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STAFF APPRAISAL REPORT

REPUBLIC OF KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

JUNE 29, 1992

Country Department I
East Asia and Pacific Region

CURRENCY EQUIVALENTS

Currency Unit - Korean Won (W)

US$1.00 = W757.00 (December 1991)

FISCAL YEAR

January 1 - December 31

WEIGHTS AND MEASURES

Metric System

ABBREVIATIONS

ADB	=	Asian Development Bank
AMPHI	=	Association of Municipal and Provincial Medical Institutes
BMA	=	Bureau of Medical Affairs
CHP	=	Community Health Practitioner
EMC	=	Emergency Medical Care
ESC	=	Equipment Selection Committee
GOK	=	Government of Korea
HMD	=	Hospital Management Division
ICB	=	International Competitive Bidding
KEB	=	Korea Exchange Bank
KFW	=	Kreditanstalt für Wiederaufbau
KHA	=	Korean Hospital Association
LMD	=	Logistics Management Division
MCH	=	Maternal and Child Health
MHA	=	Ministry of Home Affairs
MOHSA	=	Ministry of Health and Social Affairs
NCD	=	Noncommunicable Disease
NFMI	=	National Federation of Medical Insurance
NIH	=	National Institute of Health
NISR	=	National Institute of Safety Research
NMC	=	National Medical Center
NPP	=	Non-profit private
OECD	=	Organization for Economic Cooperation and Development
OECF	=	Overseas Economic Cooperation Fund (Japan)
OSROK	=	Office of Supply, Republic of Korea
PCR	=	Project Completion Report
PIU	=	Project Implementation Unit
PPAR	=	Project Performance Audit Report
WHO	=	World Health Organization

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

STAFF APPRAISAL REPORT

This report is based on the findings of a preappraisal mission which visited Korea during August 26 - September 6, 1991. Mission members were Messrs. W. De Geyndt (mission leader), and S.Z. Sung (Consultant). Project preparation was well advanced and no appraisal mission was deemed necessary. Peer reviewers were S. Scheyer, W. Rees (ASTPH) and O. Echeverri (EA1PH). The documents were reviewed by Bradley O. Babson, Chief EA1PH, and Callisto E. Madavo, Director EA1.

MAP IBRD No. 23611R

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Loan and Project Summary

Borrower:	Republic of Korea
Beneficiaries:	National Medical Center (NMC), National Institute of Health (NIH), and selected municipal and provincial hospitals
Amount:	US$30.0 million equivalent
Terms:	Repayable in 15 years including 5 years of grace at the Bank's standard variable interest rate.
Relending Terms:	The Government would on-lend the proceeds of the loan to beneficiaries at the same interest rate (plus 0.05% p.a.), maturity and grace periods as the IBRD loan agreement. Sub-borrowers would bear foreign exchange risk.
Project Description:	The project would: (a) increase the access of the rural and urban poor to medical care services, especially for noncommunical diseases (NCD); (b) improve the quality of medical care in public hospitals; (c) assist the country in protecting the public health through a more effective control of the safety of drugs and the quality of food, and through monitoring communicable diseases; and (d) provide project-related training, and carry out a health care policy based action program and research studies. Four project components support these objectives: (i) expanding diagnostic and treatment capabilities of the NMC; (ii) upgrading equipment of NIH; (iii) replacing and adding medical equipment in provincial and municipal hospitals; and (iv) an action program addressing critical sector issues (hospital efficiency, diffusion of medical technology, fee schedule) supported by relevant research studies, publications on health policy and financing, and a national concensus building program.
Benefits & Risks:	As a result of the project, about half of the public hospitals in Korea serving mainly the poorer population groups will have upgraded and modernized their biomedical equipment. This will allow them to detect and treat noncommunicable diseases more effectively and give the smaller and more rural facilities the capability to treat more patients themselves and thus decrease the flow of referrals to higher level hospitals. The National Medical Center will have upgraded its biomedical

equipment for early detection and opportune treatment of noncommunicable diseases. T... strengthened technical capability of the National Institute of Health will improve its efficiency in monitoring food safety, drug quality and communicable diseases in order to better protect the people's health. An action program on health sector financing alternatives and cost containment measures will have facilitated making policy decisions to contain health care expenditures without jeopardizing access to services and quality of medical care.

There are no major risks in this project. A minor risk might be defaulting by project institutions. However, the Project Implementation Unit (PIU) under the ongoing Health Technology Project is operating in a manner satisfactory to the Bank and it is expected that the PIU for the proposed project will also perform satisfactorily and closely monitor loan repayments. The experience with on-lending under the population project was also positive and there were no arrears. The risk of slippage in implementing the Action Program and the research studies would be addressed through semi-annual supervision missions to maintain the policy dialogue.

Project Costs:

Components	Local	Foreign	Total
	US$ million		
National Medical Center	2.3	10.2	12.5
National Institute of Health	2.3	10.2	12.5
Public Hospitals	2.3	10.2	12.5
Action Program and Training	0.4	0.0	0.4
Base cost	7.3	30.6	37.9
Contingencies			
Physical	0.3	1.5	1.8
Price	0.9	3.0	3.9
Subtotal	1.2	4.5	5.7
Total Project Cost /a	8.5	35.1	43.6

/a Net of taxes and duties, which are estimated at US$5.6 million.

Financing Plan:

	Local	Foreign	Total
	US$ million		
IBRD	0.0	30.0	30.0
National Government	3.0	1.7	4.7
Public Hospitals	2.8	1.7	4.5
National Medical Center	2.7	1.7	4.4
Total	8.5	35.1	43.6

Estimated Disbursements:

Bank FY	1993	1994	1995	1996	1997
	US$ million				
Annual	3.0	7.0	10.0	7.5	2.5
Cumulative	3.0	10.0	20.0	27.5	30.0

Rate of Return: Not applicable

KOREA

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I. SECTORAL CONTEXT

A. Population, Health and Nutrition Status

1.1 Population Status. Korea's 1990 population is estimated at 42.8 million, of which 72 percent live in urban areas. Population density is 431 persons per square kilometer, which makes it among the world's most densely populated countries. The crude birth rate and crude death rates were, respectively, 16.4 and 5.8 per 1,000 population, giving a natural population increase of one percent. Urbanization, industrialization and a successful family planning program have had a major demographic impact. Age structure by the three main age groups is as follows: 0-14 years: 25.9 percent; 15-64 years: 69.4 percent; 65 and over: 4.7 percent. The dependency ratio therefore is 44 percent.

1.2 The total fertility rate (TFR) was 1.6 children per woman in reproductive age in 1990, which is below the replacement level of 2.05. Government policy aims at a zero percent population increase by 2020 at which time the population would have stabilized at about 50 million. This goal is clearly within reach. Widespread use of modern contraceptive methods and increase in the age at marriage account for the low fertility rate. The contraceptive prevalence rate is over 70 percent and the most popular family planning method in 1989 was IUD's (40 percent) followed by sterilization (31 percent), condoms (24 percent) and oral pills (5 percent).

1.3 Health Status. Conventional health indicators show that the health status of Koreans has improved greatly in recent years. Life expectancy increased from about 55 years in 1965 to about 67 years in 1990 for males and from 58 years to 75 years for women. The national average life expectancy at birth is 71 years. The 1990 infant mortality rate of 11 deaths per 1,000 live births compares favorably with most developed countries. The 1989 maternal mortality rate is 30 deaths per 100,000 live births, which is low compared to other developing countries but still three to four times higher than the average for developed countries. Immunization rate is a high 95 percent, and 85 percent of babies are delivered in a hospital setting. These advances result from improvements in education, nutrition, public health services, housing and personal incomes. By the end of August 1991, 157 persons were identified as HIV seropositive of which 13 developed AIDS.

1.4 The incidence of communicable diseases has diminished sharply and many have been controlled (smallpox, polio, cholera, diphtheria, rabies, malaria). Korea has had successful communicable disease prevention programs through investments in water supply and sewage disposal systems, low-income

housing, aggressive public health measures, and health promotion and protection programs.

1.5 Rapid growth of the Korean economy -- accompanied by industrialization and urbanization -- has changed life styles and affected the health status of Koreans. The mortality profile and the disease burden have shifted over the last 30 years from a typical developing country's profile of high fertility/high mortality and prevalence of infectious and parasitic diseases, to a developed country profile of noncommunicable chronic and degenerative diseases, and a rapidly increasing incidence of diseases resulting from social and environmental factors. Personal behavior, food, and the natural of the environment have become the prime determinants of health and disease in Korea as in all developed countries.

KOREA: Table 1.1 Principal Causes of Death 1981-88

	1981 % of Total	1983 % of Total	1985 % of Total	1987 % of Total	1988 % of Total
Causes of Death	N=167,070	N=212,516	N=200,062	N=200,062	N=190,194
Cancer	10.53	12.53	15.56	17.11	18.22
Heart Disease and Stroke	24.78	27.87	31.80	30.38	29.98
Accidents and Violence	9.48	9.47	11.60	13.16	13.76
Infectious Diseases	3.99	4.49	4.08	3.32	3.19
Ill-defined Illnesses	35.08	27.85	18.05	18.09	17.40
All other causes	16.14	17.79	18.91	17.73	17.45
TOTAL DEATHS	100.00	100.00	100.00	100.0	100.00

Source: 1986 and 1990 Yearbooks of Health and Social Statistics (Ministry of Health and Social Affairs)

1.6 The principal causes of death in the 1980s were cancer, heart disease and stroke, accidents and violence, which together accounted for six deaths out of ten in 1988 (Table 1.1). During the period 1981-88 death rates for cancer and for accidents and violence increased consistently, but the death rate for heart disease and stroke has started to decline, a trend which is consistent with experiences of most industrialized nations. The prevalence of these conditions and therefore the disease burden caused by them has increased dramatically (Table 1.2). Cancer rates per 1,000 population increased eightfold between 1980 and 1989, and the rates for heart disease and stroke, and for accidents and violence increased ninefold during the same period. The number of deaths from traffic accidents increased fourfold between 1970 and 1988 or an average 16% per year, whereas they decreased in most industrialized countries. The number of motorvehicle deaths per million population for Korea was 2.75 in 1987 compared with 0.77 for Japan. The number of deaths was 57 per 10,000 vehicles or thirty times higher than Japan's 1.9.

KOREA: Table 1.2 Prevalence of Selected Noncommunicable Diseases
Number of Conditions and Rates Per Thousand Population
1980-89

Year	Population ('000) (mid-year)	Cancer		Heart Disease and Stroke		Accidents and Violence	
		No. of Conditions	Rate ('000)	No. of Conditions	Rate ('000)	No. of Conditions	Rate ('000)
1980	38,124	79,574	2.09	215,999	5.67	582,035	15.27
1981	38,723	119,007	3.07	174,786	4.51	793,016	20.48
1982	39,326	173,095	4.40	436,202	11.09	1,114,958	28.35
1983	39,929	253,556	6.35	674,956	16.90	1,381,902	34.61
1984	40,513	273,321	6.75	716,689	17.69	1,926,907	47.56
1985	40,806	344,403	8.44	878,362	21.53	2,174,791	53.30
1986	41,184	388,742	9.44	937,780	22.77	2,426,138	58.91
1987	41,575	449,755	10.82	1,087,839	26.17	3,159,700	76.00
1988	41,975	414,535	9.88	1,480,171	35.26	4,134,508	98.50
1989	42,380	700,957	16.54	1,930,110	45.54	5,844,266	137.90

Source: National Bureau of Statistics, Economic Planning Board; 1986 and 1990 Yearbooks of Health and Social Statistics (Ministry of Health and Social Affairs)

1.7 Nutrition Status. The nutrition status of the Koreans is generally satisfactory. The average daily caloric intake per capita in 1988 was 1,935 which is slightly below the 2,132 figure recommended by FAO as the per capita energy requirement for Koreans. A national nutrition survey carried out in 1989 with a sample of 2,000 households still indicated some small disparity between urban and rural areas. One study documented an increase in obesity which is a different type of malnutrition. MOHSA encourages breastfeeding as part of its health education programs and with the support of WHO has organized seminars to promote breastfeeding practice.

B. The Health Care System

1.8 The basic structure of the Korean health care system reflects the influence of the Japanese system, which in turn was inspired by the German social insurance model. After the Second World War, Korea adopted features of the United States private health care system. The Ministry of Health and Social Affairs (MOHSA) has formal responsibility for policy making and administration of the health system. The Economic Planning Board (EPB) has important powers in overall planning and resource allocation and therefore directly affects health policy decisions. The Ministry of Home Affairs (MHA) has jurisdiction over city, county and provincial governments and is responsible for executing MOHSA policies.

1.9 The Ministry of Health and Social Affairs (MOHSA). MOHSA is responsible for broad health policy coordination (see Organizational Chart, Annex 1). Its programmatic responsibility is mainly for the maintenance and promotion of traditional public health activities such as the control of food and water quality, and of safety of pharmaceuticals; immunization, family planning and MCH programs; epidemiological surveillance, health education and

disease control; management of MCH centers, health subcenters and primary health care posts; and for the administration of the social welfare and national pension system. Its share of the national general account budget was 4.7 percent in 1990 up from 2.7 percent in 1983 and 4.2 percent in 1989 (Table 1.3). The 1991 estimate is 5.1 percent. Social welfare expenditures absorbed 84 percent of its budget in 1990 versus 61.5% in 1983. The major factor behind the increase in social welfare expenses is higher medical insurance payments which went from 12.5% of MOHSA's budget in 1983 to 38.7% in 1990.

Table 1.3: MOHSA BUDGET 1983-90

Year	Public Health (million Won)	Social Welfare (million Won)	Total (million Won)	% of Government Budget
1983	115,238	184,243	299,481	2.7
%	38.5	61.5	100	
1985	134,145	218,296	352,431	2.9
%	38.0	62.0	100	
1987	175,802	356,575	532,377	3.3
%	33.0	70.0	100	
1989	176,659	751,583	928,242	4.2
%	19.0	81.0	100	
1990	182,721	969,102	1,151,823	4.7
%	15.9	84.1	100	

The Private Sector

1.10 Korea has a large and strong private sector. Provision of personal health services is mainly in the domain of the private sector with concentration in urban areas. Private clinics and hospitals account for 95 percent of all medical facilities, employ 72 percent of physicians and 55 percent of nurses, and manage 80 percent of hospital beds. Private medical schools account for more than 71 percent of medical schools and 60 percent of the dental schools. Traditional oriental medical schools are operated by the private sector. However, private sector activities are concentrated in urban areas, creating a maldistribution of resources between the urban population and the people living in agricultural and fisheries areas. Almost 90 percent of the hospital beds are in urban areas and 86 percent of the physicians practice there.

1.11 The government has taken steps to correct the skewed urban/rural distribution of personnel and facilities and to strengthen rural medical care. Between 1978 and 1985, 67 rural hospitals with a total of 6,580 beds were able to borrow from external sources (OECF) at lower than market interest rates. Medical school and dental school graduates can choose to work as "public health doctors" in "doctorless" areas instead of doing their military service.

The Public Sector

1.12 The public sector's main responsibility is to perform the traditional preventive public health functions in order to protect the health of the people. Several national institutes assist it in performing these duties and among them are the National Institute of Health and the National Institute of Safety Research. Government also has a residual responsibility for curative care activities especially for the inhabitants of rural and isolated areas and for people on public assistance in urban and rural areas. It operates 260 health centers, 1,318 health subcenters and 2,038 primary health care posts. About half of the staff of health centers and subcenters are "public health doctors". Primary health care posts cover communities of less than 500 residents and are staffed by community health practitioners (CHP) supervised by health center/subcenter doctors. The CHP's are qualified nurses or midwives and the government and the community each pay half of their salary.

1.13 Public Hospitals. Public hospitals were established by the King in 1910 to provide medical care to low-income persons. In 1982, 34 of these facilities were given more autonomy and were allowed to function as independent organizations supervised by their respective municipalities or provinces (Annex 2). The law authorized each hospital to charge for services provided in order to cover its operating expenses. In the first years of financial independence, the income of these hospitals had to be supplemented by their public owners. With the gradual extension of universal health insurance, most subsidies have been removed and income is derived from patient charges; 28 of the 34 hospitals have reached financial self-sufficiency for recurrent expenses Seven hospitals are located in rural areas with low population density and still receive government subsidies for equity reasons. Capital expenditures for remodeling and expansion of services and facilities come from the budgets of MOHSA for national hospitals and the Ministry of Home Affairs for municipal and provincial facilities.

1.14 Only about 10 percent of Korea's hospitals are in the public sector: one national medical center (735 beds), three national mental hospitals (1,950 beds) and two more under construction for an additional 600 beds, three national tuberculosis hospitals (1,170 beds), and 34 municipal/provincial hospitals. Among the latter, four are located in large cities (Seoul, Pusan, Taegu, Inchon), 23 in medium-size cities, and 7 in farming and fisheries areas. Nine of the 34 facilities have more than 200 beds, nine have between 100 and 200 beds, and 16 have less than 100 beds. The municipal and provincial hospitals have 5,135 beds or about 4 percent of the total number of hospital beds in Korea.

1.15 Average occupancy of the 34 public hospitals was a high 92 percent in 1989 and the average length of stay was 7 - 8 days or about half the national average. Their historical mission was to serve the poor and their client population is still mainly the poor. Less than 10 percent of the Korean population receives medical care under the Medicaid and the public assistance program, but 41 percent of the inpatients and 25 percent of the outpatient visits in these public hospitals were classified under these welfare programs in 1989.

1.16 Of the 34 public hospitals 33 created a national Association of Municipal and Provincial Medical Institutes (AMPMI) in 1987 which is recognized by the Ministry of Home Affairs. AMPMI is autonomous and its budget comes from fees paid by the member hospitals. Its mandate is to

represent the interests of its members. Its staff of seven organizes training seminars, manages a pension fund for the employees of the member hospitals, promotes good working conditions and handles labor relations, organizes group purchasing and collects statistical information on their members.

1.17 The National Medical Center (NMC). NMC is a 735-bed referral and teaching hospital located in Seoul. It is the only national public acute care hospital. A 1953 agreement between the government of Korea and three Scandinavian countries led to the opening of a 382 bed facility in 1958. Ten years later the government assumed full responsibility for NMC, expanded it to 604 beds and then again to its present capacity of 735 beds in 1990. Organizationally it is part of MOHSA and reports to the Director General of Medical Affairs (Annex 1). NMC has three functions: patient care, teaching and research. As a referral hospital it receives about 70 percent of its patients from the metropolitan area of Seoul and the balance from the rest of the country. Its bed occupancy in 1990 was 93 percent and it attended to about 900 outpatients per day including 60 to 80 emergency cases. Total number of employees in 1991 is 1,080 or about 1.5 staff per bed, which is a low ratio given the heavy outpatient load.

1.18 As a teaching and training institution, NMC receives medical interns from three universities (Seoul National, Yonsei, and Korea). Medical residents doing their apprenticeship to become specialists are part of the house staff. It also has a school of nursing with a student capacity of 120 and eight full-time faculty. Until 1990 all nursing students were national scholarship holders but as the supply of nurses has become satisfactory, most students now must pay tuition and fees. Its research budget is quite modest at less than one million US$ per year.

1.19 NMC's 1990 budget was US$35 million and its 1991 budget is US$43 million. About 80 percent of its income is derived from patient charges with the balance from the MOHSA budget. All hospital revenue goes to the national treasury and NMC operates on a prospectively MOHSA approved budget. Four fifths of its budget deficit is caused by the provision of uncompensated care to the very poor and the remainder from unanticipated salary increases, or the startup expenses of new clinical programs (e.g. harelip surgery, cancer registry). Capital expenses are paid by the government but restrictive funding in recent years has pushed NMC to lease some major items of biomedical equipment and lease payments are operating expenses. Even so, NMC lacks up to date biomedical equipment especially for diagnosis and treatment of noncommunicable diseases (cancer, heart disease, diabetes). Over 70 percent of its medical equipment is more than 20 years old.

1.20 The National Institute of Health. The Korea National Institute of Health (NIH) was established in 1963 by merging four research institutes and laboratories into one institution. Its functions are: (a) epidemiological survey and research on communicable diseases; (b) research and production of vaccines and diagnostic antigens; (c) establishing standards and research on food and food additives; (d) establishing standards and quality control of drugs; (e) standardization of radiation dosimetry, radiation protection, and inspection of radiological equipment; (f) in-service training for public health workers; and (g) administering national qualifying examinations for health personnel. A branch of NIH was established in the Southern city of Masan mainly to store drugs, vaccines, and antigens for use in national emergency situations. Annex 1 contains the organizational chart of NIH. Detailed functions of its seven departments are described in Annex 3.

1.21 The Korea National Institute of Health is part of MOHSA and reports to the Director General of the Public Health Bureau (Annex 1). The Director General of NIH is appointed by the Minister of MOHSA and the Institute receives its budget from MOHSA. Its 1990 budget was US$15 million and the 1991 assigned budget was US$18 million. The Institute does not have other sources of income. Its ability to carry out its quality control and research functions effectively and efficiently is being hampered by a lack of appropriate equipment. Much of its equipment is outdated, with 40 percent of it over 10 years old, frequently out of service, and slower, less accurate and less sensitive than newer more technologically advanced equipment.

1.22 The National Institute of Safety Research. Founded in 1988, the National Institute of Safety Research (NISR) is the nation's leading safety research center doing research, demonstration and evaluation studies on the safety and efficacy of existing and new chemical substances, including drugs, and of new materials. NISR grew out of the former Department of Drug and Food Safety Research established in 1981 in MOHSA to study the efficacy and safety of drugs, cosmetics, food additives, medical instruments, pesticide residues, and other chemical substances. It is now an independent institute formally reporting to the Director General of the Pharmaceutical Affairs Bureau in MOHSA. It is divided into the department of toxicity and the department of pharmacology and pathology. Research projects are commissioned by the Ministry of Agriculture, Forestry and Fisheries, the Ministry of the Environment, MOHSA, and the private sector. NISR collects and analyzes information on the effects of pharmaceuticals and practices toxico-pharmacology tests on pharmaceuticals and food additives. It has established an information system on toxic materials and other chemical substances hazardous to the people's health.

1.23 Institute of Environmental Research. This institute is part of the Ministry of the Environment with its own scientific and technical capability. It plays an important role in protecting the health of the people through research, demonstration, and evaluation studies on water, air and noise pollution and other environmental hazards that may negatively affect the public's health.

The Social Security System.

1.24 Korea's social security system has three components: (a) social insurance (medical insurance, pensions, industrial accident compensation); (b) public assistance (subsistence aid, medical aid, disaster relief); and (c) social welfare services for the physically handicapped, elderly, women, children and the mentally incapacitated.

1.25 The Medical Insurance System. After a twelve year gradual expansion, participation in Korea's medical insurance system became mandatory for all citizens on July 1, 1989. The system operates largely through non-profit medical insurance societies of three types: (a) the Industrial Establishment Medical Insurance societies (154 societies with 37% of the population) covering employees of industrial companies with five or more workers; (b) the 266 Regional Medical Insurance societies (with 13 million urban and 6.2 million rural residents or 44% of the population) covering the self-employed farmers and pensioners; and (c) the Korea Medical Insurance Corporation with 4.6 million members or about 10% of the population which covers government and private school employees. The 420 societies and the corporation are members of the National Federation of Medical Insurance (NFMI) organized as a special public corporation financed by membership fees and fees

for reviewing and processing claims. The insurance societies are similar to the sick funds in several Western European countries and in Japan, and perform four functions: (a) review the qualifications of the insured and dependents; (b) collect contributions; (c) pay the provider for services rendered to the insured; and (d) designate medical institutions for the care of the insured. The large number and small size of medical insurance societies is inefficient and lacks the cost saving potential and bargaining strength of a more unified system.

1.26 Medical insurance is financed by contributions from the insured and the employer and by government subsidy. Contributions to the Industrial Establishment Medical Insurance societies are shared equally by employer and employee and the rates are determined through a collective bargaining process within a range of 3 percent to 8 percent of the insured's income. The Government pays 50 percent of the cost of the Regional Medical Insurance societies, 50 percent of the insurance for civil servants as employer, 20 percent of the contribution of private school employees, and most or all of the contribution for the poor on public assistance. The insured pays part of the cost of services received, i.e., 20 percent of inpatient services, up to 55 percent of the cost of outpatient visits, 30 percent of prescription drugs, and 60 percent of non-prescription drugs.

1.27 Public Assistance. The medical insurance societies do not include medical assistance for low-income families, which is part of government paid public assistance and covers 3.9 million people or about 9 percent of the population. They are grouped by degree of medical indigence into three classes. The poorest (1.6%) receive free care, and the other two less poor groups pay part of the cost of their care.

C. Health Care Resources and Utilization

1.28 Hospital Beds. The number of hospital beds has about doubled between 1980 and 1989 and has reached a satisfactory ratio of 3.0 beds per 1,000 population (Annex 4). About half of these beds are in general acute multi-specialty hospitals, about 25 percent are in community hospitals of lesser clinical scope, and another 25 percent are in clinics with fewer than 20 beds. Urban areas have 86 percent of the hospital beds and the bed/population ratio per 1,000 is 3.4 versus 1.3 in rural areas. Not-for-profit hospitals have about 60 percent of the beds and their average hospital size is 240 beds. For-profit hospitals have about 22 percent of the beds and are smaller with an average bed capacity of 69. Public sector hospitals are fewer in number and some are specialty hospitals (tuberculosis, leprosy, mental) with an average size of 300 beds. (See also paras. 1.13-1.16 on public hospitals). The strongest growth in hospital beds occurred in the first half of the decade (Annex 4) but has slowed considerably (e.g., a 5 percent growth in 1989 versus a 21 percent growth in 1983). The national hospital occupancy rate in 1989 for all hospitals was a satisfactory 78.8% (urban: 82.4% and rural: 77%), and the average length of stay was a high 14 days (urban: 13 and rural: 23). Hospital admissions in 1990 were 62 per 1,000 population (up from 46/1,000 in 1989) and the number of outpatient visits per person per year was 3.2. These two figures are about half the corresponding figures for developed countries but in line with middle-income country utilization rates.

1.29 Medical Technologies. In Korea there is widespread and increasing demand by health professionals and patients for greater technological sophistication in the provision of medical care, driven by an increase in noncommu-

nicable diseases and by the universalization of health insurance. Comparative data are not readily available for all types of technologies but limited information shows that Korea has ten times fewer CT scanners per million people than Japan, five times fewer MRI's (Magnetic Resonance Imaging), and four times fewer linear accelerators. In the process of expanding medical technology, Korea needs to address several problems. First, the uncontrolled introduction and diffusion of medical technologies could drive up aggregate costs to an unaffordably high level. Second, geographic maldistribution could lead to inequitable access to available equipment. Finally, additional inequity could result from the cost for some procedures not being eligible for reimbursement under national health insurance and, therefore, only people able to pay would have access.

1.30 Health Manpower. With 31 medical schools (and four more in the planning stage) Korea has one of the world's highest medical school/population ratios. The total number of physicians increased about 77 percent between 1980 and 1989, going from a ratio of 1,493 people per physician to a ratio of 938 (Annex 5), which is about double the ratio of developed countries. The last three years the annual percentage increase in physicians has plateaued at about eight percent. The most striking feature of the physician manpower market is the geographic maldistribution of physicians. Seoul has 24 percent of the population but 42 percent of the physicians. Rural areas have 28 percent of the population but only 14 percent of the physicians. The most striking aspect of the shifting physician marketplace is the growing supply of physician specialists. The percentage of physicians that are specialists rose from 32 percent in 1980 to 48 percent in 1989. The increasing proportion and number of specialists may create inflationary supplier-induced demand, and especially procedure-based demand, above what can be justified medically.

1.31 Between 1980 and 1989 the number of dentists more than doubled and the ratio increased from one dentist for 10,500 people to one for 4,900 (Annex 6). The annual percent increases are accelerating going from a 9 percent yearly increase in 1981 to a 13 percent increase in 1989.

1.32 The nurse population has expanded at an annual rate of about 8-9 percent and the ratio of population per nurse was almost halved between 1980 and 1989, going from one nurse per 937 persons to an acceptable ratio of one nurse per 506 persons (Annex 7). The number of specialized nurses represents only about one percent of all nurses, but their number is increasing at a much faster rate than that of general nurses, indicating a slowly increasing supply of public health nurses, mental health nurses, anesthetists, and visiting nurses. There were also 128,867 nursing aides or one per 330 persons. Combining the two categories of nursing gives a high ratio of one nursing personnel per 200 people.

1.33 Impact on Health Care Costs. The increase in availability of hospital beds and a growing supply of physicians that are both paid for their services by a national insurance scheme are the major ingredients for rapid cost escalation (see next paragraph). Lack of regulations and the absence or non-enforcement of macro level cost containment measures fail to stem the cost inflation. Policymakers face critical questions on how to control costs, promote economic efficiency (output per billion Won invested), promote technical efficiency (output per employee or productivity), enhance quality and effectiveness (minimize unnecessary and inappropriate care), and ensure the equitable distribution of resources.

D. Health Care Expenditures and Financing of Services

1.34 The Korean health economy is riding the tide of a cost explosion. Health care spending as a percentage of Gross Domestic Product has expanded from 2.8 percent in 1975, to 5.2 percent in 1985, to 6.6 percent in 1989, and an estimated 7.3 percent in 1990. This percentage puts Korea at the high end of the range for developing countries and at the level of most developed countries. The 1990 GDP is estimated at US$234 billion and health care expenditures in 1990 would then be about US$400 per capita or one third of Japan's and one sixth of the US per capita expenditures for health care.

1.35 Sources of Funds. Direct patient payments have declined from 80 percent of health care expenditures in 1980 to 51 percent in 1990. The expansion of national health insurance benefits may reduce patient payments to 49 percent of expenditures by 1992, but this figure is still much higher than any of the OECD countries because of the high rate of cost sharing in Korea. Cost sharing is achieved through deductibles and co-payments, e.g., co-payment rates for inpatient hospital care are 20 percent and for outpatient services the rates range from 30 to 55 percent depending on the place of service. The co-payment rates for drugs are 30 percent for prescription drugs and 60 percent for non-prescription drugs.

1.36 National and local tax revenues financed 24 percent of the US$17.1 billion health care expenditures in 1989 as compared to 11.5 percent in 1985. The Korean Government pays half the premium and all the administrative expense of the Regional Medical Insurance program which covers 44 percent of the population (farmers, fishermen, self-employed, and pensioners). The Government provides facilities and 3,250 "public health doctors" (medical/school graduates serving in lieu of military service) for health care services in rural areas. The Government as employer also pays 50 percent of the insurance premium for civil servants and their dependents, and pays 20 percent of the premium for private school teachers and staff.

1.37 Private insurance premiums are estimated to account for 13 percent of sector financing, up from 4.5 percent in 1985. Adding industrial accident insurance, the total of third-party payments is 17 percent. Other non-specific and non-identified sources classified under miscellaneous account for the remaining 8 percent of sector financing.

1.38 Uses of Funds. Three major expenditure categories accounted for 89 percent of total health sector spending: drugs, herbs and injections represent 36 percent, hospital charges equal 29 percent, and medical fees represent 24 percent. The miscellaneous category that makes up the remaining 11 percent includes construction, research funds and other non-specified expenses. Private sector spending is estimated to be 76 percent of total spending, down from 88 percent in 1985 and 91 percent in 1980.

1.39 Causes of Cost Escalation. The rapid increase in health care expenditures and their share of GDP (para 1.34) are a combination of four underlying causes: demand factors, supply factors, inappropriate financial incentives, and administrative inefficiency.

1.40 More money has become available in the 1980s and has fueled demand for medical care. This money has come from two sources: health insurance and rising personal incomes. Health insurance changes patient behavior and consumers tend to consume more services as the effective "out-of-pocket" price is lower. Providers at the same time tend to induce demand and order more

services for their patients because it is in their financial interest to hospitalize patients, to order more tests, and to prescribe and sell more drugs.

1.41 The supply of all factors of production has increased sharply in the 1980s as witnessed by the number of beds (para. 1.24), the number of physicians and specialists (para 1.26), and the diffusion of medical technologies (para 1.25). Utilization of this installed and growing productive capacity is expected to increase in the 1990s and will push up health care expenditures.

1.42 Hospitals and physicians are paid on a fee-for-service basis according to a national fee schedule adjusted annually (para. 1.35). Retrospective reimbursement based on fixed fees controls the price of the service but provides financial incentives to increase the volume of services in order to increase revenue and profits. Effective cost containment seeks to control both price and quantity of services.

1.43 The large number (408) and small size (between 30,000 and 200,000 members) of insurance societies cause inefficiency in the administration of the national health insurance. Administrative expense of the Korean sickness funds is on average over ten percent of operating expenses reaching as high as 22 percent. This is two to three times more than the cost of administering national health programs in the U.K., Canada, Japan and the US but much less than the average of 33.5 percent for commercial health insurance carriers in the US.

1.44 Korea's universal health insurance coverage is a major social policy accomplishment. The resulting cost explosion confronts the country with difficult policy decisions. It must address the issues of managing the demand and supply of medical care, correcting the financial incentives and reducing administrative inefficiencies in order to reach the goal of making affordable quality medical care accessible to all citizens.

E. Hospital Financing

1.45 Korean hospitals -- public or private -- are reimbursed according to a relative value fee schedule adopted in 1976. The fees have been increased yearly at approximately the rate of general inflation in the economy. New fees are created for new items but items are only added slowly, especially for high technology services, as utilization increases quickly as soon as the service becomes reimbursable under the national insurance system. Inpatient and outpatient services are reimbursed by a split system involving: (a) a tiered fee schedule reimbursing for treatment activities; and (b) a flat fee schedule for reimbursement for materials. The plus factor of the treatment costs (1,720 items) includes labor time and is paid on a four-tiered system: clinics (less than 20 beds) receive fee plus 7 percent; general community hospitals receive fee plus 13 percent; multi-specialty hospitals receive fee plus 20 percent; and the 25 large university hospitals receive fee plus 30 percent. Materials include 8,100 items reimbursed according to a flat fixed fee schedule: 6,710 items are drugs or injections, other items are medical supplies, and one item is a fixed diagnostic fee for a first medical visit.

1.46 A major financing difference between private and public hospitals is that public hospitals do not receive the plus payment and are strictly reimbursed according to the fee schedule. Similarly, the only patients for whom no plus is paid are the poor and the medically indigent that are fully or partially covered by a public assistance program. These patients receive

medical care services in public hospitals and clinics and in about half of the private hospitals that have been certified by the government for that purpose. Private hospitals however are not keen on serving patients for whom they are not paid more than the fee schedule and consequently they do not seek their patronage. This partly explains why a high percentage of the patient population of public hospitals are publicly assisted patients.

1.47 Urban private hospitals are often able to finance their capital needs out of their own resources. Equipment, especially the "big ticket" items, are either self-financed or leased. The assets of public hospitals belong to the national, provincial or municipal government, and public hospitals - although autonomous in their operations - cannot borrow from commercial banks. The Government has in the past provided incentives on a selective basis to rural areas and priority social programs. This has been the case with an OECF loan to 67 private hospitals in medically underserved rural and fisheries areas, an IBRD loan to ten hospitals for financing MCH units, an ADB loan to a public national hospital, and a KFW loan to three hospitals. Through the proposed project the Government would on-lend to municipalities and provinces for modernizing their public hospitals.

F. Government Health Policies

1.48 The Government has made a number of policy decisions to make the health sector more equitable and efficient. It has enacted legislation to provide medical insurance coverage to the whole population as of July 1, 1989; it has divided the country into eight large medical regions and 140 Service Areas; it has created and defined a referral system to assure an orderly flow of patients within and among these eight regions; and, most important, it has expressed the political will and commitment to assure that in the 1990's health care services of consistently good quality should be available, affordable and accessible to the whole population (Annex 12). These policy measures are in line with the Government's determination to develop Korea's social sectors more quickly, and, in the case of the health sector, to respond to increased medical demand resulting from the universalization of medical insurance, rising incomes, technological innovations, an aging population structure, and the shift in the epidemiological profile from communicable to noncommunicable diseases (NCD). Government action has narrowed the urban/rural resource maldistribution by giving medical school graduates the option to work in rural areas in lieu of military service, and by investments in the rural hospital and health center infrastructure to improve the diagnostic and treatment capabilities of these lower level facilities.

1.49 Achieving the policy of universal health insurance coverage in July 1989 after a 12-year period of gradual expansion was a major accomplishment of the country's social development policy. Insurance has been accepted as an appropriate mechanism for achieving the social policy of access to affordable health care for all citizens, and access to health care is legally guaranteed irrespective of income and location. It was an important and necessary first step. Policymakers are now faced with three policy issues: (a) equity: further redressing the regional imbalances, and ensuring financial access for all; (ii) costs: containing escalating medical costs in an economic environment where hospitals with an increasing supply of beds and a growing supply of physician specialists are guaranteed under national health insurance to be reimbursed for services provided to an insured population demanding more medical care; and (iii) quality: monitoring quality of medical care and the medically justified use of medical resources in a financial environment where incentives are conducive to provide more services even if they are not

necessary, appropriate or proven effective, to prescribe and sell more drugs, to emphasize lucrative diagnostic procedures, to prolong hospital stays, and to request numerous follow-up visits.

G. Bank's Role in the Korean Health Sector

1.50 The Bank has assisted the Korean health sector with a population project (Ln. 1774-KO), a Health Technology Project (Ln. 3330-KO), and a health sector report with special emphasis on health insurance (Report No. 7412-KO, June 1989).

1.51 Population Project. In December 1979 the Bank provided the Government with a loan of US$30 million for a project expected to cost US$91.5 million to expand and further strengthen the family planning and maternal and child health programs. In March 1986, the Bank's Board approved a two year extension (Phase II) to use the undisbursed balance of the loan to on-lend US$17.5 million to private, non-profit hospitals to establish "Comprehensive Maternal and Child Health Centers". These hospitals were to serve as referral points for the rural Maternal and Child Health Centers and to assist them in upgrading their services. The loan was closed on December 31, 1987 and was fully disbursed. The Project Completion Report (PCR) was published on October 3, 1989 (Report No. 8114). The Project Performance Audit Report (PPAR) was issued June 29, 1990 (Report No. 8895). The conclusions of the PPAR regarding relevant lessons deal with the population and family planning activities of the project and not with Phase II. With reference to private hospitals, the PPAR notes that Phase II of the project was justified and that its primary value was the fact that it on-lent to private hospitals to permit them to expand their operations and to acquire more sophisticated equipment.

1.52 The Health Technology Project, approved in May 1991, builds on the experience of the second phase of the previous project by using on-lending to address the capital needs of selected private hospitals requiring quality-improving investments. By making MOHSA responsible for project implementation and accountable for its performance to other ministries and to the Bank, the project is intended to strengthen the institutional capacity of MOHSA.

1.53 The purpose of the sector report (1989) was to study the effects and implications of health insurance on the health sector, and to suggest reforms that would help Korea meet its health care objectives in a cost-effective and equitable manner. The intention of the study was to provoke consideration of a wide range of options in the organization and design of the insurance system and in the regulations governing public and private investments in medical manpower and facilities.

1.54 The proposed project would build on the experience under the two previous projects but with an emphasis on modernizing the public hospitals that are the major source of medical care for the poor. It would also carry out an action program focusing on health care financing policies and cost containment issues which would build on the sector analysis done by the Bank in its 1989 report.

II. THE PROJECT

A. Project Origin

2.1 The Government included the project in its FY90 list of projects suitable for external financing and formally asked the Bank for assistance in December 1990. A Bank mission identified the project in December 1990 and a Bank project preparation mission visited the country in March 1991. Most of the preparation work was completed by the Government according to guidelines formulated by the Bank. The project was preappraised in September 1991. Project preparation was well advanced and no appraisal mission was deemed necessary.

B. Project Rationale, Objectives and Scope

2.2 This project would be the means for the Bank to assist public hospitals serving the poor in modernizing their biomedical equipment for early detection and opportune treatment of noncommunicable diseases, and support the Government's equity policy of making affordable quality medical care accessible to all citizens. It would increase Government's effectiveness in carrying out its mandated public health protection responsibilities for monitoring the safety and quality of food, food additives and drugs; producing vaccines and diagnostic antigens; and monitoring communicable diseases. The project would reinforce an objective of an earlier project by continuing to strengthen the institutional capacity of MOHSA to give it a better understanding of hospital and sector financing which would be beneficial in performing its role of formulating health policies and developing cost containment measures.

2.3 This project would be a vehicle for the Bank to continue its policy dialogue with the Government on the financing of the health sector, and to monitor the impact of national health insurance on equity, cost and quality of medical care. The Bank would bolster its growing experience in helping a middle-income country adapt to an epidemiological transition which could be utilized in similar countries.

2.4 The objectives of the project are to: (a) increase the access by rural and urban poor to medical care services, especially for early detection of noncommunicable diseases; (b) improve the quality of medical care in public hospitals; (c) assist the country in protecting the health of the population through a more effective control of the safety of drugs and the quality of food, and through monitoring communicable diseases; and (d) address critical health sector policy issues focusing mainly on sector financing and cost containment.

2.5 The Bank loan would finance the purchase of biomedical equipment and the beneficiary hospitals and Institute would finance complementary inputs (consumables, transportation and installation, operation and maintenance costs).

C. Project Description

Project Components

2.6 The proposed project's objectives would be achieved through the implementation, over four years, of the following four components:

Component A: Expansion of the diagnostic and treatment capabilities of the National Medical Center (NMC) (US$12.5 million equivalent). This component would add new biomedical equipment and replace and upgrade antiquated biomedical equipment in a national tertiary level referral hospital located in Seoul and serving mainly low-income clients. Clinical services to be supported would focus on the most prevalent diagnostic categories, such as coronary heart disease, cancer, stroke, and chronic liver disease. NMC is also a teaching hospital accepting interns and residents from three medical schools. It therefore requires up to date and more advanced equipment than a general acute care hospital.

Component B: Strengthen the Technical Capability of the Korean National Institute of Health (NIH) (US$12.5 million equivalent). This component would add and replace research and testing equipment for monitoring the safety of drugs and food, for producing vaccines and antigens, and for monitoring communicable diseases. More accurate, sensitive and technologically advanced equipment would enhance NIH's capability to carry out quality control functions benefitting the health of the whole population.

Component C: Strengthen Selected Public Hospitals (PH) in Prevention and Treatment of Non-Communicable Diseases (US$12.5 million equivalent). This component would add and/or replace biomedical equipment in selected municipal and provincial hospitals in order to modernize their equipment and upgrade their diagnostic and treatment capabilities, especially for noncommunicable diseases. It would allow smaller public hospitals to treat more patients in situ and thereby decrease referrals to higher level tertiary care facilities. The maximum allowable amount of equipment purchases per selected hospital would be US$1.0 million to ensure that at least ten hospitals would be benefitted. The municipalities and provinces that are the owners of these hospitals would sign subloan agreements with the Government to finance the purchase of the biomedical equipment. About fifteen hospitals would be included in this component.

Component D: Action Program and Training (US$275,000 equivalent). This component would carry out a health sector policies and cost containment action program addressing critical sector issues (hospital efficiency, diffusion of medical technology, fee schedules) supported by relevant research studies, publications on health policy and financing, and a national consensus building program. It would also provide for training of MOHSA, NMC and NIH staff.

2.7 The Health Sector Policies and Cost Containment Action Program (Annex 12) formulated by the Government would be carried out during the life of the project. It would be financed by the Government at a cost of about US$250,000. Policy objectives for the 1990s focus on equitable access, affordable cost and acceptable quality of health services and progress would be monitored through a set of equity measures, cost-containment measures and quality measures as shown in Annex 12. The World Bank has engaged in a policy dialogue with the Government during project preparation and agrees with the country's policy objectives. During preparation of this project as well as the previous project (Loan 3330-KO), the Bank has raised awareness of the government -- of MOPH and of the Economic Planning Board, pointing out the criticality of short and medium term health sector financing issues and the need for policy decisions. The health sector chapter in the Seventh Five-Year Plan was drafted by an ad hoc task force of non-government health economists and health specialists. The Korea Hospital Management Institute was created in December 1991. An action program has now been defined and three priority areas have been agreed to for immediate attention: (i) hospital management

efficiency; (ii) management of biomedical technology; and (iii) insurance reimbursement and regulation of fee schedules.

2.8 Four research studies would also be carried out during 1992-94 on the following topics: (i) a study of national health expenditures; (ii) econometric models of the affordable number of hospital beds, number of physicians and other health personnel, and of reimbursement for hospital and physician services; (iii) evaluation of the impact of National Health Insurance on the Government's policy objectives of equity, cost and quality; and (iv) evaluation of alternatives for paying providers of medical care services. A regular health policy and financing publication would disseminate research fundings and annually a national health policy forum would be held. Draft Terms of Reference for the research studies were submitted to the Bank prior to negotiations.

Decision-making Criteria for Selecting Hospitals and Equipment

2.9 Hospital Selection. Criteria for selecting hospitals to participate in the project is only an issue for the municipal and provincial hospitals under Component C. The NMC and NIH are national facilities and are the only ones of their kind; their applications would be endorsed by their respective Director Generals. About 15 of the 34 provincial and municipal public hospitals in Korea would be selected to participate in the project. Respective municipal and provincial authorities will assume responsibility for repaying the loan and propose hospitals for participation on the basis of their need for additional equipment. A public hospital's application would require endorsement by the Office of Mayor or Governor which has jurisdiction over the medical facilities in its administrative area. The HMD would make the selection, taking into account improvement in equitable access of the poor to health care. Financial evaluation of the hospitals is not necessary since all applicant hospitals are public institutions and their capital costs are financed by national and local budgets. Almost all public hospitals are financially self-sufficient for operating costs (para 1.13).

2.10 Equipment Selection. The selection of biomedical equipment to be procured under the proposed project would be subject to criteria (Annex 9) and follow procedures (Annex 10) which have been prepared by HMD and LMD in MOHSA and are satisfactory to the Bank. Selection would be made by an Equipment Selection Committee (ESC) (Annex 11). NMC and NIH would submit their equipment lists and technical specifications for approval by ESC. Hospitals proposed by cities and provinces as eligible for an equipment loan under the project would also submit their schedule of requirements and technical specifications for approval by the ESC.

2.11 The Guidelines for the Allocation of Loan Proceeds per component is shown in Annex 8. The total amount of allocation for each component is indicative only. The final figure could be slightly higher or lower within reasonable limits. Unused amounts for one component could and should be used for another component. During negotiations the Government provided assurances that allocations of loan proceeds would follow the agreed guidelines.

2.12 During negotiations the Government provided assurances that the equipment approved for purchase under this project would meet the agreed selection criteria and that the selection process would follow the agreed guidelines. The Government also provided assurances that no material changes in the criteria would be made without first being discussed and agreed with the Bank.

Project-Related Training

2.13 The project would include US$28,000 for seminars and overseas study tours for loan and equipment managers and would be financed by the MOHSA budget. Any training that may be needed for NMC and NIH staff would be part of their regular training program and financed out of their training budget augmented by WHO support.

III. PROJECT COSTS, FINANCING AND IMPLEMENTATION

A. Costs

3.1 The total cost of the project is estimated at US$43.6 million equivalent, net of taxes and duties, with a foreign exchange component of US$35.3 million, or 81 percent of total costs. The estimated cost by project component is summarized in Table 3.1 and by category of expenditure in Table 3.2. Detailed costs by component and by category of expenditure are given in Annex [14] and project expenditure by year and by component in Annex [15].

Table 3.1: SUMMARY OF PROJECT COSTS BY COMPONENT 1/

	Won			USD			% foreign exchange	% total base costs
	Local	Foreign	Total	Local	Foreign	Total		
A. National Medical Center	1,703.3	7,759.2	9,462.5	2.3	10.2	12.5	82.0	33.1
B. National Institute Health	1,703.3	7,759.2	9,462.5	2.3	10.2	12.5	82.0	33.1
C. Provincial Municipal Public Hospital	1,703.3	7,759.2	9,462.5	2.3	10.2	12.5	82.0	33.1
D. Action Program & Training	186.7	20.7	207.4	0.2	0.0	0.3	10.0	0.7
Total Baseline Costs	5,296.4	23,298.5	28,594.9	7.0	30.8	37.8	81.5	100.0
Physical contingencies	264.8	1,164.9	1,429.7	0.3	1.5	1.9	81.5	5.0
Price contingencies	671.7	2,274.0	2,945.7	0.9	3.0	3.9	77.2	10.3
Total Project Costs 2/	6,233.0	26,737.4	32,970.4	8.2	35.3	43.6	81.1	115.3

Values scaled by 1000000.0

Table 3.2: SUMMARY OF PROJECT COSTS BY CATEGORY OF EXPENDITURE 1/

	Won			USD			% foreign exchange	% total base costs
	Local	Foreign	Total	Local	Foreign	Total		
I. Investment Costs								
A. Equipment	0.0	22,710.0	22,710.0	0.0	30.0	30.0	100.0	79.4
B. Transportation and installation	2,043.9	227.1	2,271.0	2.7	0.3	3.0	10.0	7.9
C. Action Program & Training	186.7	20.7	207.4	0.2	0.0	0.3	10.0	0.7
D. Operation and maintenance	1,430.7	159.0	1589.7	1.9	0.2	2.1	10.0	5.6
E. Consumable materials	1,635.1	181.7	1,816.8	2.2	0.2	2.4	10.0	6.4
Total Baseline Costs	5,296.4	23,298.5	28,594.9	7.0	30.8	37.8	81.5	100.0
Physical contingencies	264.8	1,164.9	1,429.7	0.3	1.5	1.9	81.5	5.0
Price contingencies	671.7	2,274.0	2,945.7	0.9	3.0	3.9	77.2	10.3
Total Project Costs 2/	6,233.0	26,737.4	32,970.4	8.2	35.3	43.6	81.1	115.3

Values scaled by 1000000.0

1/ Excludes duties and taxes estimated at US$5.6 million.
2/ Figures may not add due to rounding.

3.2 Base costs are estimated in December 1991 prices. The cost of the equipment is equivalent to the requested loan amount excluding contingencies. Transportation and installation costs are based on experience with other recent Bank projects in Korea. The initial supply of consumables and the cost of operation and maintenance were estimated according to standard procedures in use also in recent Bank projects in Korea. Duties and taxes are estimated at US$5.6 million and are not included in the total project cost.

3.3 The contingency allowance of US$5.8 million, about 15 percent of baseline costs, includes contingencies for unforeseen physical conditions and for estimated price increases. Physical contingencies were estimated at 5 percent of baseline costs for equipment, transportation and installation, consumable materials and O&M expenditures. Price contingencies were calculated for both local and foreign costs in accordance with the following expected annual average price increase percentages: foreign cost at 3.9% p.a. and local cost at 5% p.a. throughout. Accordingly, aggregated price increases are estimated at about 10.3 percent of baseline costs plus physical contingencies.

3.4 The foreign exchange component of US$35.1 million (about 81 percent of total estimated project costs) has been calculated on the basis of the following foreign exchange percentages: equipment, 100 percent; transportation and installation, 10 percent; consumables, 10 percent; training and research, 10 percent and O&M, 10 percent.

B. Financing

3.5 The proposed loan of US$30.0 million equivalent would finance about 85 percent of the estimated foreign exchange cost of the project, or 69 percent of total project costs net of taxes and duties. The Government and hospitals would be responsible for the remaining US$13.6 million equivalent (Table 3.3). The loan amount is limited to US$30.0 by Korea's foreign borrowing program and is therefore less than the foreign exchange of the project. The loan would finance 79 percent of the baseline cost of equipment. Equipment procured under the project for the public institutions would be financed on the basis of subloans from the Government to the borrowing NMC, and municipalities and provinces on terms and conditions satisfactory to the Bank. All loan proceeds would be on-lent. Major points of the terms and conditions are outlined in Annex 16, including: sub-loans would be denominated in Korea Won and the sub-borrowers would bear the full exchange risk of the Won against the World Bank currency pool; the maturity and the grace periods for the sub-loans would be the same as the ones for the IBRD-GOK loan; and the interest rate would be the IBRD floating interest rate for the currency pool plus 0.05% p.a.. During negotiations, the Government provided assurances that a subsidiary loan agreement would be applied to all sub-loans under the project. As a condition of effectiveness of the loan, the Government would enter into a Subsidiary Loan Agreement with NMC for carrying out Component A and with NIH for carrying out Component B. As a condition of disbursement for expenditures under Component C, the Government would have entered into a Subsidiary Loan Agreement with the concerned municipality or province.

3.6 All costs for transportation and installation of equipment, operation and maintenance and consumable materials, including contingencies, would be financed by the beneficiary institutions. In the case of imported equipment, the costs of transportation to the point of entry into Korea would be included in the cost of the equipment. Cost of special training and installation if included in the equipment contract, would also be considered as the cost of equipment.

Table 3.3: FINANCING PLAN

Category of Expenditure	National Government	Public hospitals	National Medical Center	IBRD	Total
		------ US$ million ------			
Equipment	1.5	1.5	1.5	30.0	34.5
Equipment transportation and installation	1.2	1.2	1.2		3.6
Operation and maintenance	0.8	0.8	0.8		2.4
Action Program & Training	0.3	-	-		0.3
Consumable materials	0.9	1.0	0.9		2.8
Total	4.7	4.5	4.4	30.0	43.6

Recurrent Expenditures

3.7 When fully operational, the installed equipment would annually generate recurrent costs for consumable materials, maintenance and spare parts of about 8% and 7%, respectively, of the equipment purchase price. These additional expenditures constitute a very small percentage of a hospital's annual operating budget and therefore would be accommodated by the institutions without difficulty.

C. Project Management and Implementation

3.8 Overall responsibility for project management would lie with the Hospital Management Division (HMD) in the Bureau of Medical Affairs (BMA) of the Ministry of Health (MOHSA) (Annex 1). HMD would coordinate its actions with the Logistic Management Division (LMD) in MOHSA, and other related government agencies and professional institutions which might be involved in project related activities or policies. HMD would be responsible for the financial management of the project. It will assign one staff member to carry out the following financial management tasks: appraising subsidiary loan proposals, drafting subsidiary loan agreements, recording subsidiary loans, collecting on subsidiary loans, checking compliance with covenants, and taking corrective actions against problem subsidiary loans. One person would be recruited to assist in the start up activities during the first year of implementation at a cost of US$16,500 paid out of the MOHSA budget.

3.9 The Project Implementation Unit (PIU) (Annex 17) would be the one established by ministerial decree for the previous health project (Ln 3330-KO). It would be headed by the Director General of the Bureau of Medical Affairs (BMA). The Equipment Selection Committee is directly under the Project Director (para. 3.10). The Director of the Division of Hospital Management(HMD) serves as Project Executive Director, and manages the work of the Planning and Executing Team and of the Technical Cooperation Team. The Planning and Executing Team consists of HMD's Deputy Director, one accountant and one full-time health services management specialist. The Technical Cooperation Team would support the Planning and Executing Team with its technical expertise in biomedical equipment. Its staff are drawn from the Logistics Management Division. During negotiations, agreement was reached

that the PIU would be maintained until completion of the project with structure and functions satisfactory to the Bank.

3.10 A Policy Implementation Committee would supervise the execution of the Health Sector Policies and Cost Containment Action Program with the assistance of the newly created autonomous Korea Hospital Management Institute. The Committee would include representatives of government, the providers, the consumers and academics. The organization of the Committee is shown on page 6 of Annex 12. During negotiations, agreement was reached that the Action Program would be carried out without substantial amendments unless prior approval of the Bank was obtained.

Equipment Selection

3.11 The Equipment Selection Committee (ESC) established for Loan 3330-KO but with its membership composition modified (see para 3, Annex 11) would review and approve all requests for equipment submitted under this project by the beneficiary institutions. It will be chaired by the Project Director, the Director General of BMA, and consists of two vice chairmen (the Director of LMD) and Director General, KHA, a secretary (staff, LMD), and six committee members including a Director of HMD. The ESC would be responsible for applying the agreed equipment selection criteria (Annex 9) to the schedule of requirements and technical specifications submitted by NMC, NIH and the qualifying hospitals. To carry out this responsibility it would follow the agreed procedures listed in Annex 10. Internal committees in NIH and NMC would prescreen equipment requests before submitting them to ESC. The ESC would remain in existence for the duration of the project and its Terms of Reference are contained in Annex 11. It may carry out additional tasks as judged necessary by its Chairman, such as visiting the physical sites where equipment is to be installed and determining their suitability, and providing recommendations on the efficient use of the equipment. During negotiations agreement was reached that the ESC would be maintained until completion of the project with structure and functions satisfactory to the Bank.

3.12 LMD would assist ESC by providing technical advice and data on the availability of certain large equipment items, on utilization and maintenance of equipment and it would also assist hospitals in making warranty claims. Equipment procurement would be undertaken by the Office of Supply, Republic of Korea (OSROK), the procurement agency of the Government which is highly experienced in procuring equipment under the Bank's international competitive bidding procedures. On the basis of equipment specifications provided by the institutions, OSROK would prepare bidding documents, invite bids, evaluate them in conjunction with the institutions and make contract awards with the agreement of the institutions.

3.13 The hospitals are required to register ownership of equipment within two months after installation and to bring warranty problems to the attention of the company directly or to LMD or OSROK for assistance.

Status of Project Preparation

3.14 Project preparation is completed and a number of activities relating to the initiation of project implementation are already underway. The targets in the project implementation schedule (Annex 18) are judged to be reasonable and are satisfactory to both MOHSA and the Bank. The physical facilities required to house the equipment to be procured under the project already exist in the hospitals; extra space requirements are expected to be minimal.

Equipment lists and specifications will be prepared by NMC, NIH, and by selected hospitals. The mechanisms for reviewing the equipment lists and specifications have been set up and are satisfactory to the Bank. As noted above the Equipment Selection Committees satisfactory to the Bank has already been established and members have been appointed. Arrangements to act as procurement agency have already been made with OSROK, which is very experienced in procurement under the Bank's International Competitive Bidding (ICB) procedures. Project management mechanisms satisfactory to the Bank have also been set up within MOHSA, management authority has been defined and supporting staff have been identified. The Terms of Reference for the research studies have been prepared. The advanced stage of project preparation would allow full implementation to commence immediately after loan signing.

Procurement

3.15 Procurement arrangements are shown in Table 3.4. About 85 percent of equipment would be procured on the basis of ICB procedures in accordance with Bank Guidelines. Equipment items in contracts valued at less than US$200,000 may be procured up to an aggregate limit of US$4.5 million through shopping procedures providing for the comparison of quotations from at least three suppliers. Spare parts for existing equipment and proprietary items may be purchased directly from the suppliers thereof. Local equipment manufacturers would be extended a 15 percent preference margin, or the prevailing customs duties, whichever is lower, on bid evaluation under ICB. Costs of transportation and operation and maintenance would be financed by NMC, NIH and selected hospitals under local procedures which are satisfactory to the Bank. Installation costs and cost of consumables, if not included in the equipment contracts, would also be financed by the hospitals.

3.16 In view of successful procurement under ICB procedures in recent Bank projects in Korea, OSROK would not be required to refer equipment contracts to the Bank for prior review before making contract awards. However, complete bidding documents including commercial terms, schedule of requirements and technical specifications will be sent to the Bank for reference and record before each invitation to bid. Bid evaluation reports and documents will be retained by OSROK for selected ex-post review by Bank missions. An action plan for equipment procurement is given in Annex 19, and the procurement arrangement is shown in Table 3.4 below.

Table 3.4: PROJECT EXPENDITURE BY PROCUREMENT CATEGORY

Category of Expenditure	ICB	LCB	Other/a	NBF	Total cost including contingencies
Equipment	29.3 (25.5)		5.2 (4.5)		34.5 (30.0)
Equipment transportation and installation				3.6 (0)	3.6 (0)
Operation and Maintenance				2.4	2.4
Action Program and Training				0.3 (0)	0.3 (0)
Consumable Materials				2.8 (0)	2.8 (0)
Total	29.3 (25.5)		5.2 (4.5)	9.1 (0)	43.6 (30.0)

/a Includes international and local shopping and direct purchase.

Note: Figures in parentheses are the amounts to be financed by the loan
NBF: Not Bank-Financed

Disbursements

3.17 The proposed loan of US$30 million would be disbursed over a period of 4 1/2 years (Annex 20). This is about one year less than the period in the standard profile for Korea for all sectors as a whole because of the quick disbursing nature of the project. The completion date of the proposed project would be June 30, 1996 and the Closing Date, December 31, 1996. Disbursements would be made on the basis of (a) 100 percent of foreign expenditures for imported equipment; (b) 100 percent of the local expenditures (ex-factory cost) of locally manufactured equipment; and (c) 65 percent of the cost of other local expenditures for equipment. Except for equipment contracts exceeding US$200,000 equivalent each, all reimbursement would be made against statements of expenditure (SOE) for which full documentation would be retained in OSROK, Seoul, for review as requested by visiting Bank missions. Administrative and accounting capability is adequate to support the SOE procedure. To the extent possible, withdrawal applications should be consolidated into amounts of US$100,000 or more prior to submission to the Bank.

3.18 To facilitate disbursements, two special accounts, maintained in US dollars would be set up at the Korean Exchange Bank (KEB) in an amount of US$2.0 million for MOHSA and US$1.0 million for NIH to cover the estimated average amount required to finance project expenditures for the next four months. Applications for replenishment of the special account would be submitted to the Bank on a quarterly basis, or whenever the amount drawn down exceeds 50 percent of the initial deposit, whichever comes first.

Project Monitoring and Evaluation

3.19 In order to monitor ongoing progress in the onlending of funds and in equipment procurement under the project, the semi-annual reports (para. 3.20) would initially include the following indicators for each year of the project: number of municipal and provincial hospitals that applied and that were approved by medical region; number of subloan agreements signed; number and type and cost of equipment ordered, delivered and installed by component and by medical region with corresponding dates; updates on loan allocations by component; number of persons trained and number of hours of training; summaries of the decisions of the ESC committee; and an updated project implementation schedule and an equipment procurement action program if needed. Completed activities need not be reported again to avoid repetition. The Bank would supervise the project twice a year and its missions would review with the PIU the semi-annual progress reports (para. 3.20) and monitor progress of the Action Program and the research studies (paras. 2.17 and 2.18). Supervision would be carried out by the Task Manager (Public Health Specialist) accompanied once a year by a biomedical equipment specialist and once a year by a procurement specialist. The project implementation schedule is shown in Annex 18.

Accounts, Audits and Reporting

3.20 MOHSA would maintain project accounts in accordance with sound accounting practices. The Inspector-General (also Auditor-General) in MOHSA would audit all project accounts of all the sub-borrowers (Annex 16, Point 14) and the Statement of Expenditures related to the operation of the Special Account (para. 3.18). During negotiations, the Government provided assurances that audited accounts, including an auditor's opinion on the Statement of Expenditures, would be sent to the Bank within six months of the end of the Korean financial year. The Government also provided assurances that it would submit semi-annual progress reports to the Bank on about March and September and provide status reports for visiting missions.

D. Environmental Aspects

3.21 The proposed project would have no significant negative impact on the environment. The project will strengthen NIH's technical capability to monitor food safety and drug quality, and communicable diseases through upgrading its technical and scientific equipment, and training its staff. The medical equipment supplied under the project will be located in properly designed facilities which operate under standard safety procedures.

E. Impact on Women

3.22 The equipment to be procured under this proposed project would be available to diagnose and treat all citizens. The project is therefore gender neutral.

IV. BENEFITS AND RISKS

A. Benefits

4.1 As a result of the project, about half of the public hospitals in Korea serving mainly the poorer population groups will have upgraded and modernized their biomedical equipment. This will allow them to detect and treat noncommunicable diseases more effectively and give the smaller and more rural facilities the capability to treat more patients themselves and thus decrease the flow of referrals to higher level hospitals. The National Medical Center will have upgraded its biomedical equipment for early detection and opportune treatment of noncommunicable diseases. The strengthened technical capability of the National Institute of Health will improve its efficiency in monitoring food safety, drug quality and communicable diseases in order to better protect the people's health. An action program on health sector financing policies and cost containment measures will have facilitated making policy decisions to contain health care expenditures without jeopardizing access to services and quality of medical care.

B. Risks

4.2 There are no major risks in this project. A minor risk might be defaulting by project institutions. However, the Project Implementation Unit (PIU, under the ongoing Health Technology Project is operating in a manner satisfactory to the Bank and it is expected that the PIU for the proposed project will also perform satisfactorily and closely monitor loan repayments. The experience with on-lending under the population project was also positive and there were no arrears. The risk of slippage in implementing the Action Program and the research studies would be addressed through semi-annual supervision missions to maintain the policy dialogue.

V. AGREEMENTS REACHED AND RECOMMENDATION

5.1 Before negotiations the Government submitted draft Terms of Reference for the research studies (para. 2.8).

5.2 During negotiations the Government agreed to the following:

(a) Allocation of loan proceeds would follow agreed guidelines (para. 2.11)

(b) Equipment would be selected according to criteria and guidelines acceptable to the Bank (para. 2.12);

(c) Subsidiary loan agreements will be entered into for the carrying out of the respective parts of the project (para. 3.5);

(d) the PIU and the ESC will be maintained until completion of the project with structure, staff and functions satisfactory to the Bank (paras. 3.9 and 3.11);

(e) the Action Program would be carried out without substantial amendments unless prior approval of the Bank was obtained (para. 3.10); and

(f) Audit reports would be submitted by the Government to the Bank within six months of the end of the Korean financial year (para. 3.20).

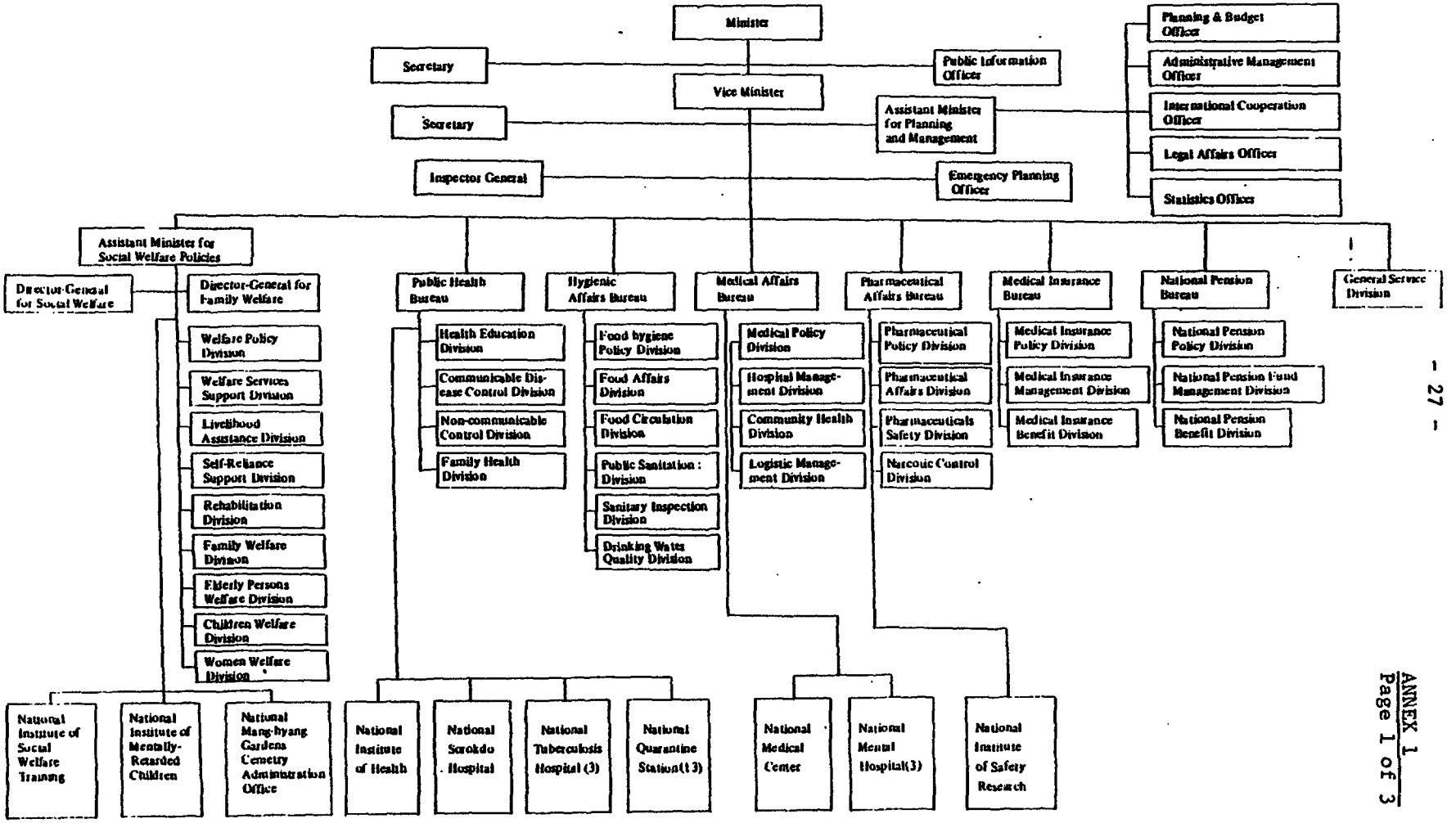
5.3 During negotiations, understandings were reached that: Semi-annual progress reports would be submitted to the Bank around March and September and status reports would be provided to visiting missions (para. 3.20).

5.4 As a condition of effectiveness of the loan, the Government would enter into a Subsidiary Loan Agreement with NMC for carrying out Component A and with NIH for carrying out Component B, and provide satisfactory legal opinions relating thereto (para. 3.5).

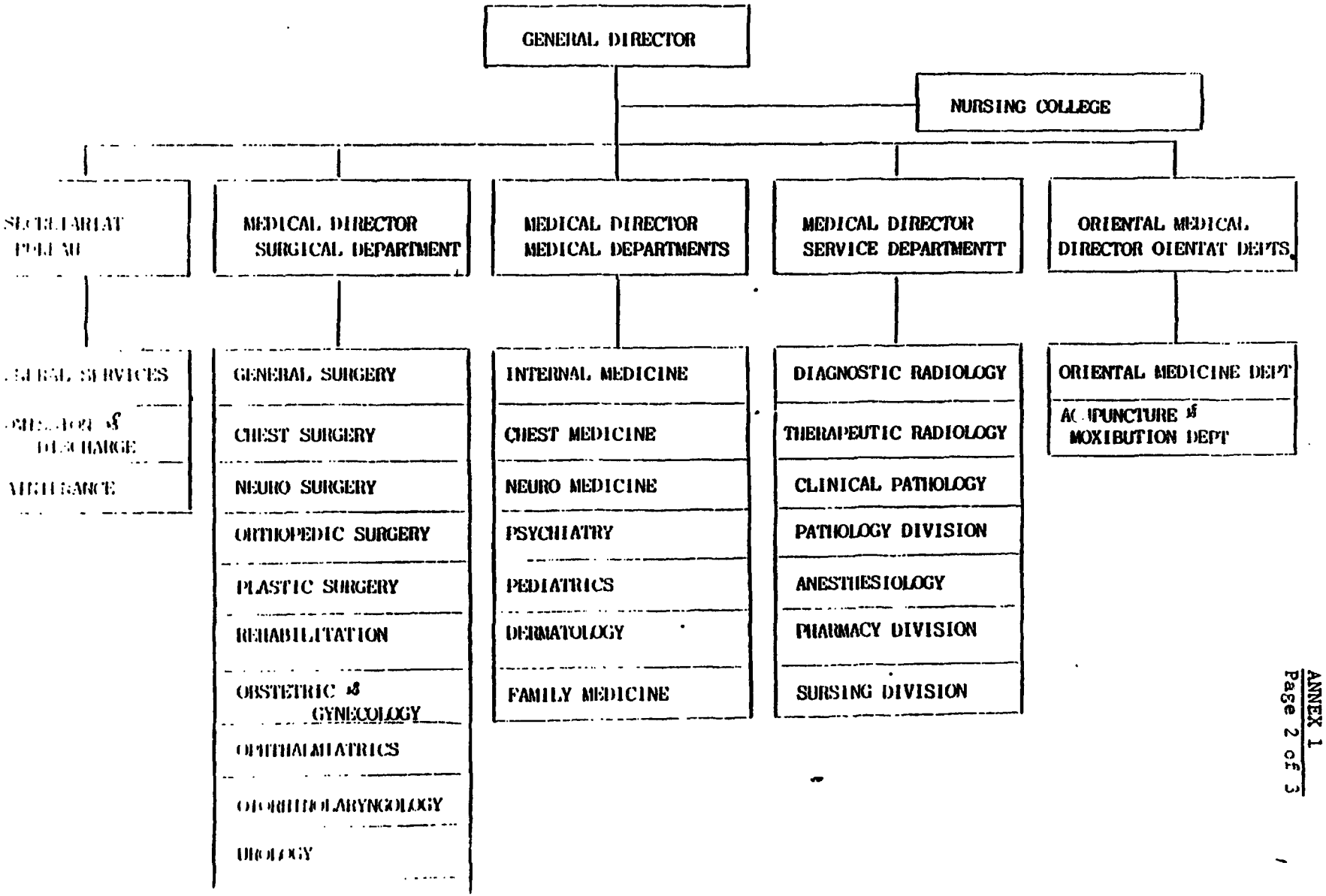
5.5 As a condition of disbursement for expenditures under Component C, the Government would have entered into a Subsidiary Loan Agreement with each concerned municipality or province and providing a satisfactory legal opinion in relation to each such subsidiary loan agreement (para. 3.5).

5.6 Subject to the above conditions, the project constitutes a suitable basis for a Bank loan of US$30.0 million equivalent to the Republic of Korea for a term of 15 years, including 5 years of grace, at the Bank's standard variable interest rate.

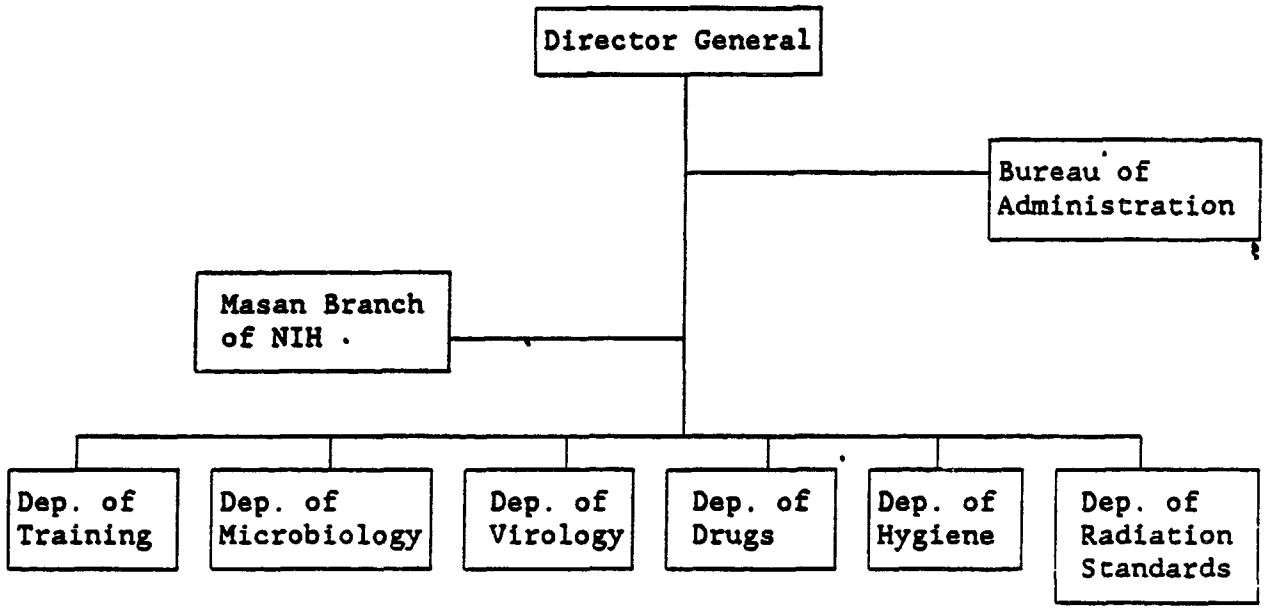
Organizational Chart of Ministry of Health and Social Affairs



NATIONAL MEDICAL CENTER ORGANIZATION CHART



ORGANIZATIONAL CHART OF THE KOREAN NATIONAL INSTITUTE OF HEALTH



ANNEX 2

KOREA
PUBLIC HOSPITAL MODERNIZATION PROJECT
Municipal and Provincial Public Hospitals By Location, Ownership and Size

Name of City/Province	No. of Hospitals	Location		Ownership		Size	
		Urban	Rural	City	Province	No. of Beds	No. of Staff
SEOUL	1	1		1		400	470
PUSAN	1	1		1		330	329
INCHEON	1	1		1		300	294
DAEGU	1	1		1		300	158
KYUNGGI	6	2	4		6	537	520
KANGWON	6	5	1		6	649	724
CHUNGBUK	2	2			2	474	343
CHUNGNAM	4	3	1		4	520	493
CHEONBUK	2	2			2	360	296
CHEONNAM	3	2	1	1	2	280	311
KYUNGBUK	3	3		3	0	440	274
KYUNGNAM	2	2		2	0	390	196
CHEJU	2	2		2	0	155	192
TOTAL	34	27	7	12	22	5,135	4,600

Korean National Institute of Health

Department of Microbiology

1. The prime activities of the department focus on the control of communicable diseases. The department undertakes not only epidemiological surveillance of bacterial and fungal infectious diseases, but also disease-monitoring information activities to prevent communicable diseases in the community, in collaboration with a nationwide network of provincial health laboratories and county centers. Microbiological research investigations of various etiologic agents are conducted. The department also carries out quality control of biological products such as vaccines, diagnostic antisera and blood products, and microbiological investigations of foods and drugs according to the minimum requirement.

2. The department makes an effort to develop either new biological production to improve old ones; a successful development was achieved recently in the production of the purified pertussis vaccine and Leptospira vaccine. Leptospira vaccine was developed to cope with recent outbreaks of this disease in some of the rice-farm areas of the country.

3. Implementing the quality control function of biologics such as vaccines, diagnostic antisera and blood products, and also microbiological investigations of foods and drugs, the department, at the same time, supplies and supports various media, reagents, physiological solution and highly-purified distilled water to all laboratories of the NIH including autoclaving services for the successful operation of NIH's research and development

Department of Virology

4. It conducts epidemiological surveys, diagnosis and research on viral diseases, including research and development of biologicals and rickettsial products and their national level evaluation for quality control.

5. Recent attention has been paid to infectious viral diseases such as hepatitis, cytomegalovirus, herpes and rubella, and those particularly prevalent among infants including measles, mumps, poliomyelitis and Japanese encephalitis and other viral diseases of respiratory origin such as influenza and parainfluenza. Therefore, the major emphasis is to be placed on R&D of epidemiological investigations in close relations with various viral diseases to define or study the structure, morphology, chemical and physical properties, and growth kinetics of viruses.

6. The National Influenza Center in the department collaborates with the International Influenza Center through the World Health Organization (WHO). For surveillance against encephalitis, continuous efforts can be made through the estimation of vector population, viral infection rate among vector mosquitoes and amplifying hosts; such information enables the NIH to predict

the critical period of encephalitis epidemics to release precautionary warnings to the people particularly to the susceptible group as preventive measures.

7. Virological examinations are performed utilizing monoclonal antibody techniques through cell fusion to develop diagnosis and control viral infectious diseases. Subsequent characterization of viral agents is to be accomplished by the use of an electron microscope. Continuous investigation is also carried out to develop vaccines, and a nationwide examination of biological or vaccine products conducted according to the standards required for the quality control.

8. Concerning parasitology, the department is engaged in performing such functions as medical ecology, laboratory diagnosis and control of parasitic diseases. Research and development is primarily directed toward ecological investigation of various parasitic infections and transmission which involves intermediate hosts and disease vectors. In laboratory diagnosis, emphasis is placed an parasitological and immunoserological diagnosis specific to the parasites involved. The department is also involved in the field of medical entomology, including taxonomy, ecology and control of medically important insects and arthropods.

Department of Drugs

9. The department undertakes R&D on drugs, narcotics, psychotropic agents, crude drugs, medical devices and cosmetics. In addition, it established drug standards and test methods and performs the national evaluation or regulatory analyses of drugs to assure their quality. It performs government batch certification for antibiotics and contraceptives before marketing and regulatory assays on the drugs in the markets to evaluate and assure the quality of marketed or pre-marketed drugs.

10. Regulatory assays extend to narcotics and psychotropic materials in accordance with the special laws or government provision as well as cosmetics and medical devices. The regulatory assays are usually available for such apparatus as high performance liquid chromatography (HPLC) and gas chromatography (GC) to facilitate its simplicity, accuracy and rapidity. In particular, these apparatuses enable the department to analyze compound drugs into a simultaneous determination according to quantitative and qualitative analyses.

11. One other important function of the drug department is to establish standards of identity, strength, quality and purity and their test methods for the drugs, antibiotics and raw materials of cosmetics which particularly are excluded from the pharmacopoeia or similar official provisions.

12. In order to determine relevant standards and test methods, the materials to be tested with supporting references are examined and scrutinized by the division of the department concerned. They are used as the reference standards for the quality control of marketed or pre-marketed drugs by

provincial institute of health, municipal institute and the pharmaceutical manufacturers as well as NIH.

Department of Hygiene

13. The department undertakes research and evaluation of food hygiene which includes foods, additives and packaging and also carries out regulatory tests on milk products, nutritional products, potable water and imported products. It establishes various food standards and test methods and carries out technical training for the provincial and municipal institutes to test foods properly.

14. More emphasis has been placed on investigation of hazardous materials such as pesticide residue contained in cereals, vegetables and even in fruits. It is stepping up its efforts to develop a monitoring system for heavy metal contaminants particularly in marine and fisheries such as fishes and shellfishes. Studies on nutritional values of vitamins, inorganic materials and other nutritional ingredients are on-going to make these factors applicable to people's dietary lif .

15. One of the most important functions of the department is the quality control activities on foods and food additives including natural, processed foods, vegetables, fruits, potable water, detergents, which extends to manufacturing apparatus and packaging.

Department of Radiation Standards

16. The function of the department involves standardization of radiation dosimetry, radiation protection or safety control and quality control of radiological equipment commonly used in the fields of medicine and public health such as ionizing or non-ionizing radiation and radioisotopes. The department also undertakes national-level inspection and calibration of radiological apparatus and instruments to maintain the accuracy and standards for the quality control.

17. The research and investigation is directed to standardize radiation dosimeters including therapy level dosimeters and protection level dosimeters used in public health and in hospitals to determine an effective minimum amount of radiation irradiation by means of proper adjustment of quantity and quality of the radiation in particular, applied to the clinical purposes. Future research will be in more specific fields such as nuclear medicine, radiopharmaceuticals and radioimmunoassay.

Department of Training

18. The Department of Training is responsible for in-service training programs offered to public health workers in national, provincial and municipal governments for the purpose of enhancing the capabilities of trainees for the effective and successful implementation of government health services. It prepares relevant education materials for the training of public health workers and government health program as well.

19. The department offers three categories of five main training courses further subdivided into some 40 classes. The principles and concepts of the training are based on: the moral education for the efficient practice of government policy, the fundamental education of public health administration, and professional training for specialty and techniques.

20. The five major courses established are: (i) recruits' training with the aim to develop capabilities in the practice of health services; (ii) managers' training aiming at an orientation of modern scientific techniques applicable to health administration; (iii) professional training aiming at an improvement of practical knowledge and skills in specific fields or specialty groups; (iv) workshops or seminars given for problem solving as well as workout for government policies; and (v) complementary courses given to civilians to improve technology.

21. The training program adopts four different types of teaching methods based on the results of task analysis and evaluation on the effective means in successful training methods. The lecture given to the trainees will be first; the laboratory work and community practice; audio-visual aid training; and fourth, group discussion and workshop on a given topic related to the corresponding course. The department receives annually about 3,000 trainees of various levels of government.

Department of Administration

22. The department executes the national qualification examination for various different levels of health personnel; enforces general administrative affairs, including an adequate supply of personnel and equipment needed for proper implementation of research and laboratory assays; provides necessary guidance in technology and evaluation for the municipal and provincial institutes of health; and performs administrative affairs including personnel and maintenance for the NIH facilities.

23. An important function of the department is to carry out various qualifying examinations for public health workers such as medical doctors, dentists, herb doctors, pharmacists, nurses, nutritionists, sanitary technicians, laboratory technicians and other medical technicians including clinical, X-ray, physical therapy, dental hygienists. It manages the administrative procedures of qualification to issue licenses in 18 different specialty fields. The number of applicants for national examination has gradually been increasing to an estimated average of about 27,000 per year.

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Number of Hospital Beds by Type of Hospital
% increase in number of beds per year, and number per 1,000 persons
1980-89

Year	Multi-Specialty Hospital	% Increase Per Year	Community Hospital	% Increase Per Year	Clinic	% Increase Per Year	Other	% Increase Per Year	Total Beds	% Increase Per Year	No. of Beds/ 1,000 Persons
1980	20,386		17,269		24,876		2,510		65,041		1.71
1985	49,394		24,321		23,861		2,374		99,950		2.45
		12.06		-1.50		9.48		4.34		7.96	
1986	55,351		23,957		26,122		2,477		107,907		2.62
		4.54		11.86		6.66		-19.70		6.12	
1987	57,863		26,798		27,861		1,989		114,511		2.75
		4.65		7.67		3.48		22.72		5.39	
1988	60,554		28,853		28,830		2,441		120,678		2.87
		3.76		3.14		8.35		11.02		4.86	
1989	62,832		29,760		31,237		2,710		126,539		2.96

Source: 1986 and 1990 Yearbooks of Health and Social Statistics
(Ministry of Health and Social Affairs)

ANNEX 5

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Number of Physicians
Population per Physician
Specialists as % of Physicians
1980-89

	No. of Physicians	% Increase per Year	Population per physician	No. of Specialists	Specialists As % of Physicians
1980	25,579		1,493	8,415	31.8
1985	33,385		1,222	14,797	44.3
		6.8			
1986	35,657		1,155	16,696	46.8
		8.3			
1987	38,611		1,077	18,353	47.5
		8.2			
1988	41,777		1,005	20,429	48.9
		8.2			
1989	45,204		938	21,725	48.01

Source: 1986 and 1990 Yearbooks of Health and Social Statistics
(Ministry of Health and Social Affairs)

ANNEX 6

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Number of Dentists
Population per Dentist
Increase in % of Dentists
1980-89

	No. of Dentists	Population Per Dentist	% Increase by Year
1980	3,620	10,531	
1985	5,436	7,507	
			10.28
1986	5,995	6,870	
			12.78
1987	6,761	6,149	
			13.25
1988	7,657	5,482	
			12.71
1989	8,630	4,911	

Source: 1986 and 1990 Yearbooks of Health and Social Statistics (Ministry of Social Affairs)

ANNEX 7

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Number of General and Specialized Nurses
Population per Nurse: Increase in % of Nurses
1980-89

	No. of General Nurses	No. of Specialized Nurses	Total	Population Per Nurse	% Increase By Year
1980	40,373	323	40,696	937	
1985	59,104	604	59,708	683	
					8.75
1986	64,270	660	64,930	634	
					8.72
1987	69,829	761	70,590	589	
					9.14
1988	76,143	897	77,040	545	
					8.63
1989	82,657	1,031	83,688	506	

Source: 1986 and 1990 Yearbooks of Health and Social Statistics (Ministry of Health and Social Affairs

ANNEX 8

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Guideline for Allocation of Loan Proceeds
Unit: US$ Million

Components	Total Amount of Allocation	Ceiling	No. of Hosp.
Total	$30 Million		
Component A (NMC)	$10 M	$10.0 M	1
Component B (NIH)	$10 M	$10.0 M	1
Component C (Mun./Prov. Hospitals)	$10 M	$ 1.0 M	10-20

ANNEX 9

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Criteria for Selecting Equipment

1. Effectiveness in Achieving the Purposes of the PHMP
(weight = 40 percent)

(a) The equipment should be strictly for bio-medical use in existing hospitals. (15 points);

(b) Equipment should be incremental but replacement of existing equipment is allowed. New equipment would be assigned 15 points and replacement equipment 5 points;

(c) Therapeutic equipment should be given priority over diagnostic equipment and points assigned would be, respectively, 10 and 5.

2. Regional Distribution and Epidemiological Need
(weight = 30 percent)

(a) For equity purposes and to increase access to modern medical technology the acquisition of equipment and the diffusion of technologies should be proportional among the eight medical regions according to population ratios; (15 points)

(b) The ESC would consider the epidemiological need and appropriateness of the proposed biomedical equipment (15 points).

3. Efficiency in Equipment Utilization
(weight = 30 percent)

(a) The selected hospital's capability to maintain the equipment to be purchased as evidenced by qualified in-house maintenance staff or agreements to sign service contracts; (15 points)

(b) The hospital's arrangements for training equipment users; (5 points)

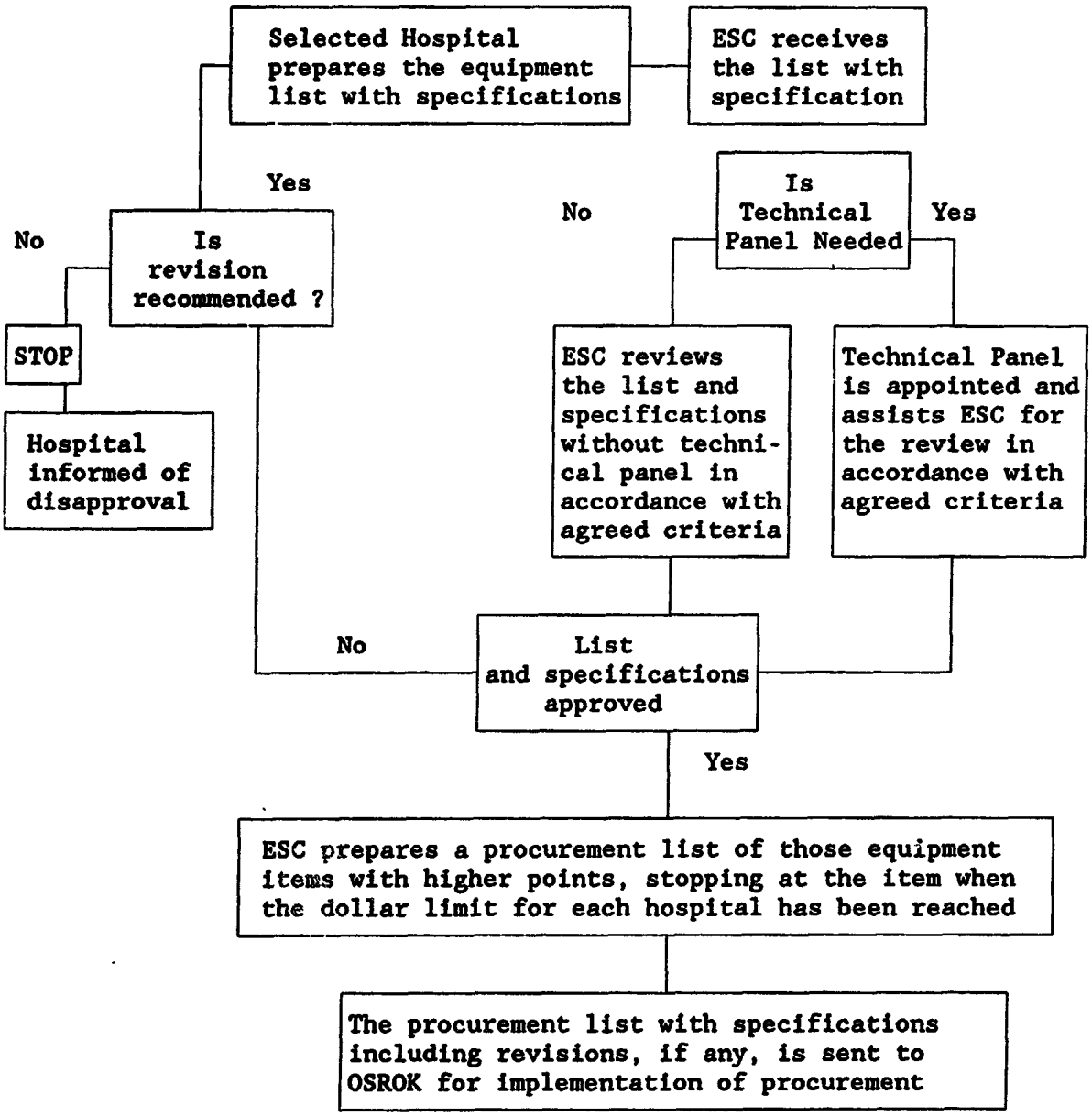
(c) The hospital's budgetary provision for the recurrent cost for operating the equipment (salaries, supplies, consumables); (10 points).

ANNEX 10

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Procedures for the Selection of Equipment



KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Terms of Reference for the Equipment Selection Committee (ESC)

1. Purpose: The ESC established in MOHSA shall apply the agreed equipment selection criteria to the schedule of requirements and technical specifications submitted by NMC, NHI and the qualifying hospitals eligible for the loan proceeds of the Public Hospital Modernization Project (PHMP) financed by IBRD.

2. Tasks: The ESC will apply the agreed equipment selection criteria and the agreed equipment selection procedures as specified in Annexes [12 and 13]. It may perform other tasks related to the PHMP as requested by the Minister of MOHSA or judged necessary by its Chairman such as: (i) visiting the physical sites where equipment is to be installed and determine its suitability; (ii) provide the necessary approvals for importing medical equipment; and (iii) provide recommendations on the efficient use of the equipment .

3. Structure: The ESC would consist of ten members as follows:

Director General, BMA, MOHSA, Chairman
Director, LMD, MOHSA, Vice Chairman
Secretary-General, KHA, Vice Chairman, Staff
Six representatives of hospitals, including the director of HMD, MOHSA.

The ESC may, whenever necessary, co-opt for the discharge of its tasks additional members but not more than seven. The co-opted members are generally technical specialists because of their ad-hoc expertise needed for a specific purpose. The co-opted members may cast vote(s) at an ESC meeting, one vote per co-opted members. The office of the co-opted members terminates as soon as the need for his/her service has been fulfilled.

4. Chair: A Chairman is responsible for the timely completion of all tasks of the ESC. In the absence of the Chairman and of the Vice Chairman, the ESC members present at the meeting elect a temporary Chairman among those present by a simple majority vote, and the temporary Chairman also has a casting vote.

5. Meeting and Decisions: The ESC would meet as often as needed and at least two months before the announcement of each bid invitation. The presence of five members (excluding Co-opted members) would constitute a quorum. Each member has one vote. The chairman, in addition to one vote as a member, has a casting vote when the number of votes for and against a motion is equal. A motion is carried with a simple majority of votes.

6. Recordings and Reports: The Secretary of ESC keeps the minutes of the meetings and submits the minutes before an affixed deadline date to the project director.

7. Panels: The ESC may for specific tasks form as many panels as necessary, each panel with not less than three and not more than five co-opted panel members from one or more members of ESC or from individuals outside ESC. Each panel would be chaired by a member of the ESC and will report to the ESC on its assigned tasks. The panel has no voting power vis-a-vis ESC. The ESC may delegate a part of its task to a panel duly formed in accordance with this Article, as an assignment, and will act accordingly on the Panel's report, to be submitted to ESC before an affixed deadline date. The ESC may modify or reject a Panel's recommendation(s) but should document the reasons for this action.

8. Selection: The ESC's recommended list of selected equipment would derive from deliberations and decisions made on the basis of MOHSA's Equipment Selection Criteria (Annex 9) which is based on a point system and in accordance with MOHSA's guidelines for Equipment Selection Procedures (Annex 10).

9. Expenses: Expenses for maintenance of the ESC will be financed from the MOHSA budget.

10. Amendment and Addition: The terms of reference of the ESC may, from time to time, whenever necessary, be amended by the project director, and the details could be added by the project director upon approval by the Vice Minister.

11. Termination: The ESC may be terminated by the Minister of MOHSA but not before the closing date of the PHMP.

HEALTH SECTOR POLICIES AND COST CONTAINMENT ACTION PROGRAM

A. Introduction

1. The Government of the Republic of Korea has made great efforts to improve access for the whole population to health care services by expanding insurance coverage and by increasing the number of hospital beds. Korea achieved universal health insurance coverage in July 1989 after a twelve year period of gradual expansion. The demand of health care was expected to increase dramatically by providing national health insurance. Therefore, the Government has continuously increased the number of hospital beds since 1978 and has added medical equipment and related facilities. All people nation-wide have access now to health care services without geographic or financial barriers.

2. The next issue for the Government is to manage the demand and expenditures which have accelerated quickly along with the expansion of insurance coverage and the increase in hospital beds. The country has put into place a legal, political and financial structure to implement the social policy of providing access to quality and affordable health care for all citizens irrespective of income and location. The challenge for the 1990's is to guide the implementation of this social policy by balancing equity concerns with reasonable cost and acceptable quality.

B. Policy Objectives for the 1990's

3. Government health policy aims at containing health care costs while at the same time meeting the increasing demand for health care. Even though the costs should be minimized, it is more important to assure access for all people to good quality of health care services by efficient management of the limited health care resources.

4. The health sector policy objectives for this decade are:

(a) ensuring equitable access to health care services by all citizens;

(b) providing affordable and cost-effective health care services;

(c) providing health care services of consistently good quality.

C. Key Indicators

5. Key indicators selected for evaluation and monitoring progress towards reaching policy objectives are as follows:

Equity Measures

6. The first problem identified in Korea health sector is the unmet demand for health care. Unmet demand is caused partially by insufficient

supply of health care services. Another, even more significant reason for insufficient supply is inequitable distribution of health facilities. About 75% of total health facilities are located in the largest cities. Thus, it is a most important goal for the Government to provide equitable access to good quality and affordable health services for all people.

7. Equity in access will be measured in two ways: (1) supply dimension; and (2) consumption dimension.

8. Equity in supplying health services will be measured by availability of services. Especially basic health services, such as primary health care services and health examinations, should be provided to all people based on need. The availability of services will be based on an analysis of the present distribution of health facilities and personnel and its relation to medical regions and socio-economic status of the targeted population.

9. Equity in health care consumption will be measured by the actual consumption status which are utilization rates. In order to measure equity, the utilization rate will be compared by region and by socio-economic status of users. Examples of utilization rates are annual number of hospital admissions and patient days per person, number of physician visits per person per year; immunization rates for communicable diseases, such as hepatitis, and the six childhood diseases; infant, perinatal, and child mortality rate, maternal mortality rates; morbidity and mortality for specific diseases such as cancer, heart disease, stroke, infectious and parasitic diseases, and respiratory and digestive diseases.

Cost-Containment Measures

10. The major reason for the policy is to contain health care costs. The cost of health care services is expected to increase sharply because of improved accessibility to health care services nationwide, as a result of providing universal coverage for health insurance and of increasing the number of hospital beds. This measure is selected as the primary index of overall sector performance because it measures the influence of a wide-range of government interventions on health markets.

11. Cost containment could be measured by:

(a) total individual health care expenditures as percent of house income;
(b) total health care expenditures as percent of GDP;
(c) increase in fee schedule of medical services as compared with general inflation;
(d) medical care index versus consumer price index;
(e) expenditures for drugs as percent of total health expenditures; and
(f) increase in availability and use rates of sophisticated medical technology.

Quality Measures

12. It is important to control the costs of health care but it is equally important to improve the quality of services. The quality could be defined by the outcomes of treatment and by the satisfaction with treatment received. Standards of care for specific procedures for some types of diseases are already available. However, standards should be expanded further for a broader range of treatment procedures.

13. Comparison of the benefit of treatment with the market costs for a variety of health care types, such as hospitalized care, nursing home care, home health care would guide the regulators and consumers: what are the most cost-effective ways to treat modern diseases and health problems. The purpose of this measure is to monitor the progress of reforms designed to shift patients with at least one chronic/degenerative disease from a hospital setting to the community. By being treated in the community, the patients would maintain their lifestyle and social and economic activities. They do not need to be isolated for care and incur expenses for similar outcomes and quality of treatment.

14. Criteria and standards of industrial countries could be applied in addition to the traditional criteria for measuring quality. Some examples of the criteria are as follows:

(a) standards of accreditation for hospitals;
(b) licensure standards for medical specialists and paramedical staff;
(c) rates of selected invasive surgical procedures.

15. In summary, the three sets of key indicators selected to monitor progress in achieving national health policy objectives are designed to measure: (i) equity; (ii) the reduction in health care expenditures; and (iii) cost effectiveness of providing better quality of care.

D. Specific Programs and Regulations

16. The actions for cost containment enunciated in this statement corresponds to the objective of the Seventh Five-Year Plan (1993-97) for the health sector. Health care cost containment was flagged as an issue in the evaluation of the Sixth Five Year Plan. Goals and action programs presented here are designed to address the issues. At the same time the Government would also reach the goals and targets of the Seventh Plan.

17. The action program consists of: (1) Hospital Management Efficiency, (2) Medical Technology Management and (3) Health Insurance Reimbursement Regulation. In addition, there is an emphasis on assisting the implementation of these policies, such as (a) conducting research projects to provide data for achieving the policy goal and (b) building National Consensus on alternatives for solving the issues. The action program will be executed

by the relevant institutions and divisions at MOHSA, and the implementation assistance will be the responsibility of a task-force established for that purpose.

Efficiency of Hospitals

Objective

18. Hospitals are the main vehicle through which medical care is provided and expenditures for hospital care account for about 30 percent of all health care expenditures. Saving expenses on hospital operation and producing the quality of services by improving efficiency is the priority strategy for minimizing health care expenditures while solving needs.

Actions:

(a) Develop by December 31, 1992 measures, including financial incentives, to reduce the current average length of hospital stay of 14 days to 11 days;

(b) Require hospitals to establish cost accounting systems and to conform to national, uniform and transparent hospital accounting practices by July 1993. This would provide baseline to regulate service fees. Through the standardized accounting system, each hospital could be managed in more systematic and efficient manner. The benefit of the savings through efficient management are expected to be returned to save expenses of consumers or to improve the quality of services.

(c) Develop alternative treatment to short-term acute care hospitals for long-term care patients (physically and mentally handicapped, rehabilitating and convalescing patients, elderly patients) such as home care programs, residential care facilities, skilled care nursing homes.

Management of Biomedical Technology

19. It is inevitable to use modern and sophisticated medical equipment for coping with epidemiological needs which are no longer for communicable disease treatment but for more complicated problems which most industrial countries have.

20. The improved life status of Koreans accelerates unnecessary use of expensive medical equipments. Such unnecessary consumption serves the interest of providers because the procedures are more profitable. Without any Governmental policy for regulation, the unnecessary use of expensive medical equipment will continuously increase.

21. Thus, this action program contains a section on the management of sophisticated medical equipment so that the Government can protect payers and

distribute the saved benefit to more people regardless of socio-economic status and geographic distance. Details are as follows:

Objective

22. To make sophisticated medical technology accessible to all patients when its use is medically appropriate and necessary, and to regulate the introduction and diffusion of expensive biomedical technology.

Actions:

(a) Make an inventory of all sophisticated medical equipment, its location, rates of utilization, and unit cost per procedures. To be completed by December 31, 1992.

(b) Study and make recommendations for sharing medical equipment among institutions and among and within medical regions. To be completed by June 30, 1993.

(c) Strengthen and apply strictly the existing regulations governing the purchase of biomedical equipment.

Regulation of Fee Schedule and Insurance Reimbursement

Objective

To set limits on the supply of money available to purchase medical care; to control reimbursement of the expenses through health insurance mechanism; and to control volume of services rendered.

Actions:

(a) Control better the volume of services provided by tightening inspection of medical insurance claims.

(b) Limit the reimbursement of the cost of a brand name prescription drug to the amount of the sale price of its generic equivalent.

E. Organization and Actions for Program Implementation

Committee for Policy Implementation

Purpose

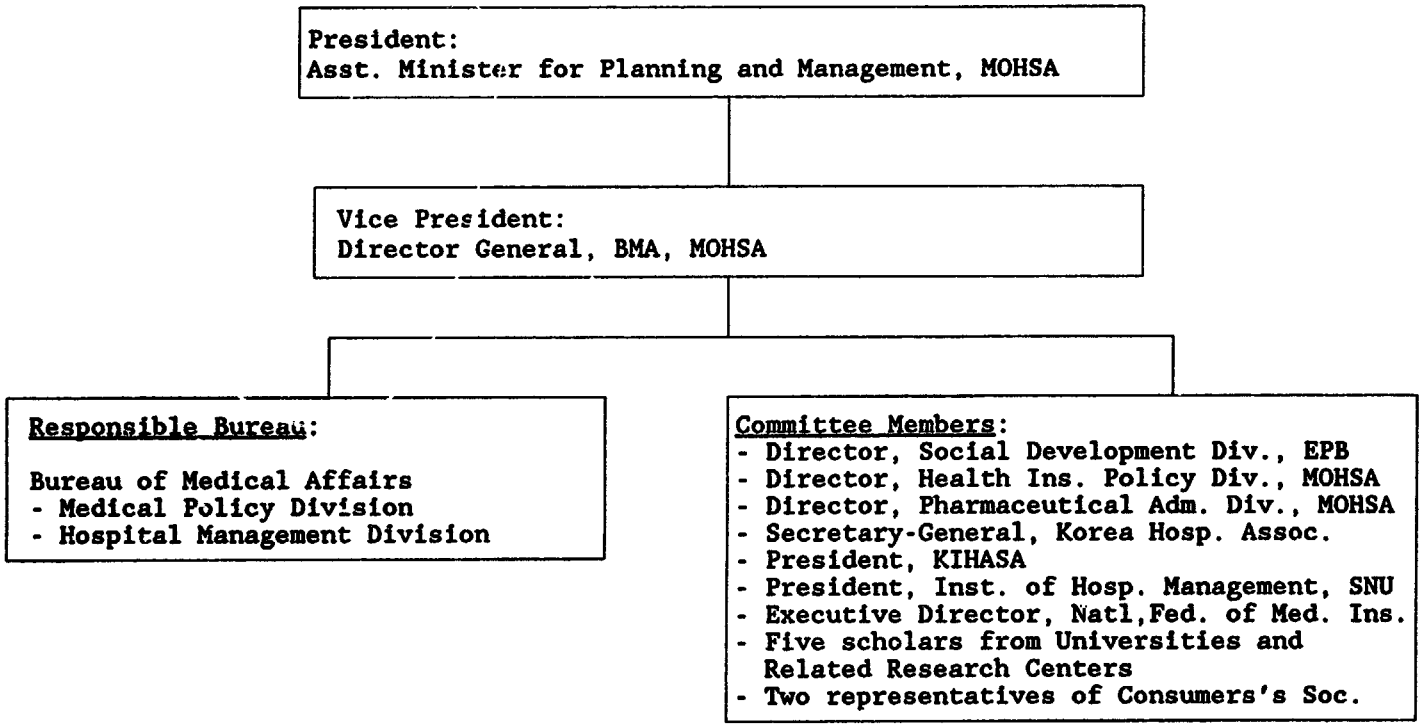
To effectively achieve the policy goals; to evaluate the policy implementation and feedback the results of the process; to build a national consensus on how to achieve the health sector policy objectives of equitable access, affordable cost and acceptable quality through involving all interested parties: the consumer, the provider, the payer and the Government.

Actions:

(a) Initiate a periodic high quality health policy and health financing publication to disseminate research findings, present and discuss health policy and financing alternatives, and provide examples how other countries attempt to balance equity concerns with reasonable cost and acceptable quality. Start publication of first issue in December 1993.

(b) Organize annually a National Health Policy forum starting in 1993 with the explicit objective of building consensus on health care strategies and strategy implementation mechanisms.

Organization of the Committee



Research Studies

Objective

23. To provide the data base for analyzing policy alternatives and for management policy decisions, and to support the three actions outlined above, i.e., hospital efficiency, medical technology and fee schedule regulation.

Research Studies:

(a) a comprehensive study of national health expenditures by nature of expenditures and by sources of payment- (two year study: 1992-93);

(b) econometric studies modeling the optimum and affordable levels of number of hospital beds, of number of physicians and other health personnel, of insurance premiums by type of insurance societies, and of reimbursement for services provided by hospitals and doctors- (three year program of studies, 1992-94);

(c) evaluation of the impact of national health insurance on the government's policy objectives of equity, cost and quality- (two-year study: 1992-93).

(d) evaluation of alternatives to the fee-for-service method for paying providers of medical care services- (one year study, 1993).

Institute of Hospital Management

24. The Korea Hospital Management Institute (KHMI) was established by law as a legal entity on December 3, 1991 and initiated operations in January 1992. The goal of the KHMI is to improve the efficiency of hospital management and the quality of hospital care. The Institute will be responsible for implementing research studies related to the action program outlined above and for providing information to the Policy Implementation Committee. KHMI is affiliated and shares research staff with Seoul National University. It is independently operated with initial financing by the Government (1.3 billion Won in 1992) and will spend 60 million Won in 1992 on the action program. The total budget and the share to be provided by KHMI follow.

Budget

(Unit: Million Won)

	Budget and Resources
1. Hospital Management Efficiency Program	
Study on Fee Schedule and Efficiency of Hospital Management (incl. Seminar and Publication)	100 (MOHSA)
Seminar for Standards of Hospital Accounting	1 (KHMI)
Study on Development of Home Health Care and Skilled Nursing Home Care	20 (KHMI)
National Health Care Needs Assessment	20 (KHMI)
Study and Development of Educational Program for Using Alternative Health Services	20 (KHMI)
2. Medical Technology Management Program	
Survey of High-Tech Medical Equipment	1 (MOHSA)
Development of Medical Equipment Sharing Mechanism	1 (MOHSA)
3. Health Insurance Reimbursement Regulation Program	
Development of Health Insurance Payment Mechanism	1 (MOHSA)
4. Administrative Costs for the Policy Committee	1 (MOHSA)

TERMS OF REFERENCE FOR RESEARCH STUDIES

This annex summarizes the Terms of Reference (TOR) for the four research studies listed in the Health Sector Policies and Cost Containment Action Program (Annex 12). The Government's letter of March 2, 1992 transmitting the detailed TORs is in the project file.

A. Study of National Health Care Expenditures

This two year study would provide the first comprehensive review of national health care expenditures by using existing data and collecting new data on the sources and uses of funds. It would examine the current resource allocation in terms of equity, allocative efficiency and effectiveness, and develop a time series of national health care expenditures.

MOHSA will carry the overall responsibility for timely and quality execution of the study selecting a principal investigator from among internationally recognized scholars at the leading Korean universities. Study findings would be disseminated through publications and seminars and the key audience would be policy makers.

B. Econometric Resource Allocation Models

Different mixes of two health sector inputs, hospital beds and physicians, would be simulated to determine optimal and affordable levels of resource allocation. Models of input mix would be built and tested using existing data to analyze allocative efficiency, resource constraints and achievable effiency. The three year study would provide better knowledge for decision makers to determine the rate and the direction of growth and the distribution of the two most expensive health sector inputs.

The Korea Institute of Health and Social Affairs (KIHSA), a semi-autonomous research institute under the aegis of MOHSA, would be responsible for the conduct of the study and would use their own research staff.

C. Evaluation of National Health Insurance

Statutory national health insurance was fully implemented in July 1989. The proposed two year study would be the first comprehensive evaluation of its impact on the equity of service delivery, the cost of providing health care and the quality of health services. Impact evaluation studies have already been carried out on the Regional Medical Insurance group of insurance societies that provide benefits to the self employed, pensioners and farmers, and this study would build on that experience.

Anticipated outcomes of this evaluative study would be recommendations to policy makers on corrective measures to make the National Health Insurance more responsive to consumer needs and more cost-effective. Findings would be widely disseminated to government, provider groups and consumers.

The study would be conducted by the National Federation of Medical Insurance and the Medical Insurance Bureau of MOHSA with technical support from non-government sources.

D. Alternatives to Fee-For-Services Payment

The one year study would, first, evaluate the present fee-for-service payment mechanism in terms of its effect on cost increase, and the demand for and the utilization of health care services, and, second, examine alternative ways of paying doctors and hospitals. Alternatives would be evaluated according to the government's health sector objectives of cost containment, equitable distribution and access to services, and acceptable quality care.

Anticipated outcomes of the study findings would be in the form of recommendations to policy makers for adjustments in the present system and/or adoption or experimentation with other reimbursement models. The study would be conducted by the recently created Korea Hospital Management Institute using its own research staff and that of Seoul National University.

KOREA
PUBLIC HOSPITAL MODERNIZATION PROJECT
Summary Account by Project Component
WON

	NATIONAL MEDICAL CENTRE	NATIONAL INSTITUT E HEALTH	PROV.MUN . PUBLIC HOSPITAL	ACTION PROGRAM & TRAINING	Total	Physical Contingencies %	Physical Contingencies Amount	Price Contingencies %	Price Contingencies Amount
I. INVESTMENT COSTS									
A. Equipment	7570.0	7570.0	7570.0	0.0	22710.0	5.0	1135.5	9.8	2216.4
B. Transportation & Install.	757.0	757.0	757.0	0.0	2271.0	5.0	113.5	12.4	280.5
C. Training and Research	0.0	0.0	0.0	207.4	207.4	5.0	10.4	13.6	28.2
D. Operation and Maintenance	529.9	529.9	529.9	0.0	1589.7	5.0	79.5	12.4	196.3
E. Consumable Materials	605.6	605.6	605.6	0.0	1816.8	5.0	90.8	12.4	224.4
Total BASELINE COSTS	9462.5	9462.5	9462.5	207.4	28594.9	5.0	1429.7	10.3	2945.7
Physical Contingencies	473.1	473.1	473.1	10.4	1429.7				
Price Contingencies	972.5	972.5	972.5	28.2	2945.7	4.8	140.3		
Total PROJECT COSTS 1/	10908.2	10908.2	10908.2	245.9	32970.4	4.8	1570.0	8.9	2945.7
Taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Foreign Exchange	8904.5	8904.5	8904.5	24.0	26737.4	4.8	1273.2		

Values Scaled by 1000000.0 2/27/1992 12:35

1/ Figures may not add due to rounding.

KOREA
PUBLIC-HOSPITAL MODERNIZATION PROJECT
WON

Project Components by Year

	Base Costs					Total	
	1992	1993	1994	1995	1996	WON	USD
A. NATIONAL MEDICAL CENTRE	946.2	2838.7	2838.7	2838.7	0.0	9462.5	12.5
B. NATIONAL INSTITUTE HEALTH	946.2	2838.7	2838.7	2838.7	0.0	9462.5	12.5
C. PROV.MUN. PUBLIC HOSPITAL	946.2	2838.7	2838.7	2838.7	0.0	9462.5	12.5
D. ACTION PROGRAM & TRAINING	41.6	41.6	41.6	41.6	40.9	207.4	0.3
Total BASELINE COSTS	2880.4	8557.9	8557.9	8557.9	40.9	28594.9	37.8
Physical Contingencies	144.0	427.9	427.9	427.9	2.0	1429.7	1.9
Price Contingencies	62.1	560.5	952.3	1360.4	10.3	2945.7	3.9
Total PROJECT COSTS 1/	3086.5	9546.3	9938.1	10346.2	53.2	32970.4	43.6
Taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Exchange	2496.3	7771.6	8074.7	8389.7	5.1	26737.4	35.3

Values Scaled by 1000000.0 2/27/1992 14:24

1/ Figures may not add due to rounding

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Sub-loan Agreement Between NMC, NIH, Relevant Municipal and Provincial Governments and MOHSA

Major Points of Terms and Conditions

1. General Terms and Conditions

The sub-loan agreement is subject to all relevant terms and conditions of the loan agreement between IBRD and the GOK and must be satisfactory to IBRD.

2. Sub-borrower

The borrowing entity where the equipment supplied with funds from this loan will be installed must legally be a registered juridical body for health care services with annual budgets approved through either MOHSA or MHA. The borrowing entity is called the sub-borrower.

3. Sub-loan amount and denomination

The sub-loan is denominated in Korea Won. The amount of the sub-loan is the upper limit of the expected equipment cost expressed in Korea Won.

4. Currency exchange risk

The Government of Korea will not bear any currency exchange risk. The sub-borrowers will bear the full exchange risk of the Won against the World Bank currency pool. The sub-borrower borrows the Korea Won equivalent of the pool of currency as determined by the World Bank at the disbursement date.

5. Payment

To keep sub-loan administration simple, the sub-loan payment dates will be the same as those of the IBRD-GOK loan agreement advanced by a few days or weeks (to be determined by MOHSA) to enable the collection of funds for repayment.

6. Maturity and grace period

The maturity and the grace period for the sub-loan will be the same as the maturity and the grace period for the IBRD-GOK loan. If the interests accrued during the IBRD-GOK loan grace period are capitalized, then the interests will also be accrued during the sub-loan grace period.

7. Interest rate

The interest rate is the IBRD floating interest rate for the currency pool plus 0.05% p.a.

8. Commitment fees

The commitment fees are the same as IBRD commitment fees (presently 0.25%). The sub-borrowers will pay the commitment fees on the un-drawn balance of the sub-loan irrespective of possible changes in the purchasing schedule.

9. Arrears penalty fees

The sub-borrower will pay a 0.05% penalty fee on arrears.

10. Pre-payment

If the sub-borrower wants to pre-pay the sub-loan, it must first request approval from the Borrower. If agreed, the sub-borrower must pay the pre-payment fee as stated in the IBRD-GOK loan agreement.

11. Collateral

There is no need for a collateral from the sub-borrower.

12. Restrictions on equipment

The sub-borrower must register the medical equipment in its books within one month after delivery. The sub-borrower is not allowed to sell, transfer or lease the medical equipment, nor use it for any other purpose unless agreed by HMD.

13. Information

(a) The sub-borrower will advise MOHSA upon equipment installation.

(b) The sub-borrower must know the sub-loan procedures related to the project.

(c) upon MOHSA's request, the sub-borrower must provide:

(i) annual reports on the operational status of the medical equipment purchased under the sub-loan;

(ii) any information related to the project.

14. Financial audit

MOHSA would audit the project account of the sub-borrower including the Statement of Expenditures related to the operation of the Special Account established under the Bank/GOK Loan Agreement for this project.

15. Non-compliance

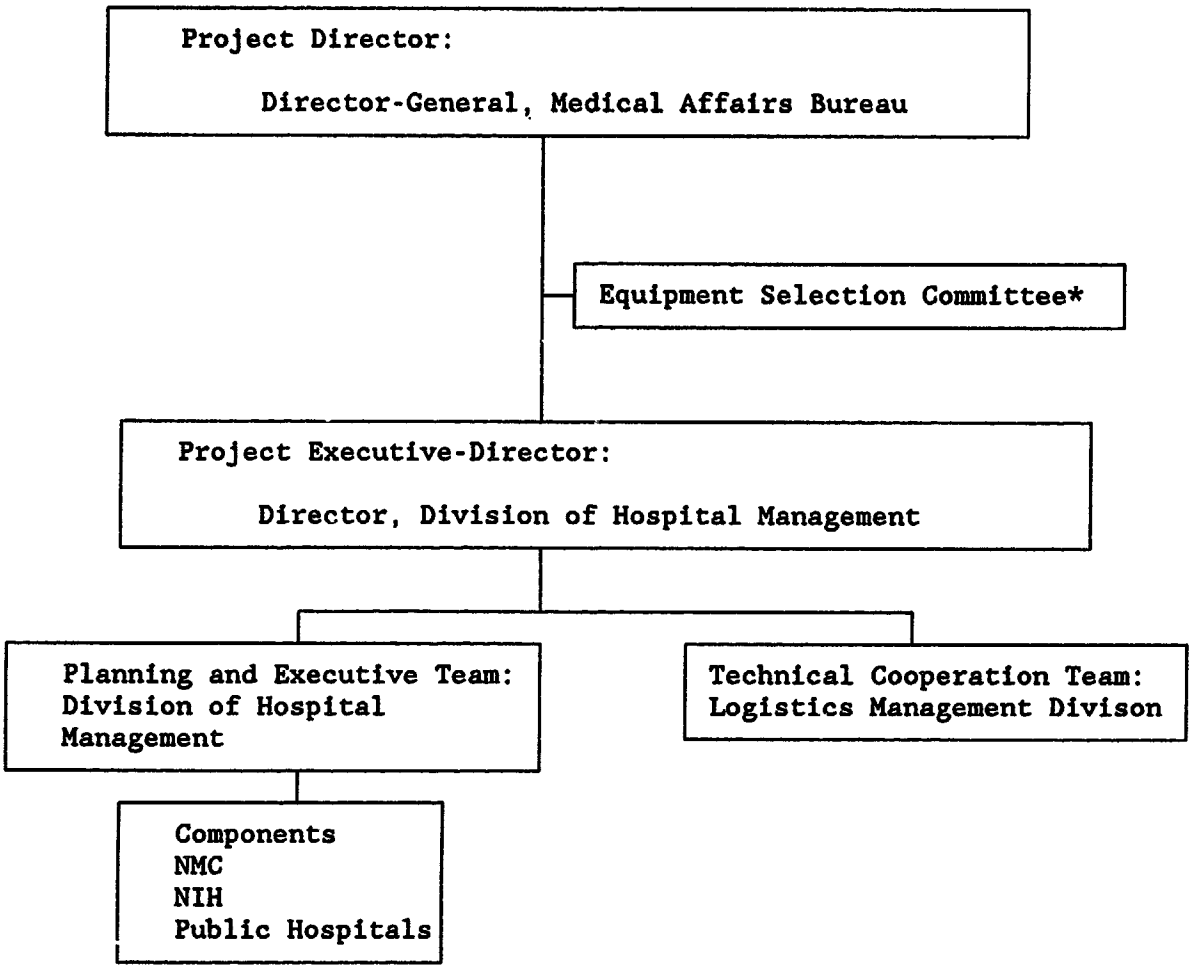
If the sub-borrower fails to comply with any of the sub-loan terms and conditions, MOHSA may terminate the sub-loan agreement and immediately claim the full payment of the sub-loan outstanding balance plus any loss that the Government of Korea would have incurred as a result of the non-compliance.

ANNEX 17

KOREA

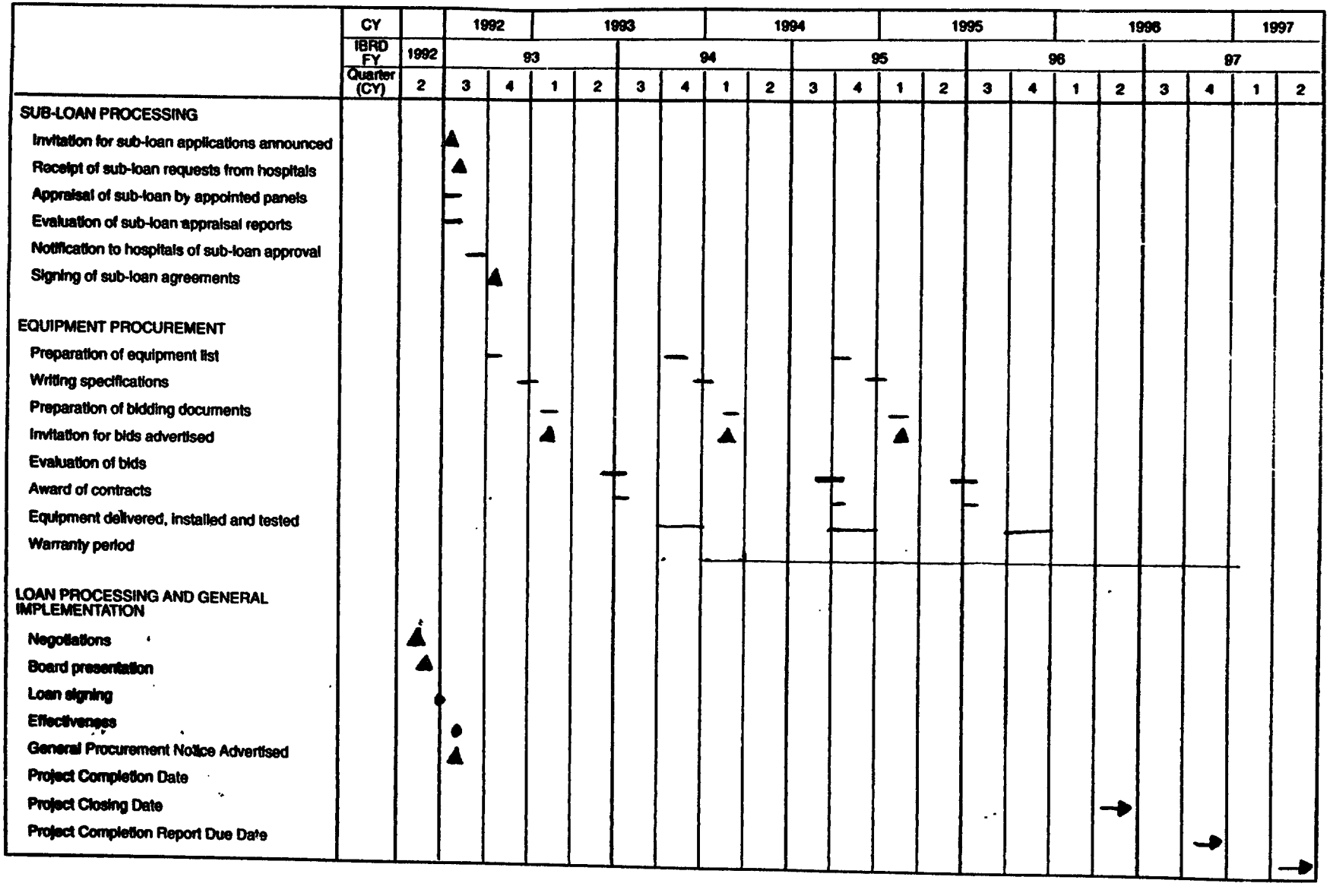
PUBLIC HOSPITAL MODERNIZATION PROJECT

Organization Chart: Project Implementation Unit



*: Equipment Selection Committee will be composed of
one chairman (Director-General, MAB, MOHSA)
two vice-chairman (Director, LMD, MOHSA; and Secretary-General, KHA)
one secretary (Staff, LMD, MOHSA)
six committee members (including the Director of HMD, MOHSA)

KOREA
PUBLIC HOSPITAL MODERNIZATION PROJECT
Implementation Schedule



REPUBLIC OF KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Action Program for Equipment Procurement

Activities and Subactivities	Initiating-Institution or Responsible Agency	Reviewing Agencies if Applicable	Recipient Institution for Action	Remarks
1. (a) Preparation of GPN	MOHSA		Business edition, development forum through IBRD, Washington, D.C.	At least 60 days before 1st IFB
(b) Obtaining OSROK's agreement	MOHSA			
2. Submission of Procurement Application	NMC, NIH & Hospitals		MOHSA	
(a) Preparation of equipment lists	NMC, NIH & Hospitals	MOHSA (committee)	MOHSA	
(b) Writing of specifications	NMC, NIH & Hospitals	MOHSA (committee)		
(c) Finalization of Schedule of Requirements with Specifications	MOHSA		OSROK	
3. Request of Procurement	MOHSA		OSROK	To the extent possible, requests from hospitals will be packaged to enable bulk purchase
4. Preparation of Bidding Document	OSROK			
5. Announcement of Invitation for Bids (IFB)	OSROK		Potential suppliers, embassies at Seoul and IBRD for reference	By deadline date at least 45 days after IFB
6. Closing of receiving bids	Potential suppliers		OSROK	
7. Opening in public of bids received	OSROK			
8. Evaluation of bids received	OSROK	MOHSA, NMC, NIH, hospitals		

Activities and Subactivities	Initiating-Institution or Responsible Agency	Reviewing Agencies if Applicable	Recipient Institution for Action	Remarks
(a) Rejection of bids according to commercial terms (e.g. no bid bond)				
(b) Rejection of bids failing of meeting specifications required				
(c) Making recommendations of contract awards to lowest evaluated bids				
(d) Compilation of bid evaluation report	OSROK		MOHSA	
9. Award of contracts	OSROK		Suppliers	
(a) Collection of performance bond and release of bid bond	OSROK			
10. Delivery of equipment	Suppliers		OSROK NMC, NIH & Hospitals	
(a) Delivery to end-users	OSROK		Hospitals	
11. Filing of claims, if any	NMC, NIH & Hospitals	MOHSA, OSROK	Suppliers	
(a) Release of performance bonds	OSROK		Suppliers	

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Estimated Schedule of Disbursements

IBRD Fiscal year & semester	Amounts per semester	Cumulative Amount	Cumulative %	Disbursement profile, % /a
	US$ million			
1993				
1	3.0 /b	3.0	10	1
2	0.0	3.0	10	3
1994				
1	5.0	7.0	23	5
2	2.0	10.0	33	10
1995				
1	5.5	15.5	52	23
2	4.5	20.0	67	44
1996				
1	4.0	24.0	80	70
2	3.5	27.5	92	81
1997				
1	2.5	30.0	100	92
2				97
1998				
1				100

/a Standard disbursement profile for projects in Korea.

/b Initial deposit in Special Account.

ANNEX 21

KOREA

PUBLIC HOSPITAL MODERNIZATION PROJECT

Selected Documents Available in the Project File

A. Reports and Studies Related to the Sector

A-1 Yearbook of Health and Social Statistics, MOHSA, 1989

A-2 Medical Insurance in Korea, National Federation of Medical Insurance, Republic of Korea, 1991

A-3 Major Policies and Programs in Health and Social Welfare Services, MOHSA, 1988

A-4 Social Welfare in Korea, MOHSA, July 1989

A-5 Hospital Directory, Korean Hospital Association, April 1, 1989

A-6 World Bank: Korea - Health Insurance and the Health Sector, June 14, 1989, Report No. 7412-KO

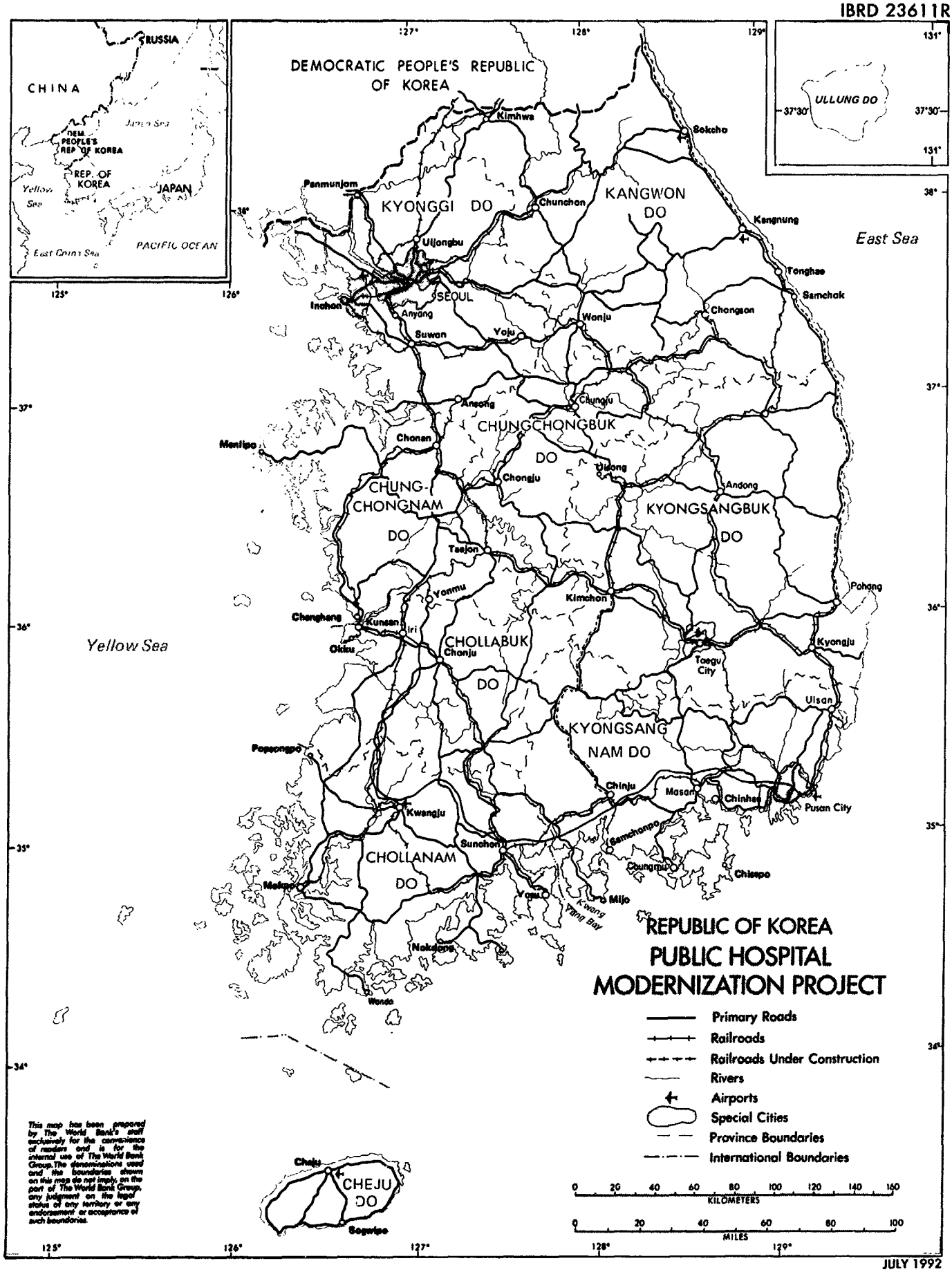
B. Reports and Studies Related to the Project

B-1 Proposal for the IBRD Loan Project, MOHSA, February 25, 1991

B-2 Execution Plan of IBRD Loan Project, MOHSA, 1991

MAP

IBRD 23611R



JULY 1992