

Conflict Management for the Construction of Hantangang Dam

Lee, Wan Ho

Korea Water Resources Corporation (Kwater), Korea, E-mail: whlee@kwater.or.kr

Baek, Un Il

Daelim Industrial Co., Ltd, Korea, E-mail: builhjoo@daelim.co.kr

Jeon, Tae Myoung

Daelim Industrial Co., Ltd, Korea, E-mail: jtm333@daelim.co.kr

Abstract: Until mid 90's in Korea, many dams had been constructed for the flood control and the water utilization without much resistance. These dam construction projects, especially for the large dams, were mainly carried out by the Ministry of Land, Transport and Maritime Affairs(MLTM) and the Korea Water Resources Corporation(K-Water). However, nowadays the construction of dam is in severe conflict with local governments, local residents, and environmental NGOs. The Hantangang dam project was started in 1999 after three excessive floods in the Imjin river basin. These floods brought 128 death casualties, 31,439 flood victims, and the property losses of 900 million dollars. As a permanent counterplan to prevent disasters from these floods in the Imjin river basin, the Hantangang dam project was proposed. At first the Hantangang dam(H:85m, W:694m, RCD type) was designed as a multi-purpose dam. However, this dam construction project is still in the middle of social conflict arousing a lot of argumentation between pros and cons, though the dam is now under construction as a flood-control dam. This study shows the process of Hantangang dam project and also tries to show how the public consensus could be reached through the years of public discussion.

Keywords conflict management, Hantangang dam, multi-purpose dam, flood control dam, public consensus

1. Introduction

In Korea, the construction of dams has been regarded as the best way to secure and manage water resources. Especially, as a counterplan to

prevent disasters from floods, many dam projects were proposed and completed. And also many dams were constructed for electricity and irrigation. However, though many dams

had been constructed for the flood control and the water utilization, nowadays the construction of dams usually brings severe conflict due to environmental reason and social reason. In addition, the related organizations for building dams increased. Until mid 90's, K-Water and the MLTL mainly carried out the dam projects, but the other ministries such as the Ministry of Environment(MOE) and the Ministry of Defense(MD) became related with dam construction. Especially, the MLTM and the MOE are frequently in conflict for the construction of dams. The Hantangang Dam project was started in 1999 after three excessive floods in the Imjin river basin. These floods

took place in 1996, 1998, and 1999. Figure 1 shows the flood in the Imjin river basin in 1996. These three floods brought 128 death casualties, 31,439 flood victims, and the property losses of 900 million dollars. The area of the Imjin river basin is 8,117 km², but there is no flood control system. In addition, two thirds of the Imjin river located in North Korea, so it is difficult to control flood in this area. As a result, to prevent disasters from flood in this area, the Hantangang Dam project was proposed. The Basic Plan for Hantangang Dam was completed by the MLTM in 1998 and the Basic Design was completed in 2002. Daelim Consortium was selected as a construction director.



Figure 1. Floods in the Imjin river basin (1996)

At first the Hantangang Dam was designed as a multi-purpose dam. Figure 2 shows the bird's-eye view of Hantangang Dam from Basic Design. The construction of Hantangang Dam became a hot potato arousing a lot of argumentation between pros and cons, though the dam is now under construction as a flood control dam. This study shows the processes of Hantangang dam project and also tries to show

how the public consensus could be reached through the years of public discussions. Additionally this study shows the specific design of flood control dam, eco corridor and primary design change to get public consensus.



Figure 2. The bird's eye view of Hantangang Dam (Basic Design, 2002)

2. Conflict Management for Hantangang Dam

In Korea, the rainfall is intensively concentrated during the summer season, which

accelerates the excessive floods in summer. As a matter of fact, Korea has suffered from flooding damage every summer. This sufficiently justified the construction of dams by the MLTM and K-Water. As Table 1 shows, most of large multi-purpose dams such as Soyanggang dam, Andong dam, Chungju dam, and Daechung dam were constructed from 1960s to 1980s. The number of constructed dams was drastically decreased from the middle of 1990s. During recent decade, the construction of dams has brought social conflict. For example, Youngwol dam project was canceled through 10-year argumentation among many related organizations, pros and cons.

Table 1. Dam Construction in South Korea

Period	Number of Dams	Multi-purpose (K-Water)	House/ Industry water (K-Water, Local gov'ts)	Electricity(Hydro - Nuclear Power Company)	Irrigation (Agricultural Infra Com.)	Flood Control (K-Water)
1946 ~ 1960	171	-	2	1	168	-
1961 ~ 1980	427	3	21	4	399	-
1981 ~ 1995	364	6	28	7	322	1
1996 ~ 2002	111	6	3	2	100	-
Sum	1073(100%)	15(1.4%)	54(5.2%)	14(1.7%)	989(91.6%)	1(0.1%)

The construction of dams in Korea is very complex undertaking which needs clearances by several laws and government organizations. Table 2 summarizes the dam building procedure in South Korea. The first step of dam building is the area studies of river basin that examine the hydrologic capacity of the regions. The area

studies are required by the law implemented every 10 years for major river basins in South Korea(Dam Law Article 4).

In the processes of dam building, the argumentation for dam project reaches a climax during the designation of dam construction site. After the designation, residents in the designated

area are not allowed to exercise their private property right anymore. In other words, the most troublesome step in the processes of dam building is to designate dam construction site. In that step, the environmental impact assessment and compensation for the loss of private property becomes the most important factor.

Compensation is an issue of concern in terms of its scope and quantity. By the revision of Dam Law in 1995 and 1999, residents who should be moved due to dam construction can receive quite enough amount of compensation. Because of a lot of compensation cost, about two thirds of the dam building cost should be spent for compensation. Meanwhile, most contentious opposition against dam construction

is usually made by residents who reside in the lake shore as they are not entitle to receive enough compensation but will be subject to land use regulations.

Above and beyond the compensation, drawing clearance for the Environmental Impact Assessment(EIA) with the Ministry of Environment is one of the most important step in the processes of dam construction. Upon examining the EIA, the MOE could order a resubmission of the EIA or reject the EIA, which could a halt to the dam project. The MOE needs to examine the EIA and also needs to make efforts to build improved relationships with environmental NGOs to reach consent of dam construction.

Table 2. The procedures for dam construction in South Korea

	Procedures	Organizations	Related laws and tasks
1	Area study	K-Water	Investigation of the capacity of regions
2	Long-range plan for dam construction	MLTM	Dam Law Article 4: long-range plan for every 10 years
3	Pre-assessment of propriety	Ministry of Planning and Budget	Administrative law regarding program budget management
4	Propriety assessment	K-Water	Construction Technology Law Article 38 Clause 5
5	Basic design	K-Water	Construction Technology Law Article 38 Clause 6
6	Environmental Impact Assessment	K-Water	Environmental Impact Assessment Law Article 8
7	Environmental Impact Assessment	K-Water, MLTM	Clearance with the Ministry of Environment
8	Central Construction Tech Committee	K-Water	Construction Technology Law Article 21
9	Designation of construction site	MLTM	Dam Law Article 5: designation and announcement
10	Basic Plan and announcement	MLTM	Dam Law Article 7: compensation and construction expense allocation, etc.
11	Application design	K-Water	Construction Technology Law Article 38 Clause 6
12	Request for approval of app. design	K-Water	K-Water Law Article 10 (internal procedure)
13	Announcement of application design	MLTM	Dam Law Article 8: water allocation plan, etc.
14	Construction	K-Water, Local gov't	Law Concerning Contracts with Government Article 6: Compensation for expropriated land
15	Request of permit for completion	K-Water	Dam Law Article 12, K-Water Law Article 4
16	Request of permit for completion	MLTM	Permit for completion and announcement
17	Application for the use of dam	K-Water	Dam Law Article 24
18	Application for the use of dam	MLTM	Designation of rights for the use of dam
19	Dam maintenance	K-Water	Dam Law Article 15, 17, K-Water Law Article 9

Starting with the investigation of Imjin river area, the effort to protect lives and property from floods in this area was begun in 1995. Table 3 shows the major events for the Hantangang dam project. Due to the construction of Hantangang dam, 69 families in the Yonchun county and 228 families in the Pochun county need to be displaced. The compensation policy was applied for these residents. In 2005, the Counterplan Committee for Imjin River Basin

was inaugurated with the Prime Minister as a chairman. This committee totally rechecked the project of Hantangang dam with many neutral experts. Finally, this committee made design change from multi-purpose dam to flood control dam for Hantangang dam. In 2007, the Application Design was announced and the construction of Hantangang dam was started.

Table 3. The major events for the Hantangang dam project

Date	Events and actions
1995. 6	Investigation of Imjin river area (MLTM)
1996. 7. 26	Flooding
1997. 12	Water Resource management plan for the Imjin river area
1998. 8. 3	Flooding
1998. 12	Basic plan for Hantangang dam (MLTM)
1999. 7. 31	Flooding
1999. 12. 11	Initiation of basic design
1999. 12. 20	Consultation between MLTM and Ministry of Defense(MD) concerning displacement of military facilities
2000. 2	Request for cooperation concerning basic design (MLTM → MD)
2000. 2 ~ 5	Joint investigation by the military
2000. 12. 15	Basic design completed
2001. 8 ~ 10	Exhibition of Environmental Impact Assessment(EIA) citizen hearing (11 times)
2001. 11	Consultation of basic plan with 8 government organizations (MOE, MOGAHA, MLTM, MD, MOA, and so on)
2001. 12	Consultation with MOE started concerning EIA
2002. 1 ~ 3	Request for reassessment of appropriateness of dam construction and EIA by citizen
2002. 5. 7	Report of reassessment result to the Prime Minister
2002. 6. 14	Request for EIA supplementation (MOE → MLTM)
2002. 10. 16	Request for the second EIA supplementation (MOE → MLTM)
2002. 12. 16	Submission of revised EIA
2003. 4. 14	Revision of basic plan submitted
2003. 7	EIA conditionally accepted by MOE (opening of 4 water outlets-6.6 square meters- for 350 days a year)
2004. 1 ~ 11	Conflict management by Sustainable Water Resource Management Committee (The flood control dam was proposed for Hantangang river)
2005. 8 ~ 2006. 8	Consideration of counterplan for the Imjin river basin (The flood control dam was selected for Hantangang river)
2007. 2. 28	Announcement of application design, the construction of Hantangang dam started

3. Primary Design Change

Although the Application Design was announced and the construction of Hantangang dam was started in 2007, the design of

Hatangang dam is still undergoing. As the type of Hantangang dam was changed from multi-purpose dam to flood control dam, the design of Hantangang dam was also changed. Especially,

instead of sediment discharge system and fishery way, the eco corridor was adopted.

Table 4 shows the primary design change of Hantangang dam.

Table 4. The primary design change (2008)

Section		Application Design	Design Change
Reservoir	M.W.L	EL. 119.1 m (PMF)	EL. 114.4 m (PMF)
	Flood Control Capacity	305 million m ³	270 million m ³
	Water supply	128 million m ³ / year	-
Main Dam	Crest Elevation	EL. 121.0 m	EL. 119.5 m
	Height / Length	85.0 m / 694.0 m	83.5 m / 690.0 m
	Volume	734,000 m ³	866,000 m ³
Spillway	Size	B5.6m×H5.4m×4EA(main) B12.0×H13.5×5EA(emergency)	B4.9m×H4.9m×2EA(main) B13.0×H16.1×5EA(emergency) B5.3m×H4.5m×2EA(sediment discharge)
	Dissipater	Stilling basin type (L: 127.5m, B: 76.0m)	Stilling basin type (L: 119.0, B: 76.0m)
Water intake system	Type	Side circle cylinder gate	-
	Capacity	6.0 m ³ / sec	
	Size	D=1.8m , L=57.3m	
Sediment discharge	Size	B3.7m ×H4.0m×1EA	Eco corridor replaced
	Type	High pressure slide gate	
Fishery way	Type	Spiral step type, Culvert+elevator type	Eco corridor replaced
Eco corridor	Size	-	B4.0×H4.2~7.2×1EA B5.3×H3.2~7.2×4EA (Design is now undergoing)

4. Conclusion

The construction of large dams brought social conflict during recent decade in Korea. For example, Youngwol dam project was canceled through 10-year argumentation between pros and cons. The Hantangang dam project also came close to similar situation to the Youngwol dam project. However, through persistent effort to reach public consensus, the construction of Hantangang dam was started in 2007. The revised compensation policy was adopted to persuade residents who should be displaced due to dam construction. The Environmental Impact Assessment for the Hantangang dam was exhibited and citizen hearings were opened 11 times. The revised EIA was conditionally accepted by the MOE that recommended the Hantangang dam be build but be operational for only 10 days in the monsoon

season. The Counterplan Committee for Imjin River Basin with Prime Minister as a chairman reexamined the Hantangang dam project. This committee finally concluded the counterplan to prevent disasters from floods in the Imjin river basin. Flood control dam and retention reservoirs were selected as a counterplan. The MLTM was notified final decision of the Hantangang dam project by Prime Minister in 2006. The final decision could be summarized as follow. 『Flood control dam and retention reservoirs should be built for the Imjin river basin; The MLTM should construct the environmentally friendly flood control dam and should not shift the type of dam from flood control dam to multi-purpose dam; The MLTM should form a regional committee to gain the

confidence of residents and citizen's organizations for the project of Hantangang dam.』

The case of the Hantangang dam project shows that the construction of large dam is not the project only related with the MLTM and K-Water but related with a lot of citizen's organizations, other ministries, and a whole nation. As a result, drawing the public consensus is essential to construct dams in Korea. Consequently, the central and local government, the MLTM, and K-Water need to establish a good plan to build dams and also need to make persistent effort to draw public consensus.