

Korea's Dam Removal Campaign, and the Restoration of Four Major Rivers

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Dams in Korea

Status of the Large Dams in Korea by Year

Year \ Purposes	Multi-purpose	Water supply for domestic and industrial use	Hydropower	Irrigation	Flood control	Total
	19	63	21	1,114	1	1,216
1910~1940	-	4	1	31	-	36
1941~1945	-	3	2	94	-	99
1946~1955	-	-	-	52	-	52
1956~1965	1	5	2	222	-	230
1966~1975	1	13	2	181	-	197
1976~1985	2	13	4	247	-	266
1986~1995	5	20	4	187	1	217
1996 이후	10	5	6	100	-	111

※ Source: Dams in Korea (K-Water, July 2000. Supplemented by the author)

Dams in Korea

City / Province	Small dams	Deteriorated dams
Seoul	189	29
Busan	115	16
Daegu	288	42
Incheon	23	2
Gwangju	138	27
Daejeon	300	39
Ulsan	738	86
Sejong	261	67
Gyeonggi	3,258	705
Gangwon	2,762	732
Chungbuk	1,603	267
Chungnam	4,055	768
Jeonbuk	4,142	629
Jeonnam	4,728	867
Gyeongbuk	4,505	720
Gyeongnam	6,737	861
Jeju	0	0
total	33,842	5,857



- Small dams for irrigation : 33,842
 - * Impaired function : 5,857
 - * Out of use : 3,826

Dams in Korea



- **The campaign against the construction of Dong River Dam in 2000**
 - * Citizens' opinion backs that conservation is more important than development
 - * Defeat of the logic of the developers that the dam was needed for water supply

Dams in Korea

2006

- * The Long-Term Comprehensive Plan for Water Resources by the Ministry of Land and Transport : Focus on non-structural measures, not dams and artificial dikes
- * The Ministry of Environment: Pilot project of removal of a small dam (Gogneungcheon Dam)



2007

- * The Long-Term Comprehensive Plan for Dams by the Ministry of Land and Transport : The Plan does not announce any more planned site for dam construction.

-> Dam construction in Korea practically comes to an end.

The Four Rivers Project - The regression of Korea's river policy



Four Major Basin Areas

- Four major rivers basin areas: 63,016km²
 - * Area of Korea : 100,378km²
 - * Area of France : 640,679km²

Classification	River length (km)	Basin area(km ²)
Han River	481.7	26,018
Nakdong River	521.5	23,817
Geum River	395.9	9,810
Yeongsan River	138.0	3,371

The Four Rivers Project - The regression of Korea's river policy

- 'The Grand Canal of Korea' Project
 - * Plans to connect four rivers to the canal using tunnels, lifts and locks
 - * Promises to complete the project within five years of the president's term
 - * Canceled after strong opposition from citizens in 2008
 - * Switched to the 'Four Rivers Restoration Projects' afterwards



The Four Rivers Project - The regression of Korea's river policy

The 'Four Major Rivers Project'

- The Project is announced by the government in Dec. 2008
- Started constructing in July 2009 and 'completed' in early 2013
- Total Project costs USD 2 billion.
- 16 large dams (called wrongfully 'weirs' by the government) in four rivers (plus Yeongju Dam in an upstream branch) were built. The total volume of the dredged sand is 570 million m³
- Official goal: water quality improvement, drought prevention, flood control



Opposition Movement to the Four Rivers Project,



- Citizen's Countermeasures Committee against the Four Major Rivers Projects (18 June 2009) : Participated by four religions, 450 civil organizations and four opposition parties
- KFEM launched the 'River of Life Research Group' (Dec. 2009 ~) : 30 experts including Professor Chang-geun Park
- A Buddhist monk named Moon-Su burns himself to death protesting the Four Rivers Project (30 May 2010)
- The Conference of Bishops officially issues a voice of opposition (12 March 2010, 27 Oct. 2010)
- Five activists of the KFEM occupy one of the construction sites (22 July 2010 ~ 31 Aug.)

Poll Survey: Opposition to the Four Rivers Project reaches about 70%

Disaster of the Four Rivers Project

- Hypoxia in the riverbeds

Nakdong River Survey Results (KFEM, June 2016)

Dalseong Dam

Depth(m)	DO(mg/l)
Surface	8.1
1	6.2
2	6.0
4	5.85
5	5.5
6	2.6

Haman Dam

Depth(m)	DO(mg/l)
Surface	10.38
1	10.51
2	8.7
3	6.8
4	6.2
5	5.1
6	4.7
6.3	4.5
10	0.02

Hapcheon Dam

Depth(m)	DO(mg/l)
Surface	8.8
2	8.1
3	6.7
4	5.7
5	4.9
6	3.8
7	2.7
8	0.75
9	0.0
10	0.0
11	0.0

Disaster of the Four Rivers Project

- “Green Algae Latte”

500 meters upstream of Hapcheon Dam

(Source: The Ministry of Environment, Water Environment Information System)

Date	Number of cyanobacteria cells(cell/ml)	Dominant algae
23 July 2018	9,958	Microcystis
30 July 2018	250,000	Microcystis
02 Aug. 2018	24,500	Microcystis
06 Aug. 2018	245,500	Microcystis
09 Aug. 2018	229,000	Microcystis
13 Aug. 2018	221,500	Microcystis
16 Aug. 2018	718,000	Microcystis
20 Aug. 2018	236,000	Microcystis
22 Aug. 2018	1,264,052	Microcystis
28 Aug. 2018	4,640	Microcystis



Disaster of the Four Rivers Project

- “Green Algae Latte”



Disaster of the Four Rivers Project

- “Green Algae Latte”



Disaster of the Four Rivers Project

- “Green Algae Latte”



Disaster of the Four Rivers Project

- *Pectinatella magnifica*



Disaster of the Four Rivers Project

- Hundreds of thousands of fish died



Disaster of the Four Rivers Project

- Anaerobic Red Chironomidae dominates the rivers



To restore the Four Rivers

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일키자

1 든든한 대통령
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To restore the Four Rivers

- President Moon Jae-in announced the reformative policy directive (22 May, 2017)
 - All-time gate-opening of the Four Rivers Project's dams
 - The main Ministry in charge of water management is shifted from the Ministry of Land, Infrastructure and Transport to the Ministry of Environment
 - The policy audit of the Four Rivers Project starts
- The Citizens' Committee for Renaturalization of the Four Rivers is established (28 March, 2018)
- The Expert Committee on the Survey and Evaluation of the Four Rivers Project
 - Launched under the Ministry of Environment (16 Nov., 2018)
 - Announced its Recommendation for the Kum River and Yeongsan River Restoration (22 Feb., 2019)
 - : Removal – Sejong Dam, Juksan Dam
 - Partial removal – Gongju Dam
 - All-time gate-opening – Baekje Dam, Seungchon Dam



To restore the Four Rivers



- Geum River and Yeongsan River

- * The Ministry of Environment presents the Restoration Plan
- * Final decision to be made by the National Water Management Commission (established on 27 Aug. 2019) within 2019
- * After full opening, the algal concentration levels in Geum River and Yeongsan River decrease.
- * Inhabitations of endangered Charadrius (June 2018), Gobiobotia (April 2019) are ascertained.

To restore the Four Rivers



To restore the Four Rivers



To restore the Four Rivers



- Nakdong River and Han River

- * Regional politics have made it difficult to open the floodgates
- * Tap water crisis in 2018 due to cyanophyceae (blue-green algae)
- * Some sandbars are being restored at the points where the tributaries join the main streams.

Normalization of water policy

- The Amendment of the Water Environment Conservation Act (Jan. 16, 2017)
 - * The Act mandates the Minister of Environment to investigate whether the stream's aquatic ecosystem has been disrupted or damaged and take necessary actions.
- The Ministry of Environment declared that the construction of large dams led by the government was over (19 Sep. 2018)
 - * The government nullified the planned construction of Jirisan Dam



The people who have been trying to protect Korean rivers



Thank you

