THE GOVERNMENT DECIDED TO CONTINUE THE SAEMANGEUM RECLAMATION PROJECT IN SEVERAL PHASES

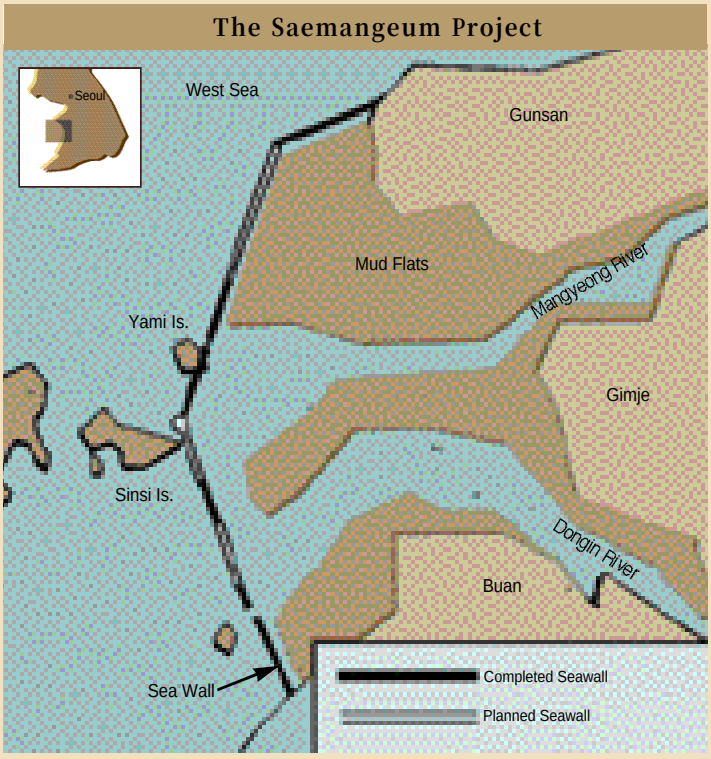
OUTLINE

The Water Management Policy Coordination Committee headed by Prime Minister announced to resume the reclamation project in Saemangeum, North Jeolla Province in the manner of environment-friendly, phased development on May 25, which had been suspended for two years due to environmental concerns.

According to the plan, the construction of 33km-dike seawall will be first completed till 2004. Then, efforts to improve the water quality of the Mangyeong River— one of the two rivers in the reclamation site — will be made and at the same time, checking its water condition regularly with its sluice open for a certain period of time. If such efforts prove to work out well, waterproof work will be started in 2006 to reclaim tidelands in the estuary of the Mangyeong River to secure 15,100ha farmland around 2011. In the case of Dongjin River, 99km waterproof work and reclamation work will be completed by 2006 and 2008 respectively to secure 13,200ha of farmland.

The project was initiated in 1991 as a government-run project to turn the tidal flats of 40,100ha in the estuaries of the Mangyeong and Dongjin Rivers into 28,300ha of farmland and 11,800ha of freshwater lake. It was expected to secure 140,000 tones of rice and 100 million tones of water for irrigation yearly from the reclaimed land. At present, more than 58 percent of dike seawall construction was completed and therefore, it must have been very difficult for the government to cancel the entire project after pouring in a vast amount of money. If the project were cancelled, it would also entail economic, social and environmental problems let alone deepening people's distrust of the government's policies. By these reasons and taking into account the fact that mountainous region amounts to 65 percent in the national territory, the government came to decide to proceed with the project in the manner of phased development. It was also designed to prepare for any possible changes in domestic and overseas circumstances such as food crisis and the reunification of North and South Korea.

The government will spend 1.3 trillion Korean won equivalent to about US$1 billion from this year till 2011 in expanding basic environment facilities to include sewage facilities in each basin of Mangyeong and Dongjin Rivers, canals to help the inflow from the Geumgang Lake and circulating drainage channels. Reclaimed farmland will be cultivated in environment-friendly methods, and ecological villages, birds' habitats, tourists farms, artificial swamps will be sited there. A tentatively called Saemangeum Environmental Measures Commission and Water Quality Preservation Measures Commission to be instituted in the central government and North Jeolla Province respectively will take necessary steps to systemically resolve critical problems that have arisen in the process of collecting opinions for the last two years.



THE PROGRESSION OF RECLAMATION PROJECT

Before commencing the reclamation project in 1991, the government carried out a feasibility study over a period from 1986 to 1988, and an environmental impact evaluation and deliberate discussions with relevant government organizations during the period from 1987 to 1991.

Nevertheless, in the midst of constructing dike seawall to link Buan to Gunsan-city - two cities encompassing the Saemangeum Area - the government came of a sudden upon an opposition of environmental groups in February 1998. They claimed that the reclamation project would be very likely to be another 'Sihwa Lake' folly, an artificial lake created by a reclamation project that had suffered from serious water pollution due to the influx of wastewater from the neighboring industrial estates.

Most people sympathized with environmentalists and the government also could not neglect environmental concerns because of the failure of the Sihwa reclamation project. So, the government suspended the work in May 1999 accepting the demand of environmental groups and formed a 30-member joint research team consisting of experts, civic group members and government officials.

The research team reinvestigated the feasibility of the project from May 1999 to June 2000 in terms of environmental impact, water quality preservation and economic efficiency through scientific and objective research and evaluations.

The environmental impact division of the joint research team forecasted that the number of edible shellfish such as clam would reduce as well as the habitats of migratory birds such as snipes and plovers, should tideland is lost because of the Saemangeum reclamation project. They suggested developing technologies to efficiently prevent red tide that is very likely to occur.

The water quality preservation division put into effect the water quality preservation measures tentatively prepared by the Ministry of Environment in pilot scale for the purpose of water quality estimation. According to the result, it was revealed that the average water quality of the Saemangeum Lake would be adequate for irrigation purposes on the premise that the Mangyeong and Dongjin Rivers would meet in a newly formed lake. However, the Mangyeong River recorded 0.12mg/ℓ of T-P (Total Phosphorus), exceeding the limit (less than 0.10mg/ℓ) for lakes for agricultural purposes by 0.02mg/ℓ, whereas it satisfied the respective standards of COD (Chemical Oxygen Demand) and DO (Dissolved Oxygen). They opined that it was too early to be pessimistic as there remained more than 10 years ahead before the starting of the earnest use of the Saemangeum lake. For the efficient promotion of water quality preservation measures, they recommended to institute an environmental commission for the water quality preservation in the Saemangeum Lake.

The economic efficiency division analyzed the economic feasibility of the project through an extended benefit/cost analysis. According to the analysis, the ratio of benefit to cost came to 1.25, the internal rate of return to 9.18%, and the present value of net benefit was estimated to be 298.2 billion Korean won equivalent to about US$229 million, which proves that the project is economically feasible. In the process, questions were raised as to the manner of han-

Table 2. Comparison between the Saemangeum Lake and the Sihwa Lake

	The Saemangeum Lake	The Sihwa Lake
The distribution of Pollutants from the lake	Scattered in remote areas from the lake	Concentrated in the surrounding areas
The cycle of the Circulation of lake water	2.5 months	10 months
Total storage quantity	530 million tones	330 million tones
Drainage area ratio (drainage area/lake area)	28.2 times larger than the lake area	7.8 times larger than the lake area
Drainage area	331,900ha	47,650ha
BOD (Biochemical Oxygen Demand) of Flowing-in Rivers	Mangyeong River: 6.8mg/ℓ Dongjin River: 2.9mg/ℓ	23.9mg/ℓ
Basic environment	Water was contained after installing	Water was contained without fully

dling data such as the value of food security, the effects of the expansion of national territory, the value of tideland, water improvement costs and benefits calculation. There were a few members who argued that the project is not economical as the ratio of benefit to cost ranges from 0.22 to 0.29.

However, the joint research team failed to reach an agreement within them, ending up to submit individual reports to the government. Eighteen members favored the continuation of the project, nine members were opposed and two withheld. Reaching a deadlock, the government attempted to draw a consensus among relevant government organs, residents, environmental NGOs by holding public forums three times and evaluation meetings twice in May 2001 but only to reconfirm the wide gap between each party's stance. Consequently, the government worked out a compromise of enviroment-friendly, phased development.

CONTROVERSIAL ISSUES OVER THE RECLAMATION PROJECT

The most controversial issue over the reclamation project was whether the new freshwater lake to be created in the process of reclamation could meet the grade D agricultural water standard. Environmentalists and a group of experts did not agree to some portion of the research result of the joint research team, claiming that the amount of floating pollutants was underestimated. They were also negative about the effectiveness of the government's water improvement measures by exemplifying the degradation of water quality in other freshwater lakes. Even the Ministry of Environment worried that it would not be possible to improve the water quality of Mangyeong River to acceptable level let alone the degradation of water quality in the dry season. On the contrary, officials of the Ministry of Agriculture responsible for this project ascertained that they could improve the COD (Chemical Oxygen Demand) and T-P (Total Phosphorus) to meet 5.5mg/ℓ and 0.103mg/ℓ respectively. For this, they promised to prepare complementary measures for the improvement of water quality to have the Ministry of Environment implement a pilot research to estimate the water quality. They also argued that it would be possible to reach the level of water quality they tried to attain if a phosphorus treatment facility is installed additionally in the mouth of the Mangyeong River in preparation for the dry season.

The Saemangeum project also gave rise to a debate over where to give more importance between tideland and farmland. There were heated debates among academic societies about the analysis of contingent value method to weigh the value of food security and the value of tideland. Both parties confronted with each other intensely in public forums: one party argued that the ecological value was over-evaluated and the other party countered saying that the joint research team underestimated the value of tideland.

The Ministry of Maritime Affairs and Fisheries, environmental groups and a group of experts demanded that the Saemangeum project should not be resumed until scientific investigation is carried out for the controversial issues. They emphasized that the 20,800ha tideland in Saemangeum has high economic and ecological values as various species of oceanic life and rare birds inhabit there.

However, officials of the Ministry of Agriculture argued that the reduction of tideland is unavoidable though, new tideland would reappear in the outside of dike seawall after a certain period of time as witnessed in several reclamation cases home and abroad. In the case of the Isahaya Bay in Japan,

Table 3. The Saemangeum Area Development Plan

		Length	Project Period	Major works	
Dike		33km	- 2004	- Sluice gate for drainage	
Dongjin River Basin	Waterproof work	99km	2004-2006	- Canals to link the Dongjin River to Mangyeong River - One settling reservoir	
	Farmland	13,200ha	2005-2008	- Artificial swamp(200ha)	
Mangyeong River Basin	Waterproof work	40km	2006-2008	- 28km-circulating drainage channel - One settling Reservoir	Depending on the improvement of water quality
	Farmland	15,100ha	2007-2011	- Artificial swamp(400ha)	

reclamation work was done in the newly created tideland nine times from the 1600s until now. The Netherlands had reclaimed new tideland of 6,880ha in the Dollard bay, Groningen until the 1990s since they reclaimed 2,210ha of tideland there in the 1600s. They also added that environmental impacts would be minimized through environment-friendly development and the fact that 1.5meter-wide tideland newly appeared outside the dike seawall justifies their position.

Environmental groups, in particular, filed a sue against the government claiming that the value of tideland should be inherited to the next generations and gave diverse performances in alliance with social, cultural and religious groups in order to publicize the significance of tideland. On the other hand, the government carried out a field investigation in the Netherlands, Germany, Denmark and Japan for fact-finding and collecting information on reclamation projects. After having discussions with the International Commission on Irrigation and Drainage and officials of the Ministry of Agriculture, Forestry and Fisheries, Japan about the needs of reclamation, the government came to a conclusion that the question whether to preserve or develop tideland should be subject to economic, social, geographical and political conditions of a nation.

TASKS AHEAD

It seems that the public in general accepts the government's plan, not as a best choice but as a second best possible under the current situation. However, difficult tasks lie ahead: facing environmentalists' demand to reconsider the government's recent decision, the government has to find ways to accommodate the opposing views, to draw cooperation between central government agencies and North Jeolla Province for the improvement of water quality, to secure the economic efficiency of the expansion of farmland, to accommodate North Jeolla Province's demand for installing a complex industrial estate and secure a vast amount of budget. The government also needs to prepare concrete measures to minimize negative effects along with measures to protect the oceanic environment. A thorough feasibility study in the planning stage will substantially reduce or cut off the possibility of adverse effects and the waste of national resources that may arise due to the controversial nature of the project. It is also recommended to seek ways to promote government-run projects in an efficient and transparent manner.

<Sun Hee Kim, Research Fellow>

KRIHS WORKSHOP ON KOREA-CHINA LAND TRANSPORT CONNECTIONS FOR THE FACILITATION OF ECONOMIC COOPERATION IN NORTHEAST ASIA

As regionalization is getting intensified all over the global village, we are called upon to make more endeavors to strengthen economic cooperation within the Northeast Asian region. For this, many experts argue that the systematization and the enhancement of the efficiency of transport connections will be a prerequisite for vitalizing economic cooperation between Northeast Asian countries. In this context, KRIHS held a workshop titled 'Korea-China Land Transport Connections for the Facilitation of Economic Cooperation in Northeast Asia on April 16. Participants including three Chinese transport experts such as Wang, Huijun of Economics & Planning Research Institute of the Ministry of Railway, China; Jin, Fengjun and Pang, Xiaomin, Institute of Geography, Chinese Academy of Sciences; Zhu, Junfeng, Institute of Comprehensive Transportation, the State Development Planning Commission of China discussed the current transport situations and prospects for the Korean Peninsula and China, and proposed ways for land transport connections through a demand analysis. Introduced herein is an excerpt of the paper by Won-Bae Kim, senior research fellow of KRIHS.