SOUTH KOREA



Source: esri

General

South Korea – officially the Republic of Korea - is a sovereign state in East Asia constituting the southern part of the Korean Peninsula. This mountainous peninsula is flanked by the Yellow Sea in the West, and the Sea of Japan in the East. Its southern tip lies on the Korea Strait and the East China Sea. The area is 10.0 Mha (million hectares) with, in 2022, a population of 51.8 million, or 5.2 persons per ha (Wikipedia and United Nations, 2022).

Climate and geography

South Korea has a humid continental climate and a humid subtropical climate. It is affected by the East Asian monsoon, with precipitation heavier in summer during a short rainy season, which begins end of June through the end of July. Winters can be extremely cold with the minimum temperature dropping below -20 °C in the inland region of the country. In Seoul, the average January temperature range is -7 to 1 °C, and the average August temperature range is 22 to 30 °C. Winter temperatures are higher along the southern coast and considerably lower in the mountainous interior. Summer can be hot and humid, with temperatures exceeding 30 °C in most parts of the country. South Korea has four distinct seasons; spring, summer, autumn and winter. Spring usually lasts from late March to early May, summer from mid May to early September, autumn from mid September to early November, and winter from mid November to mid March. Rainfall is concentrated in the summer months of June through September. The southern coast is subject to late summer typhoons that bring strong winds, heavy rains and sometimes floods. The average annual precipitation varies from 1,370 mm in Seoul to 1,470 mm in Busan (source: Wikipedia).

South Korea can be divided into four regions: an eastern region of high mountain ranges and narrow coastal plains, a western region of broad coastal plains, river basins, and rolling hills, a southwestern region of mountains and valleys and a south-eastern region dominated by the broad basin of the Nakdong River. South Korea's terrain is mostly mountainous. Lowlands, located primarily in the West and Southeast, make up only 30% of the total land area. About three thousand islands, mostly small and uninhabited, lie off the western and southern coasts (source: Wikipedia).

Sang-Hyun Park *et al.* (2018) describe that in Korea tidal land reclamation has a long history. They state that it has always been thought that tidal land reclamation in Korea started in 1235 with the construction of dikes along the coast of Ganghwa Island for the defence of the island against the Mongolian army. Nowadays, however, several historians believe that the reclamation of tidal lowlands started much earlier with the construction of the Byeokgolje Dam in 330. In their paper they prove that this is indeed the case. They also describe the historical development of the dam.

In South Korea at a large scale reclamation projects have been implemented. Between 1917 and 1938 about 40,000 ha has been reclaimed and between 1945 and 2000 even 76,000 ha. The largest reclamation is Saemangeum (source: Wikipedia).

Sang-Hyun Park *et al.* (2018) present the tidal land reclamation schemes in South Korea (Figure 1). A schematic presentation of the tidal land reclamation schemes is shown in Figure 2 (IJsselmeerpolders Development Authority, 1985).

Existing polders

The Group Polder Development (1982) identified six polder areas. These are:

- *Mokpo area*. In this area some reclamation was done in the period 1930-1940. The potentially reclaimable area is estimated at 140,000 ha. Two pilot polders have been constructed: the Chanp Po Polder of 228 ha, and in 1961 a pilot polder of 60 ha in the Kangwa Area;
- Yong San Gang Irrigation Project. The total project area was 20,700 ha, including 5,500 ha reclamation;
- *Pyongtaek Project*. The total project area was 18,419 ha, including 2,682 ha reclamation;

- *Gyewhado Project*. The reclaimed area is 2,500 ha;
- Dae Ho Area Development Project. The total project area was 7,700 ha, including 3,700 ha reclamation;
- *Naktong River Delta*. There is 15,000 ha polder area.



Figure 1. History of tidal land reclamation in South Korea (Sang-Hyun Park et al., 2018)



Figure 2. Schematic presentation of tidal land reclamation schemes in South Korea (IJsselmeerpolders Development Authority, 1985)

The following polders can be derived from Wikipedia: Ghangwa Isle (various polders), Seosan Polder, Teongsan Polder and Hwaong Polder.

Under development is the Saemangeum Coastal Reclamation Project. This project includes the largest sea dike in the world (33 km) reclamation of 28,300 ha coastal and foreshore area and the creation of a fresh water lake of 11,800 ha (Figure 3) (Moonsoo Cho *et al.*, 2016).



Figure 3. Land use plan of the Saemangeum Coastal Reclamation Project (Moonsoo Cho et al., 2016)

General characteristics of the polder in South Korea are shown in Table I.

Proposed polders

In addition to the Saemangeum Coastal Reclamation Project, which is still in the construction and development stage, no proposed polders have been identified.

Location of the polders in South Korea as shown on the World polder map

The location of the polders in South Korea is shown in Figure 4.



Figure 4. Location of the polders in South Korea (source: esri – Batavialand)

The pictures by Prof. Adriaan Volker are shown in Table II. The pictures by prof. Bart Schultz are shown in Table II.

References

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Bart Schultz

Lelystad, November 2023

Name	Reclamation	Area in ha	Type *)	Latitudes	Longitudes	Elevation in m+MSL	Land use
Ghangwa Isle (various polders)	1911-1938	18,500	LGS	37° 42' N	126° 30' E	5	Agriculture
Polder on Gangwa Island	1961	60	LGS	37° 42' N	126° 30' E	5	Agriculture
Asan	1970-1973	397	RLL	36° 48' N	127° 00' E	10	Agriculture
Pyongtaek	1970-1977	2,682	LGS	37° 00' N	127° 07' E	6	Agriculture
Namyang	1971-1973	2,285					Agriculture
Gyewhado	1974-1979	2,500	LGS				Agriculture
Sapgyo	1976-1979	201	RLL	36° 39' N	126° 44' E	7	Agriculture
Yeongsangang Irrigation Project	1978-1986	5,500	LGS	34° 46' N	126° 23' E	2	Agriculture
Seosan (A)	1979-1995	6,893	RLL	36° 46' N	126° 28' E	9	Agriculture
Seosan (B)	1980-1995	4,221	RLL	36° 46' N	126° 28' E	9	Agriculture
Daeho	1981-1985	3,700	RLL	37° 07' N	127° 00' E	9	Agriculture
Yeongsan Lake	1981	11,730	RLL	34° 46' N	126° 21' E	0	Agriculture
Seokmun	1987-1995	2,050	LGS	37° 00' N	126° 37' E	0	Agriculture
Sihwa	1987-2008	11,421	LGS	37° 20' N	126° 42' E	0	Multiple land use
Yeongam	1988-1993	7,960	LGS	34° 48' N	126° 38' E	1	Agriculture
Geumbo	1989-1996	4,540	LGS				Agriculture
Hwaeung	1991-2008	6,212	LGS				Agriculture
Saemangeum	1991-	28,300	LGS	35° 51' N	126° 42' E	1	Multiple land use
Ahnheong			LGS	36° 45' N	126° 12' E	0	Agriculture
Ahnmyeon			LGS	36° 29' N	126° 21' E	2	Agriculture
Buchang			RLL	35° 36' N	126° 39' E	4	Agriculture
Chanp Po Polder		228	LGS				Agriculture
Daecheon			LGS	36° 21' N	126° 35' E	3	Agriculture
Daedug			RLL	34° 28' N	126° 55' E	2	Agriculture
Deukryang			LGS	34° 47' N	127° 22' E	0	Agriculture
Dohwa			LGS	34° 29' N	127° 19' E	2	Agriculture
Dongmang			LGS	34° 18' N	126° 44' E	1	Agriculture
Dongmyung			LGS	34° 49' N	126° 22' E	1	Agriculture
Eulwang			LGS	37° 27' N	126° 24' E	2	Agriculture
Gammam			LGS	35° 03' N	128° 58' E	0	Agriculture
Gayong			LGS	34° 18' N	126° 41' E	1	Agriculture
Geoguem			LGS	34° 28' N	127° 08' E	0	Agriculture
Gerarim			LGS	36° 53' N	126° 16' E	0	Agriculture

Table I. General characteristics of existing polders in South Korea

Gogeum		LGS	34° 24' N	126° 50' E	0	Agriculture
Gohueng		LGS	34° 37' N	127° 14' E	0	Agriculture
Gojung I		LGS	36° 24' N	126° 31' E	1	Agriculture
Gonam		RLL	36° 28' N	126° 30' E	3	Agriculture
Hangdong		LGS	37° 29' N	126° 37' E		Industry
Hangnong I		LGS	35° 26' N	126° 28' E	2	Agriculture
Ipam		LGS	34° 48' N	126° 29' E	0	Agriculture
Janghang		LGS	36° 01' N	126° 41' E	5	Agriculture
Jangsan		RLL	35° 05' N	128° 57' E	3	Agriculture
Jukkyo		LGS	34° 49' N	126° 21' E	0	Agriculture
Jungang		LGS	37° 29' N	126° 37' E		Industry
Jwacheon		LGS	35° 09' N	128° 53' E	-1	Agriculture
Kwangan		LGS	35° 09' N	128° 59' E	0	Agriculture
Muan		RLL	35° 00' N	126° 29' E	8	Agriculture
Mueui		LGS	37° 26' N	126° 25' E	2	Agriculture
Nakdong River Delta	15,000	LGS	36° 06' N	128° 57' E	0	Agriculture
Namcheon		LGS	35° 10' N	128° 58' E	0	Agriculture
Namdong		RLL	37° 24' N	126° 46' E	4	Multiple land use
Nampo		LGS	36° 18' N	126° 33' E	1	Agriculture
Noryak		RLL	34° 30' N	126° 57' E	2	Agriculture
Ohaikdo		LGS	35° 57' N	126° 37' E	1	Agriculture
Okbong		RLL	35° 56' N	126° 38' E	4	Agriculture
Podu		LGS	34° 33' N	127° 25' E	0	Agriculture
Samhak		LGS	34° 45' N	126° 23' E	1	Agriculture
Samsan		LGS	37° 42' N	126° 15' E	6	Urban area
Sanbuck		LGS	35° 59' N	126° 41' E	0	Agriculture
Shinji		RLL	34° 20' N	126° 49' E	3	Agriculture
Shinmu		RLL	35° 02' N	126° 31' E	5	Agriculture
Sinan		LGS	34° 49' N	126° 07' E	0	Agriculture
Sindo		LGS	37° 32' N	126° 28' E	3	Agriculture
Sokuon		RLL	36° 46' N	126° 09' E	4	Agriculture
Songli		LGS	34° 25' N	126° 32' E	2	Agriculture
Sooyoung		LGS	35° 09' N	128° 58' E	0	Agriculture
Sowalmi		LGS	37° 29' N	126° 37' E		Industry
Sowon		RLL	36° 48' N	126° 10' E	2	Agriculture
Sugnum		LGS	36° 59' N	126° 38' E		Agriculture
Suknam		LGS	37° 30' N	126° 37' E	2	Industry

Suncheon		LGS	34° 55' N	127° 30' E	1	Agriculture
Walmi		LGS	37° 29' N	126° 37' E		Industry
Wando		LGS	34° 19' N	126° 42' E	1	Agriculture
Weoam I		LGS	35° 08' N	128° 55' E	0	Agriculture
Weoam II		LGS	35° 07' N	128° 55' E	0	Agriculture
Wonpo		LGS	34° 30' N	126° 22' E	1	Agriculture
Woojeong		LGS	37° 06' N	126° 45' E	0	Agriculture
Woungcheon		LGS	36° 11' N	126° 33' E	2	Agriculture
Yeongjong		LGS	37° 26' N	126° 26' E	0	Agriculture
Younghae		LGS	34° 45' N	126° 30' E	2	Agriculture
Total	134,380					

*) RLL = reclaimed low-lying land; LGS = land gained on the sea; DL = drained lake



*) Batavialand/original



Table II. Pictures and slides by Prof. Adriaan Volker on polders in South Korea (continued)



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Table II. Pictures and slides by Prof. Adriaan Volker on polders in South Korea (continued)



A5 095/XI.5.95 Group picture during the International Symposium on Engineering Problems in Creating Coastal Industrial Sites. Prof. J.F. Agema and Prof. Adriaan Volker at the left side, 1974



A5 096/XI.5.96 Prof. Adriaan Volker and Prof. J.F. Agema during a Korean diner at the International Symposium on Engineering Problems in Creating Coastal Industrial Sites, 1974



A5 097/XI.5.97 Prof. Adriaan Volker in discussion with a colleague during the International Symposium on Engineering Problems in Creating Coastal Industrial Sites, 1974



A5 098/XI.5.98 Group picture during the International Symposium on Engineering Problems in Creating Coastal Industrial Sites. Prof. Adriaan Volker just left from the middle and Prof. J.F. Agema at the left, 1974



A5 099/XI.5.99 Prof. Adriaan Volker receives a present during the International Symposium on Engineering Problems in Creating Coastal Industrial Sites, 1974



A5 100/XI.5.100 Prof. Adriaan Volker in discussion during the International Symposium on Engineering Problems in Creating Coastal Industrial Sites, 1974



A5 101/XI.5.101 Prof. Adriaan Volker receives a present during the International Symposium on Engineering Problems in Creating Coastal Industrial Sites, 1974



A5 102/XI.5.102 Prof. Adriaan Volker in in discussion with a colleague during the International Symposium on Engineering Problems in Creating Coastal Industrial Sites,1974



Table II. Pictures and slides by Adriaan Volker on polders in South Korea (continued)





Table II. Pictures and slides by Prof. Adriaan Volker on polders in South Korea (continued)



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Table II. Pictures and slides by Prof. Adriaan Volker on polders in South Korea (continued)













Table II. Pictures and slides by Prof. Adriaan Volker on polders in South Korea (continued)



Table II. Pictures and slides by Prof. Adriaan Volker on polders in South Korea (continued)

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D1 3 036/D.1.3.36	D1 3 037/D.1.3.37	D1 3 038/D.1.3.38	D1 3 039/D.1.3.39
Drain and outlet structure for salt	Salt pans or rice fields in a coastal	Salt pans or rice fields in a coastal	Sea dike under construction
pans or rice fields in a coastal polder	polder	polder	
		the second secon	
D1 3 040/D.1.3.40	D1 4 041/D.1.4.41	D1 4 042/D.1.4.42	D1 4 043/D.1.4.43
Overview of a sea dike under	Bay	Sea dike	Shiplock
D1 4 044/D.1.4.44	D1 4 045/D.1.4.45	D1 4 046/D.1.4.46	D1 4 047/D.1.4.47
Shiplock	Sea dike under construction	Sea dike under construction	Sea dike

D1 4 048/D.1.4.48	D1 4 049/D.1.4.49	D1 4 050/D.1.4.50	
Sea dike	Rice harvest	Lifting device	

Table II. Pictures and slides by Prof. Adriaan Volker on polders in South Korea (continued)





*) Batavialand/original



Table III. Pictures and slides by Prof. Bart Schultz on polders in South Korea (continued)



Table III. Pictures and slides by Prof. Bart Schultz on polders in South Korea (continued)



Table III. Pictures and slides by Prof. Bart Schultz on polders in South Korea (continued)



Table III. Pictures and slides by Prof. Bart Schultz on polders in South Korea



Table III. Pictures and slides b	y Prof. Bart Schultz on	polders in South Korea ((continued)
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Table III. Pictures and slides by Prof. Bart Schultz on polders in South Korea (continued)



Table III. Pictures and slides by	Prof. Bart Schultz on polders in South Korea ((continued)
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Table III. Pictures and slides by Prof. Bart Schultz on polders in South Korea (continued)

Row 4 003/XVIII/4-3	Row 4 004/XVIII/4-4	
Seoul, September 2001	Seoul, September 2001	