won)	Total (million Yen)
GEC	681(681)	282(0)	732(681)	676(676)	-	676(676)
KIMM	740(740)	305(0)	795(740)	724(724)	185(0)	758(724)
ETRI	592(592)	236(0)	635(592)	-	-	-
KRICT	666(666)	271(0)	715(666)	653(653)	235(0)	692(653)

Source: GEC, KIMM, ETRI, KRICT

<Table 5-50> Comparison of Original Plan and Actual Scope in Terms of Research Equipment Procurement

	Plan	Actual
GEC	41 types	51 types
KIMM	87 types	67 types
ETRI	15 types	-
KRICT	128 types	65 types

Source: GEC, KIMM, ETRI, KRICT

-Project Scope

Two hundred seventy one types of equipment needed for R&D were procured and installed in the following fields:

1) Bioengineering (Genetic Engineering Center: GEC)

Forty one types of research equipment and materials for eight fields: Microbiology, Molecular Biology, Biochemistry, Cell Culturing, Bioassay, Analytical Chemistry, Biochemistry Engineering, Information.

2) Machinery Research (Korea Institute of Machinery and Materials: KIMM)

Ninety seven types of research equipment and materials for five fields: Automation Technology, Machinery Parts Technology, Materials and Parts Technology, Ship/Maritime Structures Technology, Manufacturing-Based Technology.

3) Semiconductor Analysis Research (Electronics and Telecommunications Research Institute: ETRI)

Fifteen types of research equipment and materials for Semiconductor Analysis: assay equipment, observation equipment, measuring equipment etc.

4) Chemical Substances Research (Korea Research Institute of Chemical Technology: KRICT)

One hundred twenty eight types of equipment and materials and common analysis/testing equipment for four fields: Applied Biology, Organic/Inorganic Chemistry, High Polymer Chemistry, Chemical Industry/Industrial Chemistry.

Effectiveness

Electronics and Telecommunications Research Institute (ETRI)

Many of the procured project equipment were discarded because they exceeded more than ten years of operation. However, the procured equipment of TEM (finds the source of C-contamination), SIMS (analyses silicon depth ranges), RBS (non-destructive

determination of semiconductors), ESCA, etc., which are still operational, support the evaluation result that this project has successfully supported technology-related research activities with effectiveness.

<Table 5-51> The Genetic Engineering Center (GEC)

Equipment Nomenclature	Usage	Frequency of Use/Status
Continuous Centrifugation	Substance isolation after microorganism fermentation	2 weeks per month/ good
H.P.L.C	Verifying microorganisms in monosaccharides	10 hours per day/ good
Fermentor system	Examining culture conditions for useful microorganisms	15 days per month/ good
NMR	Biological structure observation	20 hours per day/ good

Source: The Genetic Engineering Center

<Table 5-52> Korea Institute of Machinery and Materials (KIMM)

Equipment Nomenclature	Usage	Frequency of Use/Status
Nd-Yag Laser System	Laser precision welding	400 hours per year/ good
Structure Testing System	Testing structure intensity	Not in use
X-ray Diffractometer	Qualitative assay of metal substances	5 hour per day/ good
High Combination Rolling Mill	Manufacturing of superconductive wires	20 hours per week/good

Source: Korea Institute of Machinery and Materials

Impact

Increase in Research Outcomes

Electronics and Telecommunications Research Institute (ETRI)

Counting the number of published papers by the Institute on semiconductor source technology, it was found that abundant amounts of research activities were conducted between 1996 and 2000, continuing to show an increase in accomplishments even after

2001. As for patents, a two-fold increase was reported in the year 2000. These results show that the procured project equipment had an enormous impact on increasing R&D-related activities.

<Table 5-53> Research Accomplishments

	1981-1985	1986-1990	1991-1995	1996-2000
Number of researches	-	-	346	879
Number of published papers	156	1,923	6,785	6,150
Number of patents applied	14	796	3,846	2,850
Number of patents approved	8	33	1,259	1,429

Source: Electronics and Telecommunications Research Institute

The Genetic Engineering Center (GEC)

Research contracts numbered 718 in 1990, increased to 950 in 1991~1995, and then to 1517 in 1996~2000, recording a 60% increase, and has been assessed that this upward trend will continue.

The most noticeable number was the increase in the number of technology transfers, which recorded six in 1998, five in 1999, nineteen in 2000, and twenty in 2001. This accomplishment drew attention for its quantitative and qualitative growth.

<Table 5-54> Research Accomplishments

	1981-1985	1986-1990	1991-1995	1996-2000
Number of researches	54	664	959	1517
Number of published papers	14	199	751	1521
Number of patents applied	-	66	252	695
Number of patents approved	-	23	46	365

Source: The Genetic Engineering Center

Korea Institution of Machinery and Materials (KIMM)

<Table 5-55> Research Accomplishments

	1981-1985	1986-1990	1991-1995	1996-2000
Number of researches	-	-	2,360	2,650

Number of published papers	-	700	2,176	2,190
Number of patents applied	-	-	-	-
Number of patents approved	-	59	70	73

Source: Korea Institution of Machinery and Materials

Sustainability

Electronics and Telecommunications Research Institute (ETRI)

<Table 5-56> Number of Employees

	1985	2000	2003
Total Number of Employees	809	1,717	1,812
Number of Researchers	526	1,452	1,564

Source: Electronics and Telecommunications Research Institute

<Table 5-57> Research Budget

(Unit: million Won)

Year	1991-1995	1996-2000	2001-present
Amount	143,867	223,149	355,630

Source: Electronics and Telecommunications Research Institute

Genetic Engineering Center (GEC)

<Table 5-58> Number of Employees

	1985	2000	2003
Total Number of Employees	64	239	282
Number of Researchers	51	146	174

Source: The Genetic Engineering Center

<Table 5-59> Research Budget

(Unit: million Won)

Year	1991-1995	1996-2000	2001-present
Amount	50,981,413	166,070,012	101,399,734

Source: The Genetic Engineering Center

Korea Institute of Machinery and Materials (KIMM)

<Table 5-60> Number of Employees

	1995	2000	2003
Total Number of Employees	588	412	415
Number of Researchers	301	256	263

Source: Korea Institution of Machinery and Materials

<Table 5-61> Research Budget

Year	1992-1995	1996-2000	2001-present
Amount	182,480 million won	373,778 million won	263,693 million won

Source: Korea Institution of Machinery and Materials

-The stable research budget enables efficient maintenance and repairs for the equipment, ensuring precision and accuracy in various experiment results, thereby, increasing reliability of the research results.
-By maintaining expert human resources, there are no reported problems with the operation and management of the equipment, and by facilitating learning circles and its own education programs, new technologies and education are being maintained and managed.

Case summary

Projects in the Education sector were promoted to avoid growth completely development on foreign technology and to catalyze source technology development needed for sustained economic growth. The government, which had gone through trials and errors in the related fields, promoted these projects using JBIC loans, and the achievements are as follows.

<Table 5-62> Japanese ODA loan agreement by country & year of contract approval

	1977	1980	1981	1984	1985	1988	1989	1990	1991	1992	Total
Korea	-	1	1	2	3	1	-	1	-	-	9
Indonesia	1	-	-	-	1	1	1	1	1	1	7

Philippines	–	1	–	–	–	–	–	–	1	–	2
Thailand	–	–	–	1	–	–	–	–	–	–	1
Jordan	–	–	–	–	–	–	–	1	–	–	1
Total	1	2	1	3	4	2	1	3	2	1	20

Source: JBIC sector review report (July, 2003)

Superior human resource development

Through the projects conducted in this sector, the procurement of modernized equipment was possible, therefore enabling the nurture of superior talents in every sector.

For example, the Chemical Research and Metrology Research Equipment Reinforcement Project was carried out through international cooperation and has promoted generate technological and intellectual assets. In addition, the project also created technical impacts which advanced the level of metrology research, increased the operation rate of precision machinery, and decreased the degree of dependence on overseas repairs.

The Multipurpose Ocean Research Vessel Construction Project contributed to the promotion of ocean and aquatic resource development, and increased exchanges with research vessels from other countries.

Finally, considering that improving technological competitiveness was imperative as Korea's industrial structure advanced, the JBIC projects were considered to be timely and appropriate, thus facilitating the supply of needed human resources to the respective fields.

Contributing to industrial development

The reinforcement project for research equipment was focused on securing source technology related to each industry. At the turning point where the Korean industrial structure was converting to a high value-added one, this gave tremendous effect on securing source technology, and shifted the key competitive element from price to technological competence.

Background

Korean industry began its growth at first by acquiring foreign technology and using it to manufacture exportable products. As a result, there was a tendency to delay investments for research and technology development in private enterprises. As the Korean economy developed, the backwardness of research and technology development capabolities became a major obstacle for further growth.

A critical opinion about technical competitiveness of Korean companies

"Although, the manufacturing process technology of Korean companies is at a high level compared to major industrialized countries, product development is at a relatively low level, and this gap will increase if nothing is done about it in terms of long-term investments."

"Amongst product development technologies, analyzing technology is relatively advanced; whereas, system designing technology, requiring technical accumulation and advanced software, is notably lacking."
Source: The Korea Development Bank

As the level of apical technology and product development technology stayed relatively low, the Korean government sought to restructure its industrial configuration and maintain high growth rates by devising industrial policies, such as trade policies involving import regulation, exchange rate management, tax and financial measures, and inducement of foreign capitals or technology. Particularly, the government tried hard to promote education, research and technology-development activities to boost its technological capabilities.

Purpose and Scope of Evaluation

We aim at evaluating ex-post the effect of the projects, whose initial objective were to procure research and technology-development machinery and set it up in the appropriate organization and manage it so as to boost the medical and technological sciences (biotechnology, machinery research, semiconductor analysis research, chemical substances research) in Korea; and understand the effect on education and research development activities in each field by this project. The result of the project will be divided into six categories as follows; medical science, maritime, biotechnology, machinery research, semiconductor analysis research, chemical substances research.

Approach and Methodology

The projects in the education sector are relatively the latest among the thirty six projects that this study covers. Moreover, many of the operations pursued by the project still did not finish repaying the loan including interests, therefore, making it relatively easy to secure related data. The materials needed for the research was acquired by contacting the subject hospitals, research institutes and schools which participated in the project. Some administrative teams that were in charge of the project were disbanded and it was not easy to interview all the people in charge at the time of project implementation. In such cases, the

research team used documents secured through actual inspection of the sites.

Impact assessment study

Korea recorded remarkable economical growth owing to strong leadership with political stability, strong urge to escape from poverty, national empathy about economic growth, and dynamic corporate activities by entrepreneurs. However, the economic growth which continued until the 1980s lacked source technology, and relied on simple process production using relatively cheap labor. This was not a sustainable growth strategy in the long run.

The government felt a keen need to secure technological competitiveness which would promote powerful economic development together with sustainable economic growth after the 1980s, and planned support for projects in the research and education fields to secure technological competitiveness that would upgrade the quality of products to the level of other advanced countries.

The JBIC loan projects in the education sector were launched when facilities, equipment and general systems from the technology and education field were in need of an upgrade. The projects helped establish policies and systems in this sector, initiated by receiving relevant educational training systems, equipment and apparatuses from the supplying nation. Almost all essential parts related to the implementation of the project were introduced from abroad to actively promote projects in the education, training and technology transferring fields. They were closely related to the Five-Year Economic Development Plans that were pursued at the time. The project can be credited as providing an opportunity for a developing country to stand up on its own feet, whereas the previous loan projects only provided raw materials and construction of buildings. In other words, it may be considered effective in cultivating human and technological capabilities of the recipient country, through the transfer of skills, system and intermediate technology when developing countries industrialize. Support for this sector was concentrated since the 1980s, and the project was appraised important, playing a decisive part in establishing system development and improving capabilities quite visibly in specific fields. Korea could attain the following results in the research and education fields through the aforementioned projects.

Superior Human Resource Development

Manpower could be trained in each field through the reinforcement project for research equipment procurement and the expansion projects on many education facilities. In 1980, Korea was facing the problem of securing top talent to achieve sustainable economic development and advanced industrialization. However, securing top talent was difficult due

to the poor conditions of the domestic research facilities. The government was able to attract top talent by offering overseas training to technologically advanced countries and by securing new research equipment in the fields of medical science, maritime and basic science through the JBIC loan projects.

Contribution to Industrial Development

The reinforcement project for research equipment procurement and expansion projects on many education facilities had a large positive effect on securing the much needed source technology at a time when the industrial structure of the country was converting to a high value-added one. Securing general technology in each industry was the starting point to gain technological competitiveness. This had a large effect on transforming the entire industrial structure of the country, by applying technologies under the fundamentals of general technology.

5.1.3 Poverty Reduction

5.1.3.1 Impact on Agriculture·Forestry·Fisheries

<Case> Farm Mechanization Program(1987)

<Figure 5-7> Agricultural Machinery

(1) Project Background

During the rapid growth period of the Korean economy, the growth rate of the agricultural sector was relatively low compared to other sectors. Its share of GDP dropped from twenty three percent in 1970 to eleven percent in 1984, whereas, the agricultural employment rate dropped from forty five percent to twenty two percent during the same term. Along with the changes in the industrial structure, as labor shortage and wage hike manifested, problems of inefficiency and high costs appeared in the agricultural field.

(2) Project Objectives

The objectives of this project was to support the agricultural mechanization of Korean farms, and to ① improve agricultural productivity, ② propell agricultural management diversification, and ③ improve agricultural household earnings.

(3) Project Evaluation

Relevance

In Korea, rice as the staple food was considered most important in agricultue, and the nation undertook great amounts of effort to become self-supporting. Reviewing the supply and demand conditions of rice after 1970, the self-sufficiency ratio was around ninety percent in the early 1970s, whereas, the ratio was one hundred percent during the three years between 1976 and 1978. There were also times when the self-sufficiency rate dropped all the way to sixty percent. Even the 6th Five-Year Economic Development Plan in 1987 strongly emphasized the importance of maintaining self-sufficiency in rice production. However, it was the following reasons that brought about the necessity to promote agricultural mechanization in order to maintain self-sufficiency on rice.

(1) Labor shortage and aging of the remaining agricultural population resulted from the exodus of the rural population to the cities along with economic development. This led to a decrease in agricultural productivity. In order to maintain the usual output level under this situation, it was necessary to employ temporary laborers, but this put additional pressure on the average farm due to a rise in wages brought about by labor shortages. Therefore, it was necessary to promote agricultural mechanization so that productivity could be enhanced.

(2) Also, the spare time offered from agricultural mechanization would allow the farming household to convert from a full-time to a part-time or composite farming household. As a result, this would improve living standards to these households through increased earnings. In addition, this would contribute to the suppression of population concentration in Seoul, announced in the 2nd National Comprehensive Development Plan (1982~1991).

The necessity of agricultural mechanization coincided with the Korean government's policy aimed at self-sufficiency in rice production, and its significance was readily recognized during the project implementation. Although, mechanization progressed rapidly after the late 1970s, the progress ratio as still low. Accordingly, the Korean government formulated an Agricultural Mechanization Plan that was to be put in force in 1985 and completed in 1991, and had set the sort and numbers of equipment to be supplied.

<Table 5-63> Actual Supply of Agricultural Machinery and Objectives according to the Agricultural Mechanization Plan

Year	Tiller	Tractor	Rice-Transplanter	Binder	Combine
1970 (actual)	11,884	31	-	-	-

1975 (actual)		85,722	564	16	-	56
1980 (actual)		289,779	2,664	11,061	13,652	1,211
1984 (actual)		538,273	9,684	30,893	22,635	8,417
Machine per farm household (1984)	Korea	3.7	203.8	63.9	87.2	234.5
	Japan	1.0	2.7	2.2	2.7	4.3
1991 (objective)		700,000	40,000	110,000	70,000	40,000

Source: JBIC Appraisal Report

Efficiency

As mentioned above, agricultural mechanization of Korea proceeded smoothly, and the contributions of this project were acknowledged.

Effectiveness

According to collected data, results display that the number of machines for all types, except for binders, exceeded the original plans. Although, project contributions vary by machine type, estimates between three to nine percent were reported.

<Table 5-64> Actual Results of the Agricultural Mechanization Plan and Contributions of the JBIC Project

(Unit: EA)

	Tiller	Tractor	Rice-Transplanter	Binder	Combine
1984 Actual (A)	538,273	9,684	30,893	22,635	8,417
1991 Objective (B)	700,000	40,000	110,000	70,000	40,000
Needed to Satisfy (C=B-A)	161,727	30,316	79,107	47,365	31,583
Actually Supplied (D)	230,059	43,289	136,760	39,521	45,662

Supplied by JBIC Project (E)	18,200	30,316	4,283	3,481	1,987
1991 Actual (F=A+D)	768,332	43,289	167,653	62,156	54,079
Accomplished Rate (F/B)	109.8%	132.4%	152.4%	88.8%	135.2%
Contributions of this Project (E/D)	7.9%	5.2%	3.1%	8.8%	4.4%

Source: JBIC Appraisal Report

Impact

Agricultural Population Decrease·Aging and Diversified Agricultural Management

The number of farm households and the farming population continually decreased, recording 1.7 million households and 6.07 million persons in 1991. Compared with 1985, each had declined ninety percent and seventy percent, respectively. Also, the composition rate of fifty and older in the population rose every year, recording thirty percent in 1985 and rising up to forty percent in 1991. As for management forms, gradual increase of part-time farming from full-time were shown, and the full-time farm household rate was sixty five percent in 1991, drawn from eighty percent in 1985.

As for farm households per acre, it can be seen that the number of petty farm households cultivating less than one hectare of land had decreased, in contrast to the increase in farm households cultivating more than two hectares. This allowed for integrated farmlands.

Improved Productivity

Production of rice was maintained at more than five million tons per year, and the self-sufficiency rate was almost always at one hundred percent, although there were effects of weather conditions. The reasons that the production standards remained at the same level, despite the reduction in farming population and aging of the farm household, was because agricultural productivity as a whole had increased. Nevertheless, increased land productivity and labor productivity were the factors for the improved overall agricultural productivity. Comparing the two factors of 1985 with 1991, land productivity grew from ₩320 thousand/ha to ₩580 thousand/ha, and labor productivity grew from ₩1,925/hour to ₩5,032/hour, thus displaying eighty percent and 160% growth, respectively. With the consumer price index set as 100 in 1985, the consumer price index of 1991 was 142 (wholesale price index for grains was 140). Considered by these facts,

it can be concluded that land productivity and labor productivity has improved substantially.

Increase in Farm Household Earnings

As for farm household earnings, the year 1985 recorded an annual six million Won. It increased 120%, recording thirteen million won in 1991. Considering that the consumer price index was 140 compared to 1985, it is quite clear that farm household earnings have increased. In addition, as the portion of earnings other than from cultivation increased in farm household earnings, it can be easily assumed that part time farming has contributed to an increase in farm household earnings.

Liabilities of farm households are also increasing as earnings are being improved. However, it is assumed that the increase in liabilities is not high enough to pressure the farm household.

<Case> Meat Processing Plant Construction Project(1990)

<Figure 5-8> Meat Processing Plant

(1) Project Background

Since the 1980s, meat consumption in Korea increased substantially. Particularly, demands for processed meat increased remarkably in comparison to unprocessed meat, as the former was considered more hygienic and easier to prepare for the table. As for pork and pork-processed products, the production capacity of the private sector was far below the domestic demand.

On the other hand, the volatility of the pork prices was high and needs for price stabilization by controlling the demand and supply was seen as necessary to cope with further expected increases in pork production. To cope with the situation, the Korean government launched this project.

(2) Project Objectives

This project aimed at constructing a meat processing plant to meet the rapidly increasing demands for meat-processed products, for building further capacities to control demand and supply of pork and for providing the small and medium-sized hog raising farmers with a reliable distribution channel.

<Table 5-65> Actual Demands and Demand Estimates for Pork and Pork-Processed Products

(Unit: ton in thousand)

Year	1986	1987	1988	1990	1991	1996	2001
Pork Consumption	320	373	425	505	531	679	925
Processed Secondary Products	15	19	33	48	58	144	360

Source: Meat Processing Division, National Agriculture Cooperative Federation

Outline of the JBIC Loan Agreement

Loan Amount/ Loan Disbursed Amount	1,728 million yen/ 1,386 million yen
Exchange of Notes/ Loan Agreement	September 1990 / October 1990
Terms and Conditions	Interest Rate: 4.0% per annum, Repayment Period: 25 years (7 years grace period)
Final Disbursement Date	January 1996

(3) Project Evaluation

Relevance

The project was planned to meet rapidly increasing demands for meat-processed products by constructing a meat processing plant. In 1988, per capita daily pork consumption was 10.1 $_{kg}$. Consumption increased each year thereafter, and recorded 15.3$_{kg}$ in 1996. The annual demands for pork-processed secondary products reached twelve thousand tons in 1996. Predictions that these situations would continue were made, and this project was planned in order to reduce gaps between the demands and the supplies.

On the other hand, price stabilization by storing excess supply in warehouses reached its limits and was deemed inefficient. Therefore, it was necessary to find means to directly

control demand, in order to stabilize the prices of meat-processed products.

Efficiency

There was a delay in the start-up of civil work construction from January 1991 of the original plan to October 1992, since it took longer to select consultants, etc. The installment of equipment was to be completed by the time of completion, but it was also delayed. In addition, a four-month gap between the completion of the equipment installment and the test run existed.

As a result, the project finally came to completion in July 1995, a thirty two-month delay from the original target of November 1992.

Among the major changes were a reduction by half in cold storage capacity, a fifty percent increase in the meat processing capacity, an expansion of plant area by fifty percent and an increase in processing capacities for various products.

As for the project costs, the actual expenditure amounted to 4,853 million Yen (foreign currency costs: 908 million Yen, local currency costs: 3,945 million Yen), whereas the estimated total project cost in the original plan was 5,488 million Yen. The total cost of civil work construction increased to 250% of the original estimate, but there were no cost over-runs in terms of the total project cost due to the depreciation of the Won against the Yen. There was also a substantial reduction in procurement prices of imported equipment and land acquisition in comparison to the original estimates.

Effectiveness

Production Records

The operation ratios continued to rise after the commissioning of the project plant, and continued to the year 2000.

<Table 5-66> Production Records

Item	Plan	Installed Capacity	Actual Production					
			Commencement	2nd Year	3rd Year	4th Year	5th Year	6th Year
Processed Products of First Order	24 MT/day	118 MT/day	8	21	37	83	75	59

Secondary Processed Products	26 MT/day	36.1 MT/day	0.5	2.7	6.6	12	18	28
Operation Ratio	-	-	19	48	80	97	94	91

Source: Meat Processing Division, National Agriculture Cooperative Federation

<Table 5-67> Demand and Supply of Pork and Pork-Processed Products (Secondary Products)

(Unit: 1000ton/year)

Item		Actually Production					
		Com-mencement	2nd Year	3rd Year	4th Year	5th Year	7th Year
Demands for Pork	Plan	-	679	-	-	-	925
	Actual	662	697	698	701	755	-
Demands for Pork Processed Secondary Products	Plan	-	144	-	-	-	360
	Actual	115	120	121	109	113	-
Supplies for Pork Processed Secondary Products	Actual	116	119	121	107	115	-

Source: Meat Processing Division, National Agriculture Cooperative Federation

Impact

Impact on Pork Price Stabilization

The project plant is managed based on the mission to provide the consumers with high-quality pork and pork processed products, while enabling the hog-raising farmers to earn stable incomes. The project provides in a package all the materials, goods, and services on how to raise pigs all the way to final production.

The consistency in the price setting method controlled by the government, together with the policy to purchase all the pigs from the contracted farms, provides stable income for hog-raising farmers, and contributes to the stabilization of pig prices. The project plant is not simply a storage facility, but stores pork for a long period to help price stabilization by regulating the timing of distribution.

Impact on Hog Raising Farmers

The number of farmers that raised pigs has decreased in both the Jeollabuk-Do and Jeollanam-Do Provinces, while the number of contracted farmers had steadily moved upward from the start of operation in 1995. The project plant concluded contracts with fifty farmers in the first year of operation, and through strong efforts made to recruit farmers, the project plant concluded arrangements with 365 farms in 1999. The project plant was in a position to purchase only quality pigs and thus became capable of producing meat processed products of international standards. This played a positive role in establishing and upholding the good brand image of the products from the project plant, and in return, increased the number of regional hog-raising farmers.

Impact on the Environment

The project plant taps all the water used in the plant from the groundwater aquifers. Shortly after the commencement of commercial operations, complaints were raised by neighboring communities about the drying-ups of wells for drinking water and shortage in agricultural water resources. The problems with agricultural water resources were resolved by Kimje City. On the other hand, only treated water was discharged and consequently, the quality standards were safely met as shown in the following table.

<Table 5-68> Quality of Discharged Water

Tracers	Unit	Targets	1995	1996	1997	1998	1999	2000	2001
PH	-	6-8	7.0	7.0	7.1	7.1	7.2	7.2	7.2
BOD5	mg/l	30	20	18	11	11	12	13	14
COD	mg/l	40	30	18	19	19	20	22	22
SS	mg/l	60	10	10	1	1	2	2	3
N-H	mg/l	25	0.7	0.2	0.2	0.3	0.3	0.4	0.4

Source: Meat Processing Division, National Agriculture Cooperative Federation

Sustainability

The National Livestock Cooperative Federation (NLCF) merged with the National Agricultural Cooperative Federation (NACF) on the first day of July 2000. The project plant has four divisions and one department, and is staffed by 419 persons including the general manager. For the maintenance of the machinery and equipment, the project plant employs a total of twenty nine qualified engineers who hold national certificates in

engineering and practical work experiences of five years or more in such professional fields as electricity, boilers, machineries and equipment, cold storages etc. In addition, a couple of engineers are sent each year to specialized institutions to undertake training to upgrade their maintenance skills. As the project plant runs smoothly with an operation ratio of nearly one hundred percent, it seems there is no particular problem in terms of project sustainability.

<Table 5-69> Comparison of Original Plan and Actual Scope

Item		Plan	Actual
Project Scope	Meat Processing Plant	2,030 pyeong	2,951 pyeong
	Primary Processing	24 MT/day	118 MT/day
	Secondary Processing	26 MT/day	36.1 MT/day
	Other Facilities	500 pyeong :1,000 ton	506 pyeong :475 ton
Project Period	Land Acquisition	1989.1-1990.3	1989.4-1990.8
	Consulting Service	1990.5-1992.11	1991.6-1995.7
	Construction/ Installation	1991.1-1992.10	1992.10-1995.1
Project Cost	Foreign Currency	￥1,250 million	￥908 million
	Local Currency	￥4,238 million	￥3,945 million
	Total	￥5,488 million	￥4,853 million

Source: Meat Processing Division, National Agriculture Cooperative Federation

Case summary

The previous projects in the Agriculture·Forestry·Fisheries sector were focused on increasing production levels in order to escape from poverty. However, the Farm Mechanization Project and the Meat Processing Plant Construction Project were implemented to improve agricultural efficiency because of the farming population migrating to the cities, and to sensitively cope with demands on meat consumption due to betterment in income. The following are the effects of these projects.

Promoting the agricultural economy

The farming equipment (tillers, rice-transplanters etc.) procured through the JBIC loan project facilitated the modernization, automation and diversification of agriculture. In other words, modernized equipment improved working efficiency which supported the increase in part-time farming, and then increased the farming household income, thereafter contributing to the promotion of the agricultural economy, and finally reducing the migration of farmers to the cities.

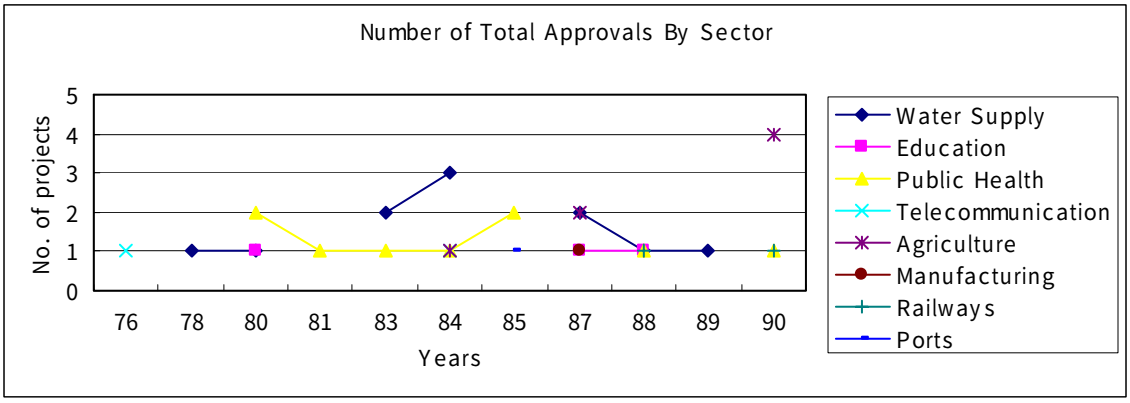
Stabilizing the price of agricultural·livestock products

By constructing the meat processing plant, demands from the changing lifestyles of westernized urbanites were possible to cope with, and modernization of its processing facility and storage facility enabled the sustained supply of meat products contributing to price stabilization.

Background

The agricultural sector was considered one of the main fields for the JBIC loans during the 1950s in which restoration and reconstruction projects were active following the Korean War. This was because the recovery of agricultural production capacity and improved farm productivity was deemed the most important task in terms of satisfying basic demands in a stereotypical agriculture-based economy in which more than half of the overall population was engaged in. Accordingly, the JBIC loan projects on Korea during the 1960s was centered on the agriculture sector, and this continued until about halfway through the 1970s. Support on the agricultural sector was provided through the Right of Claim against Japan in the mid-1960s. Although the amount of local funds available to the agriculture, forestry, fisheries sector were reduced due to increased support in favor of large national loan projects like the Pohang Integrated Iron-mill Construction Project; projects like the Farm Mechanization Project, Agricultural Water Development Project, and the Meat-processing Plant Construction Project were pursued with this fund. Thanks to such support, Korea was able to an achieve increase in productivity through farm mechanization, expand utilization of waterworks supply, and also achieve price stabilization for agricultural and livestock products through the stable supply of these goods.

<Figure 5-9> Yearly Number of Implemented Projects



Source: JBIC appraisal report

Since the 1980s, the loan projects in the agricultural sector went through a large change in terms of its relative importance and character. As seen in the graph above, seven out of thirty six projects since 1976 were carried out in the agricultural sector (one in 1984, two in 1987, four in 1990). Loan projects in the agricultural field continued even in the 1980s. However, referring to the proportional costs of each sector, shown below, we can see that the proportion of the agricultural sector is the lowest among the eight sectors covered. That is to say that in the process of going from an economic reconstruction period (a phase of emergence from poverty) period to a period of rapid economic growth, due to the Korean government's economic development policy that put rapid industrial growth as first priority, although, the enhancement of living standards of the citizens and the exodus of the farm population due to urbanization brought a large number of projects in the agricultural sector, the percentage from the total JBIC loan project costs were found to be the lowest. If we look at the JBIC loan projects that were active in the agricultural sector in the 1960s, projects to increase production capacity were the majority; while the projects since the 1980s were implemented in programs to improve agricultural efficiency reflecting the exodus of the farm population. The characters of the loan projects sensitively reflect the social and economic changes of Korea at different periods of time. Projects such as the Expansion of the Meat-Processing Plant displayed this reflection on economic development and the rise in living standards.

<Table 5-70> The Relative Project Proportion by Sub-Sector (based on project costs)

(Unit: one hundred million Yen)

Rank	Sub-sector	Number of Projects(A)	Japanese ODA loans(B)	Relative Project Proportion

				(C=B/A)
1	Railways	2	76,440(27.3%)	38,220.0
2	Water Supply· Sewerage·Sanitation	11	81,621(29.2%)	7,420.0
3	Public Health· Medical Care	9	56,744(20.3%)	6,304.9
4	Manufacturing	1	6,200(2.2%)	6,200.0
5	Education	3	16,590(5.9%)	5,530.0
6	Telecommunications	2	10,800(3.8%)	5,400.0
7	Ports	1	4,100(1.47%)	4,100.0
8	Agriculture· Forestry·Fisheries	7	26,675(9.5%)	3,810.7

Source: JBIC appraisal report

Purpose and Scope of Evaluation

The agriculture and fisheries-related projects that benefited from the JBIC loans since the 1980s are very different from the previous projects in many ways. The character of the projects changed sensitively along with the different stages of Korean economic development. It is through the evaluation of these agriculture and fisheries-related projects that we attempt to assess the impact of JBIC loan projects on agriculture and fisheries.

Approach and Methodology

Since the implementation of the project was carried out by various organizations like the National Livestock Cooperative Federation (the present NACF), the Rural Development Administration, and private dairy farming cooperatives, we found that the preserved conditions of materials to evaluate the agricultural and fisheries-related loan projects after the 1980s was not satisfactory.

Accordingly, in this line of research, we reviewed the projects by conducting in-depth interviews with the persons in charge and through surveys.

Impact Assessment Study

Of the agriculture and fisheries-related projects pursued since the 1980s, the most

representative are the ones like the Farm Mechanization Project, the Meat Processing Plant Construction Project, and the Feed Mill Construction Project. While the Korean economy was under going a rapid growth period since the mid-1980s, the growth rate of the agriculture and fisheries related projects were relatively low and the percentage of GDP was twenty three percent in 1970 compared to eleven percent in 1984. The agricultural sector employment rate was forty five percent in 1970 but only twenty two percent in 1984. They were all in clear decline. In the agricultural sector, the lack of labor and the subsequent rise in wages was so notable that problems like inefficiency and rise in production costs for agricultural products were inevitable. In order to improve the situation, the government sought a solution to the problem through JBIC loan projects.

As a country that has rice for its basic staple, rice had a special place in Korean agriculture and the government endeavored to achieve self-sufficiency in rice. In the first half of the 1970s the self-sufficiency rate was around ninety percent but from 1976 to 1978, for three years it was one hundred percent. There also was a period when it declined to sixty percent because of irregular weather conditions. The overall self-sufficiency rate at the start of the project is suspected to have been around ninety seven percent. Self-sufficiency in rice was thought to be an important policy for the 6th Five-Year Economic Development Plan which started in 1987 as well. But in order to sustain the self-sufficiency in rice, there was a strong need to improve agricultural productivity because of the following reasons:

First, the agricultural productivity of farms was expected to fall because of the labor shortage, and the aging of the average farm household due to the exodus of the agricultural population. Under these circumstances, in order to maintain production volume, there was a need to employ temporary labors. However, because of the rise in wages due to labor shortage, the local economy in the farmlands would be under pressure. Therefore, there was a need to arrange a better alternative plan to speed up the farm mechanization process.

Second, as the improvement of agricultural productivity and the improvement of productivity due to the modernization of livestock farming creates surplus time, it is now possible to convert full-time farmers to part-timers or composite farmers. It is through the expected improvement in farming household incomes, that the preparation for a higher quality of life is possible. This would also help suppress population concentration into Seoul as announced in the 2nd Land Development Plan (1982~1991).

The need for improvement in agricultural productivity and the need for the modernization of livestock farming were strongly put into action by the government. Accordingly, since the later half of the 1970s, the Farm Mechanization Project was pursued vigorously although it still remained incomplete. The Korean government started to implement strongly the Farm Mechanization Project from 1985 to 1991. By pushing through this project, the Korean government was able to achieve the following outcomes in the agricultural sector.

Diversification of management in agriculture and livestock farming

Through the JBIC loan projects, the Korean government was able to achieve diversification in management of agriculture and livestock farming. Upon completion of the project, conversion of the management structure of farming households from a full-time farming household to a part-time farming household, slowly took place and the percentage of full-time farming households in the provinces which recorded eighty percent in 1985 had declined to about sixty five percent in 1991.

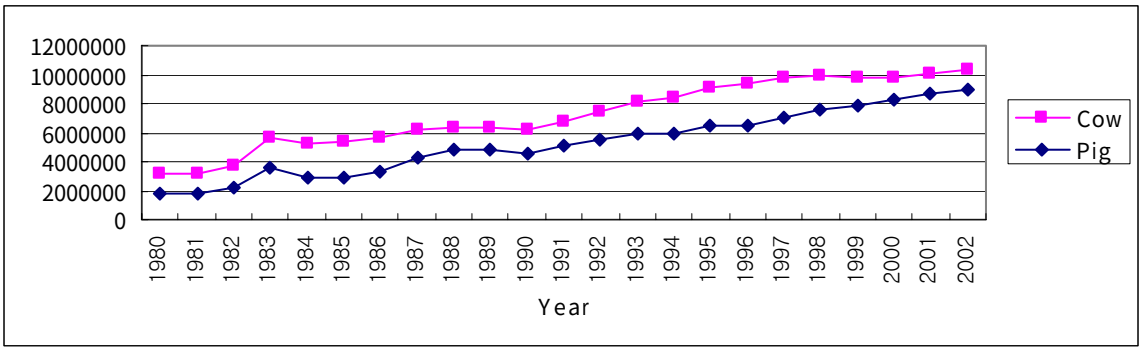
Productivity gains in agriculture and livestock farming

Due to the characteristics of agriculture and livestock farming, the production volume differs according to the climate. In the case of rice, the amount was maintained at about five million tons a year and the self-sufficiency ratio remained close to one hundred percent. As stated above, considering the decrease in the agricultural population and the aging of the average farm household, the quality of production was being sustained thanks to the improving agricultural productivity. The primary factor for the improvement of agricultural productivity was, of course, the improvement in land productivity and labor productivity. So, when comparing the years 1985 and 1991, the income from each piece of land increased from 370,000 Won/ha in 1985 to 580,000 Won/ha in 1991, an eighty percent increase, and the income of labor productivity increased 1,925 Won/hour to 5,032 Won/hour, an one hundred sixty percent increase. When considering the fact that the consumer price index of the year 1991 was 142 (the wholesale price index for grains was 140), with the consumer price index in 1985 as 100, we may say that both land productivity and labor productivity were both on the rise.

Rise in agricultural and livestock farming household income

In the case of farming household income in livestock households, a stable market was found after the completion of the meat processing plant that was propelled by the JBIC loan project. Shortly thereafter, the continual increase in livestock farming households and the steady increase in the number of livestock per head could be observed.

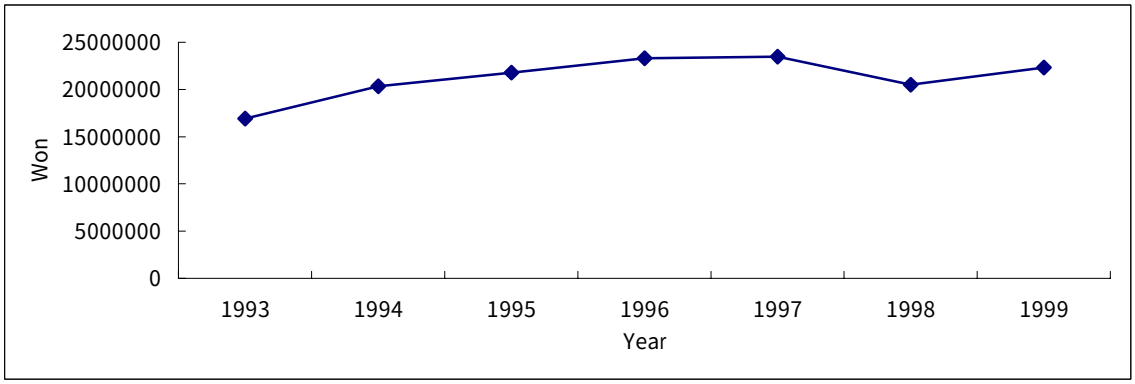
<Figure 5-10> Change in the Number of Livestock per Head



Source: National Statistics Office

The sustained increase of farm household income after 1990 can be viewed in the comparison of the years 1991 and 1985, which illustrates a 120% increase because it was about six million Won in 1991 and thirteen million Won in 1985. Comparing the two years and sighting that the consumer price index was about 140 in 1985, we can see that the farming household income clearly increased, and because the income of farming households does not come exclusively from farming, the income of part-time farmers are on the rise as well.

<Figure 5-11> Changes in Farming Household Incomes



Source: National Statistics Office

This type of phenomenon can be observed more clearly in the 1990s, and it is clean that the JBIC loan project was implemented at the right time in which the farming household income was on the steady rise despite the exodus of the agricultural population and the aging of the average farm household.

5.2 The issues on International Cooperation Development Projects in the development process and the secret to success

The problem of foreign economic dependency and subordination

According to some economists that are critical of cooperative development, foreign capital flowing into a developing country is bound to collide with the comprador capital and bring native enterprises to bankruptcy, eventually forcing a permanent foreign-dependant economic state for the developing country.

In the case of Korea, in the late 1970s, as the side-effects of the unbalanced developmental plan of highly condensed growth and specific industry-oriented growth have been spotted, there has been a group of concerned voices ever since. As the portion of foreign dependency increased not only looking at imports of agricultural products, primary manufactured products, and raw materials, but also exports of manufactured products, the economic structure became increasingly dependant on foreign trade. As more foreign capital was induced, the amount of foreign debt for the country increased, thus creating a burden on the financial structure of the nation. Correspondingly, many people became skeptical and worrisome of the long-term effects of economic development propelled with foreign capital investment.

During the developmental period, although the development funds were provided interest-free or at low interest, because the domestic capital market was relatively weak, if created much headaches in terms of managing the money supply. Foreign capital was induced not only by the public sectors but also by the private sectors, through public development loans and commercial loans, leading to indiscreet induction of foreign capital. Such tendencies distorted the efficient distribution of resources, and in parts where foreign capital was over-induced, the structural problem of overlapping or over-investment occured.

Under much criticism of such excess capital induction from abroad, the government re-evaluated the efficiency of foreign capital that included the public development loans, and also reviewed the foreign capital policy.

This foreign loan problem became a big social issue especially in the early 1980s when Korean society was going through socio-political confusion and economic stagnation. However, this problem faded away as the economy stabilized soon afterwards and the proportion of foreign loans decreased. However, the foreign loan problem arose again as a big issue when the Asian financial crisis happened in the late 1990s. With the nation lacking repayment capabilities, the increase in short-term foreign loans and the increase in the

burden of repayment after the mid-1990s brought about the Asian financial crisis which led to restructuring and reform of the economy.

Fortunately, the Korean foreign capital liquidity risk that was brought on in late 1997 was overcome at a relatively fast pace owing to the emergency backup of the international community. However, it was important endanger for Korea to realize how excessive amount of foreign loans could bring to the country. You can say that it was a chance to see what kind of serious foreign loan problems the country can face when the investment on public and private sectors that are highly dependant on foreign loans do not have the right kind of basis, structure and ability to control the induced capital.

After the 1997 Asian financial crisis, the burden of debt on Korean foreign loans that was twenty five percent declined to about fifteen percent as the total amount of foreign loans decreased. Also, the amount of foreign bonds continuously increased, and from June 2000, the amount of foreign bonds exceeded the amount of foreign debt, therefore, converting Korea to a pure bond country.

Although problems of economic unstability, foreign dependence and subordination occurred due to excessive amounts of foreign bonds which were employed as public developmental aid and cooperation, along with foreign capital in private sectors, in order to progress highly enthusiastic economic development and investment, Korea overcame it very well.

The case of Korea going through economic development and industrializing by receiving foreign capital and technical aid, has given actual examples on how it is possible to increase the productivity of input materials and the efficiency of production using foreign capital. Korea's example of improving the level of economy, every time they faced and overcame a critical situation of troubles and worries of repaying foreign debt, is a good example proving that the traditional Marxist thought about development is outworn and invalid.

<Table 5-71> Status of Korea's Foreign Debt

(Unit: one billion dollar)

Division	1979	1981	1985	1991	1999	2002
Long-term (more than 1 year)	14,831	22,206	36,030	21,898	110,487	91,936
Short-term (less than 1 year)	5,456	10,227	10,732	17,237	42,458	53,235

Foreign debt (a)	20,287	32,433	46,762	39,135	152,945	144,602
The burden rate of debt repayment	13.3	13.9	18.7	4.6	25.2	11.6
Foreign bonds (b)	6,294	7,963	11,222	27,186	146,104	184,025
Foreign pure bonds (b-a)	-13,993	-24,470	-35,540	-11,949	-6,841	39,423

Source: Korea National Statistical Office

In terms of debt management, it is a noticeable fact that Korea had never failed to fulfill her financial obligations even though there was a great amount of financial assistance in the form international cooperative capital or developmental assistance from abroad.

Unbalanced development by the 'grow-first' policy vs Balanced development by the 'distribute-first' policy.

Korea has proved to be a very distinguishing case in the process of economic and industrial development based on international cooperation development projects. Korea achieved amazing results in developing her economy and industries by promoting unique economic development strategies and development policies. It is widely known that Korea achieved rapid industrialization and economic development through trade-oriented industrialization and unbalanced development policies. This change brought about the shift from a self-dependent agriculture society to the highly industrialized society.

Korea's transformation into an industrial nation was based upon long-term unbalanced development polices which maximized the distribution of resources to limited fields of industry. The limitation of a balanced development approach and full reliance on the free market mechanism had already been confirmed in the late 1950's. To overcome this limitation, the unbalanced development approach which put much emphasis on the forceful intervention of the government emerged as an alternative. This strategy had potential problems such as uneven distribution of resources. However, considering the extremely unstable economic situation and the lack of social overhead infrastructures, capital, foreign exchange, and technology at the time, it was the only choice realistically available. The government's long-term economic development plans secured social overhead

infrastructures and concentrated support to specific strategical sectors such as export industries which were labor-intensive. The investment in the government-led plans during early development stages was compensated through public developmental aid and cooperative capital. Therefore, it was essential to obtain financial resources from the international financial society to pursue the planned projects.

The intervention and assistance of the government for the special sectors of industry not only includes the distribution priorities of special investment funds, but also privileges to practically monopoly a particular industry. This proves that the Korean government tried to promote socio-economic development through an unbalanced industrial development approach.

Korea and Japan in future international cooperation development projects

After the Korean War ended in 1953, Korea started to reconstruct the economy through international development cooperation with various nations around the world. Surprisingly, Korea was able to achieve rapid economic growth through diligence of the works, presidential leadership, and entrepreneurial spirit, and is now in a position where she can transfer economic development cooperation know-how to other developing countries.

Until now, international development cooperation has been carried out under cooperation between only two countries (donor and recipient), which had its own limitations.

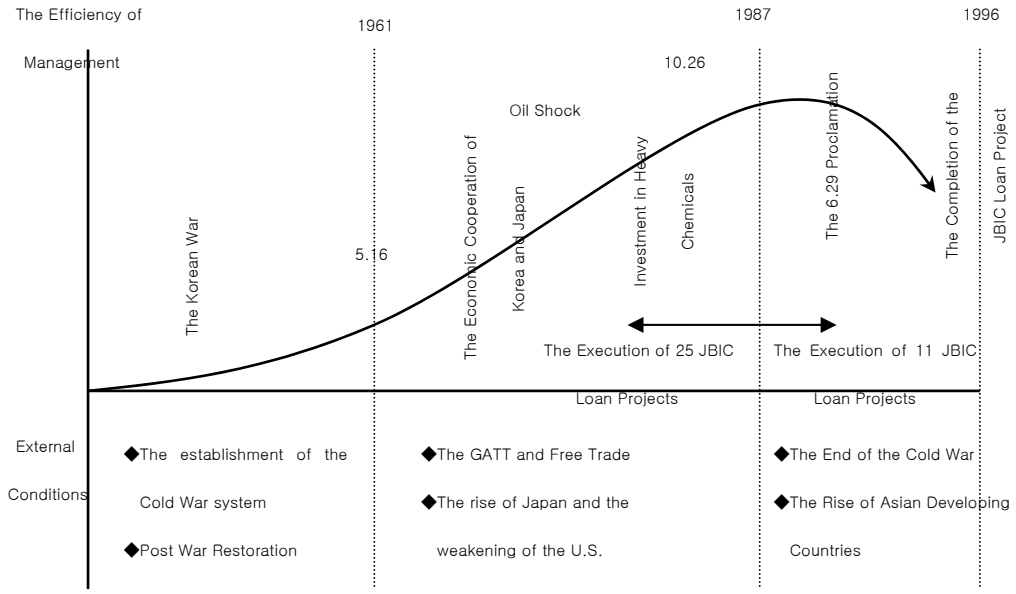
However, because Korea has proved to be a successful case of having achieved economic development by establishing cooperative relations with various nations and actively applying them to develop its economy, there remains a task for Korea to fulfill in the future. The task in to entrance that theses valuable experiences could be effectively conveyed and reflected to other developing countries in the future.

Multilateral cooperation composed of three or more subjects (with two or more donors) could be one way to realize this necessity. To carry out such cooperation, it would be appropriate to construct joint cooperative relations with Japan between the donor nation, recipient nation and a successful ex-recipient nation.

5.3 Lessons Learned · Recommendations

JBIC loan projects consistent with the main objectives of different phases in Korean economic development

<Figure 5-12> The Phases of Korean Economic Development



The emphasis of JBIC's loan projects toward Korea were failed to match the social and economic development of Korea. JBIC loan projects can be seen as having contributed a great deal in helping Korea develop from a poor agricultural country to the world's 11th largest economy.

For the past half century, Korea asked for economic assistance and foreign loans from the international society in order to develop her economy and society. The international society accepted this request, enabling Korea to achieve noticeable development.

As JBIC's loan projects toward Korea matched the priorities in Korean economy and society of the time, the specific form of implementation was carried out in accordance with each step in terms of the size and method of assistance.

We can see this clearly when the JBIC loan projects to Korea are classified into four time periods: the economic restructuring period in the 1960s, the earlier part of development process from 1961 to 1975, the later part of the development process from 1976 to 1990, and etc. The experiences and historical lessons learned from the unique case of Korea's active and energetic socio-economic development are so meaningful that they can probably be well-utilized by other developing countries in formulating and implementing their development strategies and policies.

The importance of long-term perspectives in the course of implementing loan projects

The international society's assistance to Korea was a sustained process. Korea was able to transform herself from a war-torn agriculture-based country to an important member of the global economy.

Loans extended to Korea met the demand for financial resources needed by Korea to develop herself and the international community complied.

It was noticed that projects were formulated with foresight and long-term perspectives where development cooperation projects were studied. Evaluations indicate that the effects of the developmental loan projects were maximized by conducting in-depth research and check-up ex-ante, which enabled formulating well-planned strategies and clear establishment of project goals, thus it was obvious that foreign economic cooperation enabling smooth execution was needed for the the Korean economy in which capital and technology were both low in quality and short or supply. The foreign assistance was so significant that the individual economic assistance plans may be considered having great impact entire economy. Fortunately, the international development assistance and cooperation was accomplished in line with the policy priorities of Korea in mind.

On the other hand, the point worth being noticed in individual aid projects was the fact that as the original plans ended, new alternative support programs followed. Support did not just stop with the first step, but continued on for a while until the efficiency of the project was secured and was sustainable enough.

In the project planning stage, there was even an example in which the recipient had capabilities of devising alternatives of not only sustaining independence, but also stabilizing finance and establishing sustainability, when additional assistance was not expected.

This kind of long-term perspective on projects was, as afore mentioned in the examples, what made it more compatible to cope with the demands of the day to expand functions and roles. Conversions were occasionally made in order to reach a higher level.

The problem of establishing the project plan

As seen in the chart below, there were several minor changes in the thirty six projects that were under research: budget, scope and period. Especially in the portion dealing with project costs, inflation, frequent changes in plans, and confusion in operating systems caused miscalculation in project costs, and consequently, changes were brought to project period and scope, thus becoming the main cause of domestic financing expenditure

increase. Overcoming these problems were possible by securing contingency costs in the planning stage, never became an insurmountable problem.

<Table 5-72> Cost Overruns, Changes in Scope, and Changes in Period
(Number of projects)

Type of Change		76	78	80	81	83	84	85	87	88	89	90
Cost Overruns	Domestic currency	1	1	2	1	2	5	3	5	3	1	5
	Foreign currency	–	–	–	–	–	–	–	–	–	–	–
Changes in Scope	Major Change	–	–	–	–	–	1	–	–	–	1	1
	Minor Change	1	1	3	1	1	5	3	2	2	–	3
Changes in Period	Major Change	–	1	–	–	–	1	–	–	–	1	2
	Minor Change	1	–	3	1	2	5	3	6	4	–	4

Source: JBIC appraisal report

Side-effects from centering hardware on JBIC loan projects

As mentioned above, the total of Ninety one JBIC loan projects executed in Korea, after the 1960s, have been the bases of rapid growth in the Korean economy. However, in terms of content, more projects to improve technology research capabilities necessary for today's industrial competitiveness were probably needed.

6. Conclusions

The objective of this research was to look at the general features of JBIC loan projects on Korea; and to look at the periodical and historical flow, general socio-economic tendency, overall scope, principal forms and achievements. As we suspected prior to this research, we

can conclude that the range, form, and contents of JBIC loan projects were very broad and diverse, and that its impact was also enormous. Although we could not render specific and academic results through reinforcing structural theories or in-depth metrical analysis, we were able to confirm the general effect of the projects and find out about the positive and negative effects of the international cooperation and JBIC loan projects.
Moreover, the noteworthy positive effects from the JBIC loan projects that we have revealed in this study can be seen in two ways.

First, Escape from Poverty

After independence, the Korean government's number one task in the worst economic · social situations of narrow domestic demand market, absolutely weak supply of natural resources, chronic inflation and unemployment, low technology standards and resource shortage, was to escape from poverty.
However, in the late 1950s, conversion to decrease foreign assistance and grants opposed the need to expand export for establishing a self-supported economy. Therefore, the Korean government had no choice but to depend only on the first industry in order to absorb the increasing working population. The worse fact was that the government could not secure the financial resources for economic development. Under these circumstances, the government drove forward to the activation of economy using loan projects in order to free citizens from poverty. Through this, the government, under policies to promote the economy, achieved increases in employment rate, industrial development, and the revival of the domestic demand market, thus relieving minimal and basic economic difficulties to citizens.

<Table 6-1> A Comparison of the Economic Society between the time of National Foundation and Present

	National Foundation (1948)	Present (1997)	Remarks
<Economic scope>			
GDP (billion dollars)	1.4	443	World's 11th
Income per capita (dollar)	67	9,624	World's 26th
Total trade amount (100 million dollar)	0.32	2,787	World's 11th
International Reserves (million dollar)	26.8	20,405.3	Increased 760 times
Generated power (million kwh)	694	205,493(1996)	World's 16th
Railroad length (km)	2,753	3,098(1996)	

<Industrial structure>			
Manufacturing (%)	10.1	26.9(1995)	21% in developed countries
No. of factories (EA)	5,249	96,202(1996)	Increased 14 fold
No. of factory employees (thousand)	122.2	2,952(1996)	Increased 23 fold
<Others>			
Unemployed (thousand)	798	557	1,530 in June 1998
Unemployment rate (%)	11.3	3.1	0.7 in June 1998
Deposited amount (billion Won)	30.59	84,054.0	Increased 2,747 fold
No. of cars (thousand)	14.7	10,413.4	Increased 700 fold

Source: National Statistics Office

<Table 6-2> Income·Expenditure of Urban Laborers

Year	Household income	Household expenditure	Change from preceding year (%)	Consumption expenditure	Change from preceding year (%)	Non-consumption expenditure	Change from preceding year (%)
1974	47,780	42,580	19.5	41,170	25	1,410	-47.6
1975	65,540	59,480	39.7	56,890	38.2	2,590	83.7
1976	88,270	75,520	27	71,150	25.1	4,370	68.7
1977	105,910	86,810	14.9	82,050	15.3	4,760	8.9
1978	144,510	114,930	32.4	108,870	32.7	6,060	27.3
1979	194,749	151,942	32.2	144,059	32.3	7,883	30.1
1980	234,086	183,578	20.8	173,983	20.8	9,595	21.7
1981	280,953	223,957	22	211,791	21.7	12,166	26.8
1982	313,608	251,972	12.5	235,657	11.3	16,315	34.1
1983	359,041	280,515	11.3	259,479	10.1	21,036	28.9
1984	395,613	305,730	9	281,711	8.6	24,019	14.2
1985	423,788	328,761	7.5	302,211	7.3	26,550	10.5

Source: National Statistics Office

In such a government, the strong drive of the economic development policy helped achieve the highest rate of growth among the High Performing Asian Economies (HPAEs) during the last 50 years.

Likewise, Korea achieved the dissolution of absolute poverty through the high performance of economic growth; however, what seems to remain is relative poverty[4], which is subjected to be more difficult to settle. Through a social problem which is the situation of unfair distribution of money and wealth, the seriousness of the relative poverty could be observed. In the present Korean society, relative poverty is not seen such a serious level, but seeing the antagonism between stratum and the expression of conflicts happening recently, it could be expected that solving such relative poverty could be as hard as solving absolute poverty from the past. It would be possible to say that this could act as a lesson to future International Cooperative Development Projects for developing countries, teaching that wider views of considering relative poverty as well as absolute poverty are needed.

Second, Developing Superior Human Resources

<Figure 6-1> Developing Human Resources

The efficient drive of projects under harmony between Korea's socio-economic development and JBIC loan projects showed value, especially, in the aspects of human resources development. After analyzing Japan's JBIC loan projects by sector, results confirmed that such investment in the education sector was processed more in Korea than in any other country. In terms of projects implemented in the early stage, rather than the bias towards Korea becoming an economic subordinate to powerful industrial countries, significance that opportunities were given to realize the importance of technological development through these projects were found to be more meaningful.

[4] Lee, Kyung Koo, Development Assistance and Cooperation to Korea, KOICA, p.270

On the other hand, negative results from JBIC loan projects were also observable. Although, the support on obtaining and expanding overall infrastructures, equipment procurement etc., from the 36 studied JBIC loan projects (since 1976) were noteworthy, it was shown that there was absence of technology transfer and lack of educational support in terms of facility operation after the projects were completed.

Later, it was found that this caused the Korean government to focus solely on productivity measures while achieving rapid economical growth, and thus, in result, causing the relative neglect in source technology research.

Despite such positive and negative evaluations on JBIC loan projects, what is also meaningful is the point that the international cooperative development projects were rather unexpectedly and noticeably successful in Korea compared to those of other developing countries. However, what are the causes? The fundamental objective of this study greatly corresponds to this question, and boldly explains that the achievements are factored by the recipient nation's attitude and ability [5] to acknowledge international cooperative development.

Therefore, in terms of promoting economic cooperative projects to Korea, it may be thought, that the attitude towards project execution and the recipient nation's perception on development and advancement were probably the most important keys to differentiated success.

That is, although the hardware and the software may be considered important; the way of acceptance, in other words, the mechanism of putting together the resources aforementioned, is to be considered more important. It is strongly believed that, the upright and motivated attitudes of social subjects, such as, strong wills and desires of citizens for development, future-oriented leadership of political leaders, and pioneerism of entrepreneurs, optimize the achievements made from international development projects and provide the motive to bring continuity to growth and development.

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APPENDIX

The Current Status of Public Loans by Individual Sector

(Unit: one million Yen)

Sector	Sub-sector	Number of projects	Japanese ODA loans	
Agriculture, Forestry and Fisheries	Agriculture	10	74,147	12.3%
Commodity Loans	Commodity loans	2	15,400	2.5%
Electric Power and Gas	Multipurpose dams	8	72,150	12.0%
	Power plants	1	641	0.1%
	Transmission lines	1	4,000	0.6%
Irrigation and Flood Control	Irrigation and flood control	3	6,090	1.0%
Mining and Manufacturing	Manufacturing	12	64,688	10.7%
Social Services	Education	12	72,994	12.1%
	Public health	6	46,020	7.6%
	Strengthening of administrative management	1	4,200	0.7%
	Water supply and sanitation	17	85,384	14.2%
Telecommunications	Telecommunications	5	14,325	2.3%
Transportation	Bridges/Ports/Railway/Roads	13	139,869	23.3%
	Total	91	599,908	100%

The Proportion of Projects According to Each Sector

(Unit: one million Yen)

Sub-sector	Number of Projects (A)	Japanese ODA loans (B)		The proportion of each individual sector (C=B/A)
Water Supply· Sewerage·Sanitation	11	81,621	29.2%	7,420.0
Education	3	16,590	5.9%	5,530.0
Public Health· Medical Care	9	56,744	20.3%	6,304.9
Telecommunications	2	10,800	3.8%	5,400.0
Agriculture· Forestry·Fisheries	7	26,675	9.5%	3,810.7
Manufacturing	1	6,200	2.2%	6,200.0
Railways	2	76,440	27.3%	38,220.0
Ports	1	4,100	1.4%	4,100.0
Total	36	279,170	100%	8,816.4 (average project cost)

The thirty six JBIC loan projects

Sub-sector	Number of	Project Name

	projects	
Water Supply· Sewerage· Sanitation	11	City Water Project
		Daejeon City Water Supply Extension Project
		Chungju Multipurpose Dam Project
		Habcheon Multipurpose Dam Project
		Chuam Multipurpose Dam Project
		Sewage Treatment Plant Project
		Daejeon City Water Supply Extension Project-3
		Urban Solid Wastes Treatment Facilities Project
		City Water Project(Seoul)
		Yong san gang Irrigation Project
		Imha Multipurpose Dam Construction Project
Education	3	Educational Facilities Expansion Project
		Educational Facilities Expansion Project-2
		Research Equipment Reinforcement Project
Public Health· Medical Care	9	Medical Facilities Expansion Project (Children's Hospital)
		C.R. and M.R. Equipment Reinforcement Project
		Safety Research Center Project of the National Institute of Health Project
		Medical Facilities Expansion Project
		Medical and Health Research Institute Equipment Modernization Project
		Regional Hospital Equipment Improvement Project
		Private Hospital Medical Facilities Expansion Project
		Medical Facilities Expansion Project(SNUH)
		Medical Facilities Expansion Project-2
Telecommunications	2	Telecommunication Facilities Expansion Project 2
		Weather Service System Modernization Project

Sub-sector	Number of projects	Project Name

Agriculture· Forestry· Fisheries	7	Farm Mechanization Program Project
		Dairy Facilities Improvement Project-1
		Dairy Facilities Improvement Project-2
		Agricultural and Fisheries Research Equipment Modernization Project
		Fisheries and Maritime Education Facilities Expansion Project
		Meat Processing Plant Construction Project
		Livestock Feedmills Construction Project
Manufacturing	1	Small and Medium Industries Modernization Project
Railways	2	Seoul Subway Construction Project 2
		Ulsan City Development Project
Ports	1	Multipurpose Ocean Research Vessel Construction Project
Total	36	

Post Evaluation Data Collection Survey 2004
Survey

Research objective

1. To criticize implementation details of the project, to go through the effect and impact of the project, and to draw out lessons and find out successful cases in order to reevaluate the meaning of the Japan Bank for International Cooperation(JBIC) loan project.

2. To criticize the current status and management · maintenance of the completed project based on Yen loans, and to provide suggestions to the borrower or executing agency whenever necessary in order to establish the appropriate operation of the project.

Person visited or contacted with during investigation (expected person)

1. Name:
2. Attached post or position:

Evaluation method

The evaluation of each JBIC project is carried out in five points of views: 1.Relevance 2. Efficiency 3.Effectiveness 4.Impact 5.Sustainability.

The following research table comprises five blocks (Block A ~ Block B), each related to the five standards mentioned, above respectively. The research table is divided into common questions and questions for certain organizations. Please answer all the common questions, and for the rest, answer only those which apply to you. It is supposed that some of these questions would require data that you organization may not possess. However, please suggest substitutable and/or alternative evaluation indexes in consideration with the evaluation objectives of each standard. To accommodate the research, the definition and details are displayed on the next page.

The Five Evaluation Standards

Evaluation Standard	Explanation	Respondent
Relevance	This standard evaluates whether the purpose of the project meets developmental policies and plans of Korea and the demands of beneficiaries during the time of appraisal or early evaluation.	
Efficiency	This standard analyzes problems, adequacy of countermeasures, success factors etc., by comparing plan and actual, in terms of project scope, period and costs etc.	
Effectiveness	This standard evaluates the effectiveness of the project, especially on how much the output contributed to achieving project objectives.	
Impact	This standard evaluates the impact on the local community and the environment during or after implementation of the project. This includes unexpected results compared to the initial planning.	
Sustainability	This standard evaluates whether the positive effects after project completion sustained in a self-supportive and developing manner. To be more specific, this examines whether the project effects are sustainable in the long or intermediate term, although operations and management systems are sufficient and appropriate, and also examines what kind of countermeasures are needed in case hindering factors are present.	

Project outline

(1) Project background **(Common)**

(2) Project objective **(Common)**

(3) Project scale **(Common)**

(Example)

Loan number	
Field of project	
Project executing agency	

(4) Outline of loan agreement **(Common)**

(Example)

Loan Amount· Disbursed Amount	
Exchange of Notes· Loan Agreement	
Terms & Conditions	
Final Disbursement	

Block A: Questions on plan relevance

(A-1) Common

Does the project objective accord with Korea's development plans and policies of the same field? If the promotion of this project coincides with the development plans and policies of the government, write how it does, and please attach a copy of the document of proof. For example, pivotal development plans, issue on scientific skills, and special research development plans that are planned for the development of the nation.

(A-2) Common

Offer the data that can prove on how the Korean government concentrates to develop the sector that this project is concerned with. In addition, in case you have the following data on the sectors the project had been promoted, please present the data by sector.

(1) Amount of investment in the related sector versus GNP, Korean governmental investments etc. (1970~2004)
(2) Research and development costs in the related sector versus GNP, Korean governmental investments etc. (1970~2004)

Block B: Questions on execution effectiveness

(B-1) Project scope **(Common)**

The table below is to compare the plan and actual results of the supplied equipment during evaluation of the project. Fill in the table. If you have a list of equipment procured at the time, please submit the list as well.

(Example)

	Plan	Actual
Executing Agency A	Types (planned)	Types (actual)
Executing Agency B		
Executing Agency C		

(B-2) Project costs **(Common)**

The table below is to evaluate and compare the plan and actual results of project costs. Fill in the table.

(Example) (Unit: Yen)

	Plan			Actual		
	Foreign currency	Domestic currency	Total	Foreign currency	Domestic currency	Total
Executing Agency A						
Executing Agency B						
Executing Agency C						
Executing Agency D						

Block C: Questions on Effectiveness

In Block C, we evaluate how the output achieved from this project is applied in each sector.

(C-1) Common

We suppose that there exist many difficulties in measuring the effectiveness accurately since more than a decade has passed after the output of this project first came out. However, please try to indicate in how the results of the promoted project is currently used and managed.

(Example)

Project title	
Project background	The background the project's promotion
Project results	Write based upon the output gained through this project. (For example, how much freshwater capacity of a dam has been constructed or the number of materials procured.)
Usage	The usage of output gained through this project.
Frequency of usage and the current condition	The frequency of usage and the current condition of the output gained through the project.

(C-2) Sectors concerned with research equipment and materials

Write down the noticeable effects of research equipment (including the ones discarded) procured from the project while being used in research and development activities, and explain how the equipment is being utilized in the research progress.

(Example)

Topic of research	
Nomenclature of used equipment	
Research contents and achievements	
Status of equipment use	

Block D: Questions on Impact

This block evaluates the overall impact of each industrial sector in Korea achieved by project implementation. Fill in the table below so that the impacts of the project can be ready evaluated.

(D-1) Common

Please write down below about the effects the project had on the corresponding industrial sector.

Field		Impact
Regional socio-economic aspects		
Relative sector	Aspects on the industrial structure	
	Aspects on technology	
	Aspects on the environment	

(D-2) Number of patents (in fields of research equipment and materials)

(1) Fill in the number of applied patents and researches achieved through the project in the chart below.

	1986~1990	1991~1995	1996~2000	2001~현재
Number of researches				
Number of theses published				
Number of patents applied				
Number of patents approved				

(2) Illustrate the roles of the equipment supplied through the project in achieving the results above.

Block E: Questions on Sustainability

The operation and management of the project after completion is carried out by each project's executing agency. This standard evaluates the projects sustainability in terms of organization, finance, operation, maintenance & management.

(E-1) About the executing agency (Common)

(1) Submit introductory materials of your organization.
(2) Submit a graphic diagram of the chain of order, the present the number of personnel per department and their corresponding roles.

(E-2) The executing agency's operational budget (Common)

(1) Report the changes of your organization's operational budget. (by division and year)
(2) Express the effects on the maintenance & management of the procured equipment or on the actions on procuring new research equipment, which was rendered from the flux of the research institute's budget distribution.

(E-3) Maintenance & management and operation on the output derived from the project (Common)

(1) Is it believed that the technological skill of the personnel, in charge of the project output's maintenance and management, sufficient? If so, please provide proof. (education diplomas, certificates, documents showing working experience etc.) In addition, explain what kind of education and training is carried out in order to elevate technical skill levels.
(2) Are budgets for routine inspections and management of the project output sufficient?

Suggestions and Lessons

Suggestions

Based on the experience of executing the project, provide us with any suggestions on loan projects.

Lessons

Through the experience of executing the project, tell us what you have learned.

Name and contact information of the questionnaire's provider

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Date of Question	April 10th, 2004

Minutes of Discussion of the Seminar

on

The role of infrastructure in the process of socio-economic development

Date: October 18, 2004

Place: Westin Chosun Hotel, Seoul

1. Purpose

(1) Feedback to Korean audiences on the outcome of "Evaluation on Korea" implemented by IPS (The Institute for Industrial Policy Studies)

(2) Exchange of views among donor agencies in Japan, Korea and Thailand concerning the role of infrastructure in the process of socio-economic development

2. Outline

(1) Morning session

In the feedback by IPS on "Evaluation on Korea", Dr. Dong-Sung Cho, Professor of Strategy & International Business, College of Business Administration, Seoul National University, and Dr. Jung-Ho Kim, Professor of Strategic Management, Graduate School of International Studies, Korea University, made presentations, respectively. Following the feedback, discussions were held concerning (i) measures to be taken by donors to enhance ownership of developing countries, and (ii) applicability of the Korean development model to developing countries today.

(2) Afternoon session

In the afternoon session, presentations were made by Mr. Surachai Pongpitaksopon, Managing Director, NECF (Neighboring Countries Economic Development Cooperation Fund) of Thailand, Mr. Masashi Fujiwara, Deputy Director, Development Assistance Operations Evaluations Office, JBIC (Japan Bank for International Cooperation), and Mr. Man Hwan Park, Senior Deputy Director, Policy & Coordination Team, EDCF (Economic Development Cooperation Fund), on the following themes:

NECF : Future Role of NECF for Economic Development in neighboring countries

JBIC : Impact Assessment of Transport Infrastructure Projects in Northern Vietnam

EDCF : Poverty Reduction and EDCF Loans

Discussions were held concerning each presentation.

(3) As a conclusion of the seminar, it was confirmed among participants that experience and knowledge needs to be shared on a continued basis for mutual understanding among parties in Thailand, Korea and Japan in academia, Asian donor agencies and the private sector with discussion to include, but not limited to, topics such as development policy, evaluation,

project identification, development theory, etc.

3. Opening Address

by Mr. Kazuto Tsuji, Director General, Project Development Department, JBIC

- ✓ The purpose of this seminar is to share information and experience of the past activities of former OECF in Korea as well as the experience of Korea, Thailand, and Japan. JBIC has been involved in development assistance for the past 30 years including cooperation with Korea. JBIC requested Korean experts to review JBIC activities in Korea to draw some lessons from them. Although Korea's development has already progressed substantially, there is room for improvement of past OECF activities for the future. We can also learn how our assistance and cooperation with Korea have been in line with Korean industrial development policy.
- ✓ Considering the fact that Thailand recently commenced its economic cooperation to neighboring countries and that Korea has been a donor for ten years already, our mission today is to review our past experience and share information and experience to improve our future strategy to assist and cooperate with our recipients in the developing world. I would like to stress that we would like to initiate an Asian donor alliance among Korea, Thailand and Japan. In the past, donor strategy and the donor community have comprised mainly European and American donors. At present, emerging countries including Korea and Thailand have put their strategies into effect to cooperate with less developed countries. We would like to formulate a so-called "Asian Voice" of donor countries to call for poverty eradication and improvement of the global environment for a better world in the future. Today I would like to ask all of you to participate in frank discussions so that JBIC itself can improve its future operations.

4. Presentation by Dr. Dong-Sung Cho

【Definition of ODA】

- ✓ ODA can be divided into two categories: bilateral and multilateral. We need to see what type of approach or philosophical stance we should have. In the literature of foreign grant investment, there are two modes of operation: the cascade type and the sequential migration type. In the cascade type, the donor country provides certain aid to the recipient country and when the recipient country becomes mature enough to be a donor, it then provides aid to the next recipient country and so on for the investment to be rolled over. In the sequential migration mode, the donor country gives aid to a recipient country until it becomes fully mature while simultaneously giving aid to another recipient country. It is said that the U.S. chooses the former and Japan the latter; however, there are pros and cons for each type. The cascade type is theoretically preferable in an orderly progressive world, but has the demerit that the LDC is made to wait too long. On the other hand, in the sequential migration type, the donor country is heavily burdened in providing aid to multiple countries. Nevertheless, this second type certainly possesses the advantage of

expediting the process of development, which, in turn, makes it more realistic.

- ✓ Regarding ODA, it is believed that a third mode, which could be referred to as comparative sequential migration type or collaboration type, can be developed. This type, having the characteristics of both the aforementioned, may be considered more realistic. The original donor's burden can be reduced, and the recipient country can receive more divergent types of aid from both countries. Regardless of whether it is done consciously, JBIC projects seem to possess the characteristics of the comparative type.

5. Presentation by Dr. Jung-Ho Kim

Outline of presentation:

【History of the economic development of Korea】

- ✓ During the period of national development, foreign assistance mainly consisted of U.S. grants focusing on security, and the major domestic concern was reducing poverty (1945-1960). The assistance for the first half of the total six Five-Year Economic Development Plans gradually changed to be characterized by loans rather than grants, reaching an even approximate ratio of 50:50 in terms of total amount.
- ✓ For the second half of the Five-Year Plans, Japan's portion in total foreign assistance funds to Korea surpassed that of the U.S. while the nature of the total funds drastically shifted away from grants to loans. The majority of U.S. assistance was grants for coping with reconstructing the economy, whereas the majority of assistance from Japan was loans in the process of realizing a self-sufficient economy.

【The role of Japan as a donor in the Korean development process】

- ✓ JBIC ODA loan projects were implemented according to Korea's economic development, which can be divided into the following three stages:

  In the first stage (1962-1971) of development, Korea began to promote the Five-Year Economic Development Plans foremost in order to overcome poverty. The majority of the funds procured during this period came from the right-of-claim funds against Japan which focused mainly on infrastructures to form the fundamentals needed for industrial development.

  The second stage of growth (1972-1979) saw ODA loans used to improve the economic structure in accordance with domestic endogenous policies such as the *Saemaul* Movement. This stage was a period of rapid economic growth in which the amount of Japanese ODA loans recorded its peak.

  The third stage (1980-1987) could be considered the most prosperous time, in which Korea began to slowly open up its markets and also benefited through the '3 lows (low dollar, low international interest rate, low oil prices)' driven by the G5 summit talks. This was a period when Korea hosted its first Asian Games and made preparations for the 1988 Olympics.
- ✓ Two groups of projects can be identified in the 30 years of promotion of ODA through JBIC for Korea's economic development. The first group consisted mainly of the establishment of

infrastructures in the sectors of Water Supply/Sewerage, Education, and Public Health which had occurred throughout a wide timeframe from 1970-1990. The second group is focused on the sectors of Agriculture/Fisheries, Manufacturing, Railways, and Ports, which were promoted more directly for enhancing the standards of living and improving productivity. This second group came to be formed after the late 1980s.

【Effectiveness/impact resulting from representative large scale infrastructure projects】

- ✓ As for case examples in this study, three major projects can be mentioned: Kyungbu Highway Construction Project, Chungju Multipurpose Dam Project, Pohang Steel Company (POSCO) Construction Project.
- ✓ Despite the difficulties in seeking funds to construct the highway and negative views about its timing, the government was fortunate to utilize right-of-claim funds against Japan to promote it. This project contributed to a variety of positive effects derived from cargo transport efficiency and had a significant impact on catalyzing balanced national development and industrialization.
- ✓ The Chungju Multipurpose Dam Project is a representative case in the water supply sector. This project was imperative to cope with the future demands of Korea's water and electricity in its rapid economic growth. Not only did it have the direct effects of flood control, water supply, power generation, but also indirect effects such as water quality improvement, enhancement of farm household income, and aquatic tourism development.
- ✓ As a massive project in the manufacturing sector, the Pohang Steel Company Construction Project contributed significantly to all sectors in industry by responding to the explosive demand for steel and the development of the basic material industry. The project contributed to the development of steel, basic material and heavy chemical industries, which served as the basis of industrial development and massive job creation.

【Lessons learned】

- ✓ 1. JBIC loan projects have varied in scale and method in accordance with Korea's socio-economic development. These ODA projects have partly contributed to the unprecedented economic growth in Korea and are expected to significantly help LDCs in developing strategies and policies on economic development.
- ✓ 2. JBIC's international development assistance and cooperation was carried out as part of the government's administrative policies and economic management. As a result, the government did not merely implement them as individual projects with individual goals but promoted them to maximize the ripple effect by realizing the continuity of project and financial stability. This effect is seen as the result of the Korean government's long-term and broad view.
- ✓ 3. Each of these projects, which were pursued against the backdrop of rapid socio-economic development, differed from the initial plan in terms of period, scale and cost. This was due to the unpredictable changes in the internal/external (inflation, cost increase of raw materials, etc.) and international (Oil Shock) environment, which highlighted the lack of experience of the Korean

government, the first recipient of JBIC loans.

【Issues to be addressed】

- ✓ 1. Korea has successfully achieved rapid economic development by establishing multilateral cooperative relations with countries around the world in the course of its socio-economic development. This demonstrates the possibility that Korea may form a joint cooperative relationship with Japan, which possesses abundant know-how and experience in international development cooperation projects in the international arena.
- ✓ 2. JBIC loan projects in the 1970s focused on external growth and increasing production in line with the policies of the Korean government, which relied on rapid economic development, and issues such as technology transfer and employee training were overlooked.
- ✓ 3. The rapid shift to an industrial nation driven by the imbalanced growth strategy benefited certain industries, companies and people in terms of resource allocation and support. This brought about the unfair distribution of wealth based on past economic growth in an open, stable Korea in the 1980s.

【Korean development model and conclusion】

- ✓ The rapid growth of Korea driven by the imbalanced growth strategy benefiting certain industries (‘grow first, distribute later’ policy) also resulted in the unfair distribution of resources and wealth during the 1980s.
- ✓ The JBIC loan projects helped Korea achieve higher levels of production in agriculture and industry, and helped improve the living standards of the average citizen nationwide. As for human resource development, JBIC supported the nurturing of industrial technology human resources as well as medical human resources.
- ✓ There are two major roles that Japan’s ODA plays in Korea’s socio-economic development. First, Japan’s ODA respected the ownership and initiative by Korea, especially in the early stages of its development. This may be observed in the Kyungbu Highway Construction Project and the Pohang Steel Company Construction Project. Both projects were rejected by western societies and procuring funds for them proved difficult. However, Japan had acknowledged the requests by the Korean government to respect Korea’s initiative, and supported a small but crucial amount to start off the Kyungbu Highway Construction Project and also supported half of the total cost for the Pohang Steel Company Construction Project. Again, these are good examples that show the importance of the Japan’s respect for Korea’s ownership and initiative. Second, after Korea graduated from the IDA in 1975 and stopped receiving soft loans and U.S. ODA loans, Japan filled the fund void.

6. Discussion 1

(1) Comments and questions by JBIC/Mr. K. Tsuji

- ✓ In relation to recipient country ownership, it is quite correct to point out the lack of stress in the

software components. Given that Japan conducts assistance activities in over 90 countries across the globe, ownership in certain recipient countries could be weaker than in Korea at the time of its development. Today, not only Japan, but also other donor countries, tends to intervene too much and give too much consultation and advices. However, at the time of Korea's development, Japan was not sufficiently knowledgeable to provide advice to Korea, but was simply trying to support the financing of the hardware. Ownership by the Korean government and society at the time seemed to be adequate. However, if the same model were applied to a different country now, it would create a vicious cycle. The more advice is given, the less ownership the recipient country has. The software support may not be necessarily compatible with the recipient country ownership. JBIC would like to ask for advice on how ownership by the recipient country can be enhanced, and what the appropriate software component is from the donor's side?

- ✓ In the second phase of socio-economic development presented earlier, IPS introduced the Saemaul Movement and the 'grow first, distribute later' policy. JBIC would like to know whether the 'grow first, distribute later' model work well in the developing countries in the present, because this has always been a challenge and dilemma for Japan in providing assistance to other countries.

  Without growth, there is no distribution. However, a more equitable method of growth should be conceived. At this point, it is believed that Japan and other developed countries should learn more from Korea's experience in terms of distribution.

Answer:

Dr. Jung-Ho Kim:

- ✓ 'The Issues to be Addressed' in the presentation are very minor and occupy only a small portion of the whole actual text and may be skipped. Japan's ODA projects assisted a great deal in the development of human resources in Korea. The reason for emphasizing these issues is that technology transfer and employee training as part of the JBIC assistance process in other developing countries could be better addressed today compared to when Japan did so for Korea.
- ✓ The ownership of the country may also be taken as the readiness of the country. According to one famous book in economic development 'Aid as Obstacle,' the obstacle refers to not providing help in building endogenous capacities for self-growth. It is also important to help people learn 'how to bake bread rather than just give bread away.' Korea having been a recipient of development assistance itself may use its own experience to support and emphasize the importance of readiness to current recipient countries.
- ✓ The 'grow first, distribute later' policy was pursued by the Korean government and policy makers in Korea and therefore does not fall under the responsibility of JBIC. JBIC and other donors merely extended financial and technological aid to Korea in line with the policy. If any advice could be given to present developing countries, it may be to suggest that not only economic

growth but distribution needs to be considered in the early stage of the development process.

Dr. Dong-Sung Cho:

- ✓ According to the theory of the first Nobel prize laureate for economics, Timbergen's Principle, you cannot pursue two separate objectives with one policy means. If you want to pursue two objectives, you should have two policies, and if you combine two objectives into one policy, you will not reach either. ODA should have very clear cut objectives, choosing one of the two: growth or distribution. If the two objectives are mutually exclusive and ODA pursues both, the whole purpose will become diluted. Therefore, the problem of distribution may be compensated by a secondary project with the objective of distribution.
- ✓ There is a tendency for the recipient country to be lackadaisical and thus try to elongate the time that it receives grants. To alleviate this problem, the early experiences of Korea can be referred to when grants acted more than loans as a poison in disguise. The Korean government became very dependent on grants provided by the U.S., which delayed Korea's growth in the early stage of its development. After Kennedy's inauguration as president of the U.S. in 1961, the grants to Korea from U.S. ceased and the government finally carried out self-help efforts for independence, which led to the series of the Five-Year Economic Development Plans. If Nixon had become as president of the U.S., Korea as we know it today would not have been established.

  Finland during 1941-1944 is a similar case. When Finland lost the war of independence against the then-Soviet Union, the Soviets gave Finland freedom, but charged a large sum of money in the form of reparations. In order to pay its debt, Finland had to create industries and established an economically independent nation, which today occupies the world's number one ranking in national competitiveness. This demonstrates that self-help efforts are indispensable for a country's development. In this sense, while a loan is effective, a grant is a poison.

7. <u>Presentation by NECF/Mr. Surachai Pongpitaksopon</u>

Outline of presentation:

- ✓ NECF is a bilateral official development assistance fund of the Royal Thai government. Thailand quickly developed over the past 30 years, which has created a large gap between Thailand and its neighboring countries, and the influx into Thailand of immigrants from the neighboring countries has been a problem. Prime Minister Thaksin takes this problem seriously and makes efforts to provide financial support to reduce the gap and help those neighboring companies become independent.
- ✓ The purpose of NECF is to provide concessional loans to neighboring countries to support their infrastructure development and promote economic cooperation with them. The loan conditions are: repayment period 20 years, grace period 10 years, interest rate 1.5% p.a. As much as 30% of the loan amount can be a grant portion. Neighboring countries are asking for 50% grants.

- ✓ Regarding the procedure for eligible project selection, the neighboring countries first make an official request to the Thai embassy in their respective countries for a loan, and the committee in NECF conducts appraisal work after receiving the request from the Ministry of Foreign Affairs of Thailand. The eligible countries for NECF assistance are Cambodia, Laos, Myanmar, and Vietnam. There has been only one project in Vietnam so far, because the country has been receiving a lot of assistance from other donors, including Japan, and there has thus been no recent request by Vietnam to NECF.
- ✓ Among ongoing projects under NECF support, there are six projects in Laos, two in Cambodia and one in Myanmar. All of these projects are in line with the framework of GMS. In the Myanmar project, for example, a road is to be constructed and extended to India from the Thai-Myanmar border. It is expected that the road will in the future form a distribution route from Southeast Asia to the Middle East and Europe through South Asia.
- ✓ We expect that NECF will be transformed into a new public organization called 'NEDA' (Neighboring Countries Economic Development Cooperation Agency) in November or December. After establishment of NEDA, the number of staff will be increased and the organization will flexibly exercise its own discretion in its budget usage. It is also possible that the list of eligible countries will be expanded to include ASEAN and Central Asia.

8. <u>Discussion 2</u>

(1) Question by Dr. Jung-Ho Kim:

- ✓ Is there any particular reason why the existing structure needs to be transformed into a new organization?

Answer:

<u>Mr. Surachai Pongpitaksopon:</u>

- ✓ All decisions regarding budget and project approval etc. are made by the Fiscal Policy Office (FPO), the head organization of NECF. NECF can only make sideline checks in FPO's decision-making process, but not any decisions by itself.
- ✓ The Thai government believes that the present organization will be more efficient if it were changed to a public organization so that it can make its own funding decisions. An Asian bond market has been under development and, once it is created, funding from the bond market could also be used in addition to government budget which will enable an expansion of the scope of activities after the transformation to NEDA.

(2) Question by JBIC/Mr. K. Tsuji

- ✓ On the policy level, GMS countries including Thailand have been said to be coordinating with the Chinese government. Has the coordination been carried out on the operational level as well? Do

you have any idea or prospect about that?

Answer:

- ✓ Not really. Currently there is no communication with the Chinese or any of their ODA organizations. However, there has been contact with the ADB. There is one ongoing project (road construction project to connect Thailand and Kunming in China) in Laos in which China is involved. In the project, with the coordination of ADB, dialogues have been conducted among the Kunming administration, and the Thai and Lao governments.

9. Presentation by JBIC/ Mr. M. Fujiwara

Outline of presentation:

- ✓ Nowadays it is widely recognized that great focus has to be placed on "results" in the field of development aid to achieve aid effectiveness. Result-based management has become quite important for the donor community. Poverty reduction has become the ultimate goal of donors in development assistance, and the development policy of donors needs to be aligned with the Poverty Reduction Strategy Paper (PRSP) prepared under the ownership of the developing countries. However, the priority in PRSP seems to be less on economic infrastructure development. The same applies to the Millennium Development Goals (MDGs) adopted at the UN summit in 2000. On the other hand, the role of infrastructure has been recently reviewed and even the World Bank, which used to put more priority on the social sector in 1990s, has placed more importance on infrastructure development. Thus, a "revitalized drive for infrastructure" can be seen on a global level.
- ✓ When JBIC conducted this study, Vietnam was in the middle of developing its Comprehensive Poverty Reduction and Growth Strategy (CPRGS), the Vietnamese version of the PRSP. Since there was no description in CPRGS of the role of large-scale infrastructure development despite the word "growth", Japan made efforts to incorporate the role of large-scale economic infrastructure in its CPRGS to sustain Japan's development philosophy that infrastructure development leads to poverty reduction through sustainable economic growth.
- ✓ In such a situation, we needed to show to the Vietnamese government the role of large-scale infrastructure in the form of its linkage to poverty reduction since there had been no concrete study about the linkage to our knowledge. Thus, we made an assessment on two Japanese ODA loan projects: Highway No.5 (improvement) and Haiphong Port (rehabilitation Phase 1).
- ✓ The most significant contribution of FDI should be the economic growth in the region. Inflow of FDI increased the GRP by 9.6% in 2001. On the other hand, FDI's impact on poverty reduction was still limited. Highway No.5 and Haiphong Port served as preconditions necessary for FDI inflow. We found a significant transformation of the economic structure. Income sources of rural households were very diversified. Many households started new businesses. The local economy

itself is the driving force for development and the improvement of Highway No.5 and Haiphong Port were important triggers to make the change.

10. <u>Discussion 3</u>

(1) Question by EDCF/Mr. Man Hwan Park:

- ✓ In the presentation, you explained that the World Bank revitalized the drive for infrastructure. Our understanding is that the World Bank reduced their portfolio especially in the African and Central/South American regions and in turn, in order to expand their portfolio, they found Asia to be an eligible region to support. Therefore, the rationale of the World Bank to develop infrastructure differs from that in your presentation.

Answer:

Mr. M. Fujiwara:

- ✓ In relation to poverty reduction, the World Bank has been shifting its policy from social sector development to infrastructure development. According to its website, its policies clearly indicate the drive for infrastructure. The World Bank used to place more importance on the social sector or budget support than individual projects due to unfavorable conditions of the macroeconomy in developing countries and left infrastructure development to the discretion of the private sector. In addition, since the private sectors then had problems in implementing infrastructure development, the necessity to support infrastructure development has been reviewed once again.

Mr. K. Tsuji:

- ✓ As you properly mentioned, in the sub-Saharan area, the IDA fund was not sufficiently absorbed and thus the World Bank shifted its portfolio focus from Africa to Asia. Another possible reason for the World Bank's shift from social development to infrastructure may be due to the strong complaints by the representatives of China and India at the Bank. They criticized the Bank's policy to emphasize the social sector because they expected the Bank's massive fund to develop infrastructure in their country while poverty alleviation-related projects in those regions could be implemented through their own government funds. Such internal pressure in the Bank is also considered to be in the background of the World Bank's policy change.
- ✓ JBIC has been stressing the importance of infrastructure development for the past 40 years. Even in Japan, infrastructure development is not easily understood. JBIC realizes the great importance of infrastructure in developing countries, and therefore, would like to utilize the policy shift of the World Bank as a measure to persuade Japanese taxpayers about the importance of infrastructure development. As this study shows, infrastructure may be a necessary condition for poverty reduction but not a sufficient one.
- ✓ JBIC has been trying to improve project components. In the case of a road construction project,

for example, a feeder road is constructed in addition to the trunk road and a healthcare center is built along the road network so that the economic benefit of the project can be properly delivered to beneficiaries. In the process of project formulation, it is a new challenge for JBIC to facilitate economic growth in an equitable manner.

(2) Question by KOICA/Mr. Lee Kyong Koo:

- ✓ This study is very clear and interesting. For economic growth and poverty reduction, basic human needs have to be supported, on top of infrastructure development. In this connection, are policies of the Vietnamese government also considered in this analysis?

Answer

Mr. M. Fujiwara:

- ✓ We analyzed the policies of the Vietnamese government as in parallel and we collected relevant information and data regarding their policies.

(3)Question by Korea Highway Corporation/Mr. Han-Sung Roh:

- ✓ This is the first time I have seen this kind of study with a lot of concrete evidence. I understand it is rather difficult in Vietnam to gather data. How did you manage to get the data? And another question: Why did you not include a feasibility study?

Answer:

Mr. M. Fujiwara:

- ✓ There is a sort of Vietnamese nature of opposing data gathering by foreigners. In fact, reliable statistical data were available and we also collected data by interviews with administrative organizations, including peoples' committee in each province. Thanks to the great efforts of our consultant, we were able to obtain data to a great extent. Since the impact on traffic was so significant and evident, I intentionally skipped the presentation about the impact on traffic. In fact, our study shows about 19% of EIRR.

(4) Question by EDCF/Ms. Minnie Chey:

- ✓ Did you also conduct this type of analysis on the two projects at the time of appraisal?

Answer:

Mr. K. Tsuji:

- ✓ At the time of appraisal, it was possible to assume the impact in a qualitative manner. Quantitative assessment, however, is rather difficult. The impact at the time of ex-post evaluation can be measured quantitatively to a certain extent. It will be a challenge for us to make a

quantitative analysis at the time of appraisal.

11. Presentation by EDCF/Mr. Man Hwan Park:

Outline of presentation:

- ✓ EDCF participates in today's seminar as a close friend of JBIC. As an Asian partner, we hope that EDCF and JBIC will gradually establish consensus and confidence in future.
- ✓ Poverty reduction is deeply linked with growth and the main objective of the MDGs is to eliminate poverty by creating an environment dependent on growth. The MDGs reflect both elements of growth and poverty reduction.
- ✓ For the sustained growth of developing countries, development of domestic financial systems, legal and administrative adjustment and infrastructure development need to be pursued, and EDCF is extending its economic cooperation to developing countries taking these elements into consideration. The breakdown of EDCF loans indicates that 60% was allocated to economic infrastructure in the transportation/telecommunication/energy sector. During the initial stage, EDCF loan was allocated in full to these three sectors, and now the support for other sectors such as social infrastructure has been gradually increased.
- ✓ EDCF's specific approach to poverty reduction concentrates on four factors: increasing employment opportunity, relieving bottlenecks through infrastructure development, strengthening supporting industries, and transferring Korea's development experience to developing countries. Regarding the fourth point, EDCF has been collaborating with KOICA. As Korea owns a unique and competitive ODA policy in light of its development history, competitive technical transfer can be made to the developing countries.

12. Discussion 4

(1) Question by JBIC/Mr. M. Fujiwara:

- ✓ What specific actions are you taking in order to enhance EDCF's accountability to the public?

Answer:

- ✓ EDCF has only a short history and people in Korea are not very familiar with EDCF. More attention is being paid to assistance to North Korea than to ODA. The situation of Korean ODA loans, therefore, differs from that of Japanese ODA loans. As for accountability, EDCF so far is not too concerned due to the fact that not many people are aware of the body. However, in the near future, EDCF needs to enhance its accountability to the public on why EDCF extends ODA to developing countries.

(2) Question by KOICA/Mr. Lee Kyong Koo:

- ✓ According to the presented material, it seems that the main focus for emphasizing poverty

reduction is somewhat diminishing year by year. Social sector support accounted for 41% in 1999, while it was only 19% in 2000. Does this mean that EDCF's priority on the social sector has been reduced? What is the policy direction of EDCF in relation to poverty reduction?

Answer:

- ✓ It is difficult to find consistency, because there is a restriction in budget in Korean ODA and many countries want support from Korean ODA, but the needs of the recipient countries vary from country to country.

(3) Comment by JBIC/Mr. K. Tsuji:

- ✓ The 'transfer of Korea's development experience to developing countries illustrated in this presentation is considered an important point. As mentioned in the morning session, the purpose of the research is not an evaluation of Korea itself, but rather obtaining lessons learned from the Korean experience. The Korean government had strong ownership from the beginning and the priority of their policy was quite clear. The former OECF (JBIC) extended support to Korea in accordance with the government's priorities. 'Grow first, distribute later' is a very clear strategy, and in this regard, we do not see such a clear strategy in present developing countries. Therefore, I believe that Korea's experience will be highly appreciated by EDCF partner countries.
- ✓ JBIC has been shifting its policy from traditional infrastructure development to social sector development such as provision of software, institutional improvement, know-how/technology transfer, etc. or the combination of both. Infrastructure development itself is not that difficult. However, it is doubtful whether Japanese policy and institutions are applicable to developing countries as they are. In addition, Japan did not adequately document its social experience in the past and had many difficulties in explaining its experiences and expertise to partner countries. The policy and institutional arrangements by the developing countries' own initiative may be more effective than getting foreign advice. On the other hand, we need to show our own experience to Japanese tax payers and thus there is a dilemma. Therefore, it is suggested that EDCF take the initiative and make documentation as much as possible about Korea's socio-economic development experiences.

13. <u>Closing</u>

<u>Mr. K. Tsuji:</u>

- ✓ This is the first exercise in exchanging views and experiences. It is desirable that Korea, Japan and Thailand continuously share views and experiences on the varieties of topics such as evaluation, operation, project finding, poverty and any other topic, so that we can enhance mutual understanding and cooperation, support other countries more efficiently, and jointly contribute to discussion in other places, such as at the OECD, in a more coordinated way.

Dr. Jung-Ho Kim:

- ✓ It is hoped that some of the lessons and implications mentioned in the early session will be reflected in future JBIC projects and provide meaningful influences in EDCF's future activities as well. It seems that there may be some room for Korea to collaborate with Japan in jointly sharing resources from both a recipient and donor's point of view. As Korea has been a recipient in the past, it is quite reasonable to assume that Korea can provide good and useful advice to countries entitled to international cooperation by sharing its experiences. We hope that this meeting will be the beginning of a fruitful relationship between agencies and institutions of the two countries.