

## Articles



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Article

# Reclamation Projects and Development of Agricultural Land in Colonial Korea

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## Introduction

The purpose of this study is to estimate the statistics of colonial reclamation using data from articles from the *Official Gazette* of the Japanese Government-General of Korea and elucidate how reclamation projects were ethnically promoted by business entity and region. This study shows that modern large-scale reclamation projects in the colonial period changed the natural environment of beaches at ebb tide, and that ethnic Koreans also participated in small-scale reclamation projects.

Various goals, for example, sufficient water supply, traffic improvement, and tourism income through the land development of coastal areas have been cited as reasons reclamation was necessary (Lim 1988, 1-2). The primary significance of the reclamation projects in colonial Korea can be found as the solution to Japan's food shortages, ultimately by increasing the supply of food with the expansion of farmlands. Korea, which is geographically close to and strongly influenced by Japan, was responsible for supplying food to Japan. Because Taiwan had both rice and sugar industries, it was able to choose between rice and sugar according to market trends. However, Korea could only plant and harvest rice due to its climate.<sup>1</sup> Therefore, reclamation projects, which significantly expanded farmlands and the degree of land intensification, gained attention in the early days of the colonial rule.

Another key function of the reclamation projects in colonial Korea was that they represented a way to facilitate the immigration process from Japan to Korea. Agricultural immigration of Japanese farmers to farmlands pushed existing Korean farmers from their land, causing social tensions. However, over the long term, Japanese immigrants, contrary to their earlier intentions, moved away from rural areas, engaged in lending and commerce, and became absentee landowners who entered into contracts with Koreans as tenant farmers. In this regard, the reclamation projects were very important in that they faithfully guaranteed Japanese immigrant farming without causing confrontation with existing Korean farmers (Fujii 1924).

In this respect, the colonial rule of the Japanese Empire may be said to

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1. It can be pointed out that Taiwan's agricultural policy in 1920 was relatively high in "freedom," while the agricultural policy in Korea was mainly focused on the increase of rice and its export to Japan (Yamamoto 1992, 137).

have benefited colonial development on an economic level (Matsumoto 1992). The development, in turn, had institutional aspects, such as the denial of the existing order and the establishment of a new market economy, along with the quantitative aspects of economic growth and per capita GNP increase. The development was a process in which the improvement of the welfare of the locals was not primarily made but the interests of the mother country were carried out. Huh (2011) argued for “development without development” for locals with colonial modernization writers such as Kim Nak-nyeon and Cha Myung-soo (Kim 2006; Huh 2011, 2014; Rhee 2012a, 2012b; Woo 2015; Park 2015; Cha and Hwang 2015). Nevertheless, the colonial rule of the Japanese Empire brought about an irreversible change in colonial Korea.

The reclamation projects brought about environmental change to the land and secured farmland, which became the basis for food production. In addition, the ethnic Koreans actively participated in reclamation projects of government-owned land as a business opportunity. The creation of such opportunities cannot be explained only through the lens of invasion and colonization. An ethnic disparity should be pointed out; the reclamation projects were an opportunity for ethnic Koreans to become businesspeople in the agricultural sector who overcame the difficulties of long-term investment of fixed capital and of construction. The process of modernization in colonial Korea meant colonial modernization propelled by the Japanese Empire.

Despite their significance, the reclamation projects in the colonial period have not received much attention in previous studies. While Park and Oh (2004) explained the development process, technology, and utilization of reclamation projects in the Joseon Dynasty period, it is still difficult to grasp the scale of the reclamation projects as a whole. Yang (2010) introduced some cases confined to the late Joseon Dynasty and recognized that the reclamation technology from the 17<sup>th</sup> century to the 1960s was continuous in terms of the use of human labor. However, she ignored the fact that modern design technology, such as civil engineering works using bogies and rails, was introduced in the colonial period and local constructors did not conscript workers as overlords but rather paid them as employers for the reclamation projects.

Even though Park (1989) examined the ethnic distribution of the reclamation projects in the colonial period using the *Chosen Land Improvement Booklet* (1940), he could not fully elucidate the situation of the reclamation

projects before the 1920s and after the end of the Chosen Rice Production Increase Plan (CRPIP).<sup>2</sup> From a geographical point of view, Namgung (1991) examined the evolution of residents' settlements in reclamation areas through surveys of the Mangyeong River and Dongjin River. In addition, Oh (2009), Koh (2009), and Huh (2011) introduced the colonial reclamation projects based on Lim's (1995) research achievements.<sup>3</sup>

## **Tidelands of Korean the Peninsula and the Administrative System of Reclamation Projects**

Reclamation projects aimed to build dikes, block tide, exclude internal water, and obtain farmland for various purposes on tidal flats formed by factors such as materials supplied from the upstream, tidal tributaries, indented shorelines, waves, and geological structures. Even though the progress of reclamation projects was directly influenced by the accumulation of land capital, the degree of technological development, and socioeconomic demand, it was basically defined by how much tideland existed.<sup>4</sup>

The west and south coasts of the Korean peninsula have estuaries rich in sediments supplied by the many rivers. The coastline is also a complicated ria coast that has a winding outline and many islands. In addition, the tidal ranges can reach global levels, with the peak in Incheon. Korean tidal ranges that have a direct relationship with tideland development are listed in Table 1 (Tochi kairyōbu 1929).

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2. The CRPIP was an agricultural policy carried out from 1920 to 1934 to increase rice production in colonial Korea and rice export from Korea to Japan in order to address the food shortage and increase in rice prices in Japan.

3. As can be inferred from Matsumoto and Chung (2017) on the development and overflow of the Mangyeong River, the promotion of the reclamation projects may bring environmental changes to the terrain of the area. However, regarding this, another analysis is required because of length limitations.

4. Tidal flats refer to coastal sedimentary terrains where seawater enters during high tide and exits during low tide. In the academic sense, a tidal flat is the area between the highest tide, that is, the coastline, and the lowest tide (Geonseolbu 1979, 101).

**Table 1. Tidal Range in Korean Peninsula (Unit: meter)**

Geographical Location	High Tidal Range	Low Tidal Range
Dasa Island, Pyeonganbuk-do	7.0	4.9
Seok Island, Hwanghae-do	5.5	3.7
Daechong Island, Hwanghae-do	3.9	2.5
Jumun Island, Gyeonggi-do	8.7	6.1
Jemulpo, Gyeonggi-do	9.5	6.5
Sajangpo, Chungcheongnam-do	7.4	5.2
Gunsan Port, Jeollabuk-do	7.6	5.3
Mokpo, Jeollanam-do	4.4	3.0
Yeosu, Jeollanam-do	3.6	2.3
Jinhae Bay, Gyeongsangnam-do	2.3	1.4
Busan Port, Gyeongsangnam-do	1.3	0.9
Yeong-il Bay, Gyeongsangbuk-do	0.2	0.2
Wonsan Port, Hamgyeongnam-do	0.5	0.4

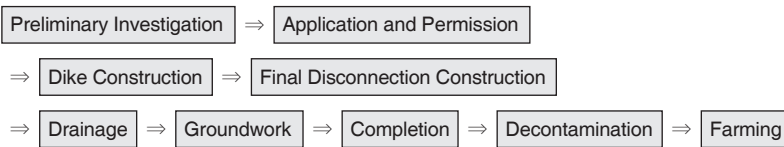
Source: Yamaguchi 1910, 101-04

The average tidal range of the east coast is small, whereas those of the west and south coasts are significantly larger. Among Korean cities, Incheon has the largest tidal range, which is about 9.5 m. The tidal range gradually decreases from the peak of Incheon in the northern area towards the center of the city, but the tidal range increases toward the Pyeonganbuk-do area. The tidal range of the southern area of Incheon also gradually decreases closer to the southern part of Korean peninsula. In the south coast, the Jeollanam-do coastal area has a large tidal range, and the tidal range decreases toward the Gyeongsangnam-do coast. The tidelands are distributed according to these differences in tidal range.

Tidelands, which have economic significance, naturally change with the situation of the times, and this situation is determined by capital and technological development (Nongeochoon jinheung gongsa 1979, 4). As technology advanced, reclamation projects moved from shallow water to deeper water. Therefore, the reclamation methods progressed from surrounding the sea exposed at low tide with a seawall to obtain farmland to blocking an estuary or an entrance of a bay, including the part of the sea not exposed at low tide, to construct a freshwater lake, build an internal waterproof dike, and develop

tideland with natural or mechanical drainage. In the economic sense, tidelands can be defined more broadly.

The bedrock of the west and south coasts is composed mostly of granite, granite gneiss, and crystalline gneiss (Geonseolbu 1979, 101). These rocks are usually covered with a thick weathered layer, and they protrude from the sea in various places, forming marine cliffs and wave-cut platforms. The soil of the tideland is composed mainly of fine sand, silt, and clay, which are rich in organic matter, as diluvial and alluvial soil carried by rivers and seawater are deposited there. The tideland from Gyeonggi-do to Jeollanam-do can be classified as clayey tideland because it has a lot of clay soil, whereas the tideland north of Hwanghae-do is known as sandy tideland because it has a lot of sand soil (Tochi kairyōbu 1929, 101).<sup>5</sup> Approximately 1 million ha of tidelands on the Korean peninsula cover 5% of the nation's land area (Ban 1977, 235).



**Figure 1.** Reclamation Project Process

The reclamation projects during the colonial period were carried out based on the National Uncultivated Land Utilization Law (1907) from September 1907 to July 1924 and the Chosen Public Waters Reclamation Act (1923) since August 1924. First, those who wished to participate in reclamation projects needed to submit a series of documents and drawings, including the application form to the Governor-General.<sup>6</sup> Next, the Governor-General decided whether or not to grant a reclamation license through an appropriate examination, and give the license to the applicant if approved.

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5. Tidal flats can be categorized into sandy tideland, clayey tideland, and mixed tideland according to their main constituents, such as fine sand, silt, and clay (Park 1977, 11).

6. Refer to Article 4 of the National Uncultivated Land Utilization Law (July 1907, Law No. 4); Articles 9, 10, 11, and 12 of the enforcement regulation for the National Uncultivated Land Utilization Law (December 1911, Government of the Governor-General Ordinance No. 81); Article 2 of the Chosen Public Waters Reclamation Act (April 1921, Law No. 57); and Article 1 (2) of the enforcement regulation for the Chosen Public Waters Reclamation Act (June 1924, Government of the Governor-General Ordinance No. 36).



When the applicant obtained a reclamation license, he or she became a licensee and paid the license fee to the Governor-General and addressed the difficulties presented by the circumstances to help ensure the success of the project within the term of the license. The most important construction step in a reclamation project was the construction of a seawall, which required a lot of sand, stone, and concrete. The critical moment of the embankment construction was the final disconnection or terminal blocking, during which the speed of the tidal current was so fast because of the difference between the inside and outside water levels, which could cause the loss of the seawall. Normally, the workforce and equipment were intensively mobilized to complete seawall construction during the low tidal season each year (Kang 1993, 190). It usually took two to three years to build such a seawall in the colonial period (Tochi kairyōbu 1929, 36).

**Table 2. Soil Nitrogen Content (Unit: millionth in a cubic centimeter of dry fine soil)**

Soil	Nitrogen	Percentage
Rice Paddy	600	38
Uncultivated Land	465	30
Subsoil	273	18
Ordinary Rice Paddy	1569	100

Source: Mitsu 1944, 54

After the ground construction was completed and the land category was identified, the reclamation licensee needed to fill out an application form for completion and submit it to the Governor-General with a completion report, ground plans of the actual survey, and mensuration. When the completion was authorized, the ownership of the reclaimed land was confirmed.<sup>7</sup> Reclamation projects were one of the most labor-intensive forms of capital-to-land conversion

7. Refer to Article 3 of the National Uncultivated Land Utilization Law (July 1907, Law No. 4); Article 23 of the enforcement regulation for the National Uncultivated Land Utilization Law (December 1911, Government of the Governor-General Ordinance No. 81); Articles 22 and 24 of the Chosen Public Waters Reclamation Act (April 1921, Law No. 57); and Article 27 of the enforcement regulation for the Chosen Public Waters Reclamation Act (June 1924, Government of the Governor-General Ordinance No. 36).

because they first required building a seawall, breaking off the tide, excluding internal water, and in the case of farmlands, establishing various irrigation facilities. It required a long term of 7-8 to 10 years to complete decontamination work, crop harvests, and capital withdrawal after beginning the construction. In the case of rice farming, direct planting was carried out until the second year after crops were harvested because direct planting was better when the farmland contained salt, and the transplantation of rice seedlings was carried out from the third year after desalting. The nitrogen level in tideland soil was very low, only 38% of that in normal rice paddy soil. For this reason, nitrogen fertilizer like ammonium nitrate was considered ideal (Nongjigwanliguk 1958, 23-24). Due to fertilization, the soil of reclaimed land contained more nitrogen than that of uncultivated land.

### **Advantages of Reclamation Projects in Colonial Korea**

Reclamation projects were considered a means of helping settle both agricultural immigrants from Japan and independent farmers in Korea. If the state transferred unemployed rural people to reclaimed land acquired through reclamation and sold arable land under 25-year installment payment contracts, an immigrant could become an independent farmer on the condition that the state would subsidize 50% of the net construction cost. This effort produced benefits, such as unemployment relief, land expansion, food increase, and equitable land distribution (Matsumura 1929, 3).

Fujii (1924, 19-20), who was called “King of Irrigation in Korea” at that time, said, “It is no surprise that land reclamation in Korea is the most important thing for the industrial development and the rule of the Japanese Government-General of Korea. In other words, for the sake of true harmony between ethnic Japanese and ethnic Koreans and the Japanization of ethnic Koreans, at least millions of ethnic Japanese should immigrate and ethnic Koreans must be sent to Japan inland and the distinction between Japan inland and Korea should be eliminated.” This Japanese immigration had many side effects, the most serious of which was driving out Korean farmers from their means of production, that is, the land.

Fujii continued to point out: “In addition to receiving the antipathy consciously, even though the Japanese immigrant worked hard at first, he later

accustomed himself to Korean customs; he stood on the ridges between rice paddies only to supervise farming and took a strong dislike to carrying the manure himself, as he was the landowner. As a result, the real immigration business fell into a dead end. It is an urgent issue for me to concentrate my efforts on the reclamation of uncultivated land as much as possible as a method of immigration to Korea, which is a serious problem in national policy.” Reclamation was emphasized as a precondition for the promotion of large-scale Japanese immigration. Though Fujii (1924) himself promoted the reclamation projects as a means of Japanese immigration, the scale of immigration was limited.

In terms of individual capitalists and businessmen, these reclamation projects were practically not carried out at the national level but through the calculation of business profit and opportunity cost.

As for a person who actually inspected the reclamation of tidal land, construction expense per *tanbu* (approximately one-tenth ha) is 50 yen ...Farmlands were fertile soil...Harvest from successfully reclaimed land usually amounted to 4 *koku* (180.39 l) of unhulled rice per *tanbu*. It was not surprising that the harvest of 5-6 *koku* of unhulled rice per *tanbu* from previously successfully reclaimed land was also considerable...Whereas the price of 1 *tanbu* of paddy was over 400 yen in Japan inland and especially the price of a good paddy was over 1,000 yen because of many purchase applicants, it is obviously possible to purchase the best paddy for 140 yen in today's Korea. However, it was hard to buy more than a dozen *chobu* (approximately 1 ha), and it was never an easy business to manage scattered farmlands. And the average harvest from a mature paddy was...2 *koku* per *tanbu*, even from hundreds of *chobu* of farmlands...The farming of a mature paddy yielded profit at the moment of the purchase, but the reclamation of tidal land could not earn a full income for 5 years. (Yamane 1918, 14-15)

Although the above article by Yamane was written in 1918 and therefore, it would have been impossible to determine reclamation project costs during the entire colonial period, it shows the reason many people were involved in the reclamation projects despite the risks of long-term fixed capital investment and business failure. The ratio of the market value of the best paddy in Korea to that of a mature paddy in Japan per *tanbu* was only 35%, and the ratio of

the market value of the reclamation project cost to that of a mature paddy in Japan was about 10%. Therefore, it was much more advantageous to carry out a reclamation project in Korea than to invest capital in Japan inland. In addition, because the reclaimed land contained a large amount of organic matter,<sup>8</sup> if proper decontamination and fertilization were carried out, it was usually possible to harvest 4 *koku* of unhulled rice per *tanbu*.<sup>9</sup> Therefore, reclamation projects had a relative advantage in terms of cost and harvest.<sup>10</sup>

The Japanese Government-General of Korea, in contrast to the Government of Japan, referred to the advantages of the reclamation projects due to the natural characteristics of Korea as follows (Tochi kairyō-bu 1928, 73-74). First, the seawall length of the Korean reclamation project was shorter than that of the Japanese reclamation project because the tidal flats in Korea had a lot of indentation. A seawall of about 21 meters was needed for the reclamation of an area of 1 *chobu* in Japan, but a seawall of six meters was enough in the case of Korea. Second, tidal flats in Korea were higher, and storm invasion was less severe than that in Japan, so the seawall was low and the structure was relatively simple.<sup>11</sup> Third, owing to the above two reasons, it was enough to pay about 43 yen per *chobu* in Korea, compared to 210 yen in Japan inland.<sup>12</sup> Fourth, reclamation in Korea was relatively convenient for business management under the support of the Japanese Government-General of Korea. Fifth, as 44% of farm households in Korea were purely tenant farmers, it was easy to secure farmers.

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8. For this, refer to Matsuyama 1918, 43.

9. In the case of a good harvest, it will be about 30% of that of a mature paddy (4-5 *koku* of unhulled rice) in the first year, 60% in the second year, 80% in the third year, and 100% in the fourth year. In the case of a normal harvest that is not better than a good harvest, it will be 20% of that of a mature paddy (3-4 *koku* of unhulled rice) in the first year, 40% in the second year, 60% in the third year, 80% in the fourth year, and 100% in the fifth year (Tochi kairyōbu 1928, 73).

10. This method of explanation seems to look at the situation optimistically. Because colonial Korea's position in the Japanese Empire had always been that of an agricultural country, even if colonial industrialization was promoted by the Government of the Governor-General, optimism about the reclamation projects should have been emphasized generally in the academic and journalistic fields.

11. A typical characteristic of a Korean tideland was a base shaped like a very soft wave-cut terrace (Park 1975, 7).

12. According to other data, the construction cost of a seawall in Korea was about one-tenth of that in Japan, because there were many cases where 30 yen per *tanbu* to build a seawall was enough, while 300 yen was needed for the same in Japan (Syokusankyoku 1922, 30).

**Table 3. Seawall Extension and Construction Costs in Korea and Japan**  
(Unit: chobu, m, yen)

Licensee	Cultivating Area	Seawall Length	Seawall Construction Cost	Construction Cost*	Seawall Length*
Sakae Reclamation Work, Yatsushiro County, Kumamoto Prefecture	1,020	16,165	1,919,995	188	16
Ryusei Village Arable Land Readjustment Association, Kishima County, Saga Prefecture	13	1,333	84,071	609	103
Taiho Village Arable Land Readjustment Association, Saga Prefecture	99	4,305	330,660	435	43
Gyuya Village Arable Land Readjustment Association, Saga Prefecture	57	3,596	162,147	284	63
Subtotal (Japan)	1,189	25,400	2,496,873	210	21
Estate Company, Young-am County, Jeollanam-do	653	1,609	204,372	31.30	2
Hori Farm, Younggwang County, Jeollanam-do	300	2,284	216,901	72.30	7
Fuji Farm, Okku County, Jeollanam-do	1,800	13,327	732,729	40.71	7
Tada Farm, Chungcheongnam-do	61	485	59,752	97.95	8
Subtotal (Korea)	2,814	17,705	1,213,754	43	6

Source: Ayata 1922, 351

Note: Construction cost\* is the seawall construction cost per *tanbu*, and seawall length\* is the seawall length per *chobu*.

## Historical Trends of Reclamation Projects and Reclamation Decision Factor Analysis

The statistical tables presented in this paper are based on “the disposal of national uncultivated land” and “the disposal of the public water reclamation for agricultural purposes” that appeared in the *Official Gazette* in the Korean Empire period and the Japanese colonial period. The terms used in this paper are “license,” “completion,” “transfer,” “extinguishment,” and “recovery.” “License” means permission for a reclamation application, while “completion” indicates permission of a licensee of reclamation to complete the project after the successful establishment of the project. “Transfer” refers to both an

inheritance and handling of a reclamation right, while “extinguishment” means a loss, return to the government, and cancellation of a reclamation right. Finally, “recovery” refers to the revival of a reclamation right that has lost its legal effect from exceeding the license date. The data from the *Official Gazette* include information such as land address, land area, original land category, license land category, name and address of licensee, the person who attained the completion of project, transferor, transferee, and number of participants. The data give more detailed information than any other type of data about the reclamation project.

These statistics may be questionable in terms of the accuracy or reliability of the numerical values, in that they were related to the number of reclamation subprojects indicated in the *Official Gazette*. This information can be compared with other available data. There are some official statistics on colonial reclamation projects, but they do not cover the whole reclamation period. Among them, the “survey on public water disposal for agriculture” of the *Chosen Land Improvement Booklet* (1941) shows the trend up to 1941. These statistics cover 65% of reclamation licenses, 99% of completion districts, 106% of completion rice paddies, and 47% of extinguishments. The completion area is almost the same between the data from the *Official Gazette* and the *Chosen Land Improvement Booklet*, but the license and extinguishment data are very different. This result was largely because a reclamation subproject with an area of more than 3 *chobu* was considered significant under the jurisdiction of the Japanese Government-General of Korea, and a subproject with an area of less than 3 *chobu* was considered significant under the jurisdiction of an individual province. Reclamation projects with an area of less than 3 *chobu* were unlikely to succeed. Nevertheless, these statistics suggest a variety of information by ethnic group, business entity, and region.

Applications for a license, which indicated a desire to invest in a reclamation project, seemed robust from the start and grew significantly with the rapid increases in rice prices and land value from the late 1910s to the 1920s. Since then, even though the number of license applications slightly reduced compared to the previous period, the number of license applications achieved a stable state later, until finally, it sharply declined with the closure of the CRPIP in 1934. Licenses somewhat increased from 1936 and extremely regressed when wartime controlled the economy after the outbreak of the Pacific War. The gross number and area of reclamation licenses under the disposal of the Governor-General of Korea were 1,438 cases and 201,318

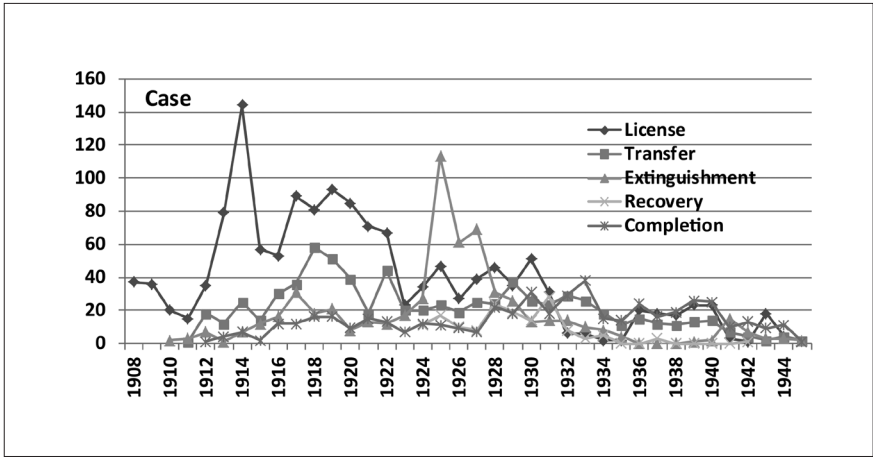


Figure 2. License, Transfer, Extinguishment, Recovery, and Completion of Reclamation (Unit: number of projects)

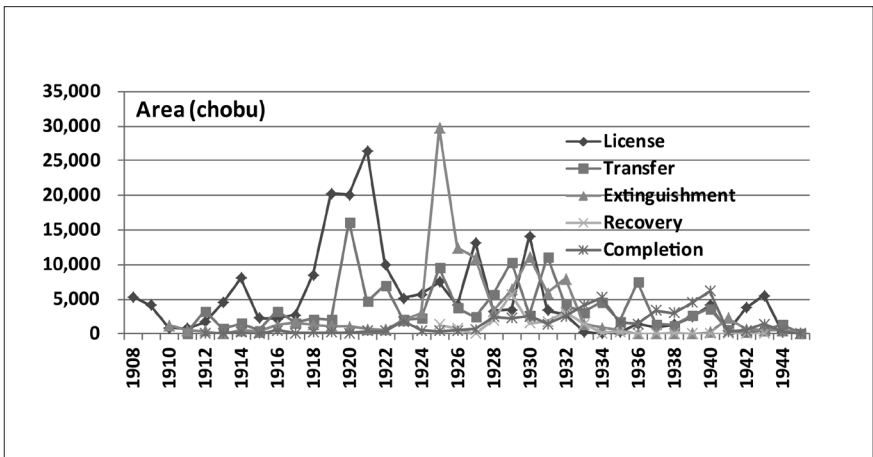


Figure 3. License, Transfer, Extinguishment, Recovery, and Completion of Reclamation (Unit: *chobu* of projects)

*chobu*, respectively (Jeollanam-do: 330 cases, 45,036.46 *chobu*; Hwanghae-do: 176 cases, 43,507.1 *chobu*; Chungcheongnam-do: 326 cases, 37,859.12 *chobu*; Gyeonggi-do: 217 cases, 21,212.92 *chobu*; Jeollabuk-do: 70 cases, 19,416.45 *chobu*; Pyeongannam-do: 86 cases, 14,175.48 *chobu*; Pyeonganbuk-do: 124 cases, 13,052.13 *chobu*), during the entire colonial period. Reclamation rights were licensed mostly on the west coast, such as in Jeollanam-do, Hwanghae-do, Chungcheongnam-do, Jeollabuk-do, Pyeongannam-do, and Pyeonganbuk-

do. The average area per case was 140 *chobu*, which was considered a large-scale project. Based on this average area, the ratios of the individual provinces were 198 for Jeollabuk-do, 168 for Gyeongsangbuk-do, 176 for Hwanghae-do, and 118 for Pyeongannam-do respectively. The reclamation scale of these areas was relatively large.

There was no guarantee that a licensee would succeed in a project because a reclamation project generally required a minimum of 7 to 10 years for an incubation period between the initial investment and the first harvest from the reclaimed farmland. Therefore, reclaimed land rights were constantly transferred during the reclamation period. The total number of transfers was 731, and the total area was 126,178.9 *chobu*, which accounted for about 51% and about 63% of the licenses, respectively. As can be seen from the ratio of the area, which was about 10% larger, the average area per case was 172.61 *chobu*; in turn, this area was 30 *chobu* larger compared to the average area of licensed projects. Transfers occurred mostly in large-scale projects than in small-scale projects and most actively in Jeollanam-do, Chungcheongnam-do, Gyeonggi-do, Hwanghae-do, and Pyonganbuk-do, which corresponded to the license. Jeollbuk-do was the largest province with an average area of 455.74 *chobu*, followed by Hwanghae-do, Jeollanam-do, Pyeongannam-do, and Pyonganbuk-do. In addition, extinguished reclamation rights, which meant failure of a project, represented 591 cases and an area of 110,384.7 *chobu*, which accounted for 41.1% and 54.97% of licenses, respectively. It was also possible to recover a previously extinguished reclamation right; such recoveries of rights represented 151 cases and an area of 18,108.29 *chobu*.

The successful completion of a reclamation project was authorized by the Japanese Government-General of Korea. Even though the completion area did not increase significantly from the second half of the 1910s to the first half of the 1920s, the number of such cases steadily increased. This outcome was a result of the small size of completed projects during the reclamation period. Since the mid-1920s, particularly 1928, reclamation projects made great achievements. Wages and material prices plummeted, resulting in cost reduction during the Great Depression. Regardless of the brief stagnation in 1935, shortly after the end of the CRPIP, which guaranteed up to 50% in government subsidies for major reclamation construction costs, this trend continued until 1940.<sup>13</sup> However, reclamation projects rapidly recessed because of the material and labor shortages in the controlled economy during the Pacific War, which



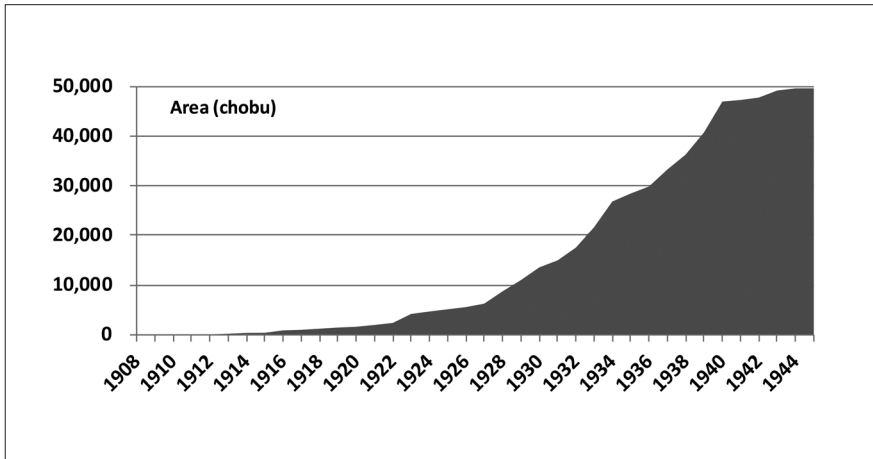


Figure 4. Cumulative Area of Reclamation Completion in Colonial Korea

began in 1941.

Completed projects represented 492 cases and an area of 49,596.1 *chobu* during the colonial period. This is equivalent to about 34% of the total cases and about 25% of the total reclamation licenses, excluding a few projects that were continued at the time of liberation from Japanese rule. Although some reclamation projects were under construction at the time of liberation, only 30% of the licensees succeeded. The average area per completed project was 100.8 *chobu*, which was reduced by 40 *chobu* compared to the total number of licenses. By province, Jeollanam-do had the largest production with 129 cases and an area of 14,786.3 *chobu*, followed by Hwanghae-do with 53 cases and an area of 7,977.2 *chobu*, Jeollabuk-do with 33 cases and an area of 7,232.2 *chobu*, and Pyonganbuk-do with 48 cases and an area of 6,686.0 *chobu*. It is worthwhile to note that the reclamation area in Chungcheongnam-do was only 4,637.5 *chobu* in spite of the province's 93 cases, while the reclamation area in Jeollabuk-do amounted to 7,232.2 *chobu* in spite of the province's 33 cases. This outcome shows the difference in project scale between provinces.

13. 75,000 *chobu* was planned for reclamation projects, of which 33,050 *chobu* was for marine reclamation, in the renewed Chosen Rice Production Increase Plan. The proportion of reclamation was only 21% of the total project area, but it accounts for 35% of the construction cost. In other words, a subsidy rate (30%, later 50% of construction cost) higher than other projects was applied to increase food production, because the construction cost of the reclamation projects was higher than that of irrigation projects and field changes (Chōsen sōtokufu 1928).

**Table 4. Analysis of Table Reclamation Project Decision Factors  
(OLS White heteroskedasticity-consistent standard errors & covariance)**

$$\ln(\text{permission or completion}) = c + \ln(\text{riceprice}) \text{ or } \ln(\text{landprice}) + \text{interest rate} + \text{policy dummy}$$

		License Model		Completion Model	
		①	②	①	②
Constant Term	coefficient	-2.415	-6.876	12.620	13.705*****
	t-value	-0.670	-1.168	5.563	4.484
Rice Price	coefficient	2.037**		-0.637	
	t-value	2.593		-1.097	
Paddy Land Price	coefficient		2.093**		-0.517
	t-value		2.450		-1.010
Interest Rate	coefficient	0.329**	0.467**	-0.455***	-0.523***
	t-value	2.729	2.468	-5.360	-5.335
Policy Dummy	coefficient	0.022	0.001	1.746***	1.680***
	t-value	0.037	-0.001	4.803	4.721
R-squared		0.334	0.292	0.564	0.603
Observation		35	34	33	32

Note: 1. \* significant in 10%, \*\* significant in 5%, \*\*\* significant in 1%.  
 2. Policy dummy variable is the dummy variable of CRPIP.

To examine the causes of these reclamation projects, this study performed a regression analysis on the license and completion areas of the reclamation projects, the results of which are shown in Table 4. The explanatory variables were rice price, paddy land price, interest rate, and policy dummy (CRPIP year = 1, not CRPIP year = 0).<sup>14</sup> Since the multicollinearity between rice price and paddy land price is obvious, the respective analysis models are different. The signs of the explanatory variables are expected to be: rice price (+), paddy land price (+), interest rate (-), and policy dummy (+). The results of the regression analysis show that in the case of the license model, rice price, land price, and

14. The rice price is the price of 180 liters of Seoul wholesale rice that can be observed over a long period of time (Hankuk eunhaeng 1968). The price of rice paddies is the national price estimated by reflecting the provincial area weights of 1918, 1922, 1932, and 1942 (Chōsen sōtokufu annual). The interest rate is the general loan rate of Chosen Agricultural Bank and Joseon Development Bank, which was closely linked to agricultural land improvement (Zaimukyoku annual; Joseon eunhaeng josabu 1948, 1949).

interest rate have significant coefficients, but the interest rate shows a positive (+) value rather than a negative (-) one, which suggests that despite a high interest rate, many entities applied for permission to invest in reclamation projects in response to the increase in rice price or paddy land price and consequently, obtained licenses. On the other hand, in the case of the completion model, the regression coefficients of rice price and paddy land prices are not significant, and only interest rate and the policy dummy are statistically significant with the expected signs, that is, interest rate (-) and policy dummy (+). The trends in interest rates and the CRPIP affected the completion of reclamation projects that required fixed capital over at least 7-8 years. On the other hand, trends for rice price and paddy land price did not affect the completion of reclamation projects.

## Reclamation Projects by Entity

**Table 5. Licensing and Completion Situation of Different Entities (Unit: case, *chobu*)**

		License				Completion			
		Case	Area	Average Area	Average Participant	Case	Area	Average Area	Average Participant
Korean	Sub-total	800	47,332.5	59.2		242	12,009.3	49.6	
	Individual	793	45,035.8	56.8	2.6	232	8,754.7	37.7	2.5
	Company	7	2,296.6	328.1		10	3,254.6	325.5	
Japanese	Sub-total	590	149,634.1	253.6					
	Individual	544	123,345.9	226.7	2.0				1.4
	Company	46	26,289.0	571.5					
Korean and Japanese		15	2,395.9	159.7	5.2	2	18.8	9.4	2.0
Government		16	349.0	21.8		10	219.6	22.0	
Agro Forestry Association and Groups etc.		15	1,414.1	94.3		1	1,149.4	1,149.4	
Total	Sub-total	1,436	201,125.8	140.0		491	49,510.2	100.8	
	Individual	1,352	170,777.0	126.3	2.4	430	26,089.1	60.7	2.0
	Company	53	28,585.5	539.4		50	22,052.0	441.0	

Table 5 shows the license situation by ethnic group and business entity. First, the project cases promoted by ethnic Koreans numbered 800, which outnumbered the 590 cases promoted by ethnic Japanese. This indicates the ethnic Koreans' strong intentions to participate in reclamation projects. However, in terms of area, that of the Koreans' projects (only 47,332.5 *chobu*, or 23.5% of the total area) lagged behind that of the Japanese's projects (149,634.1 *chobu*, or 74.4% of the total area) because the average area per case for the Koreans (only 59.2 *chobu*) was less than that for the Japanese (253.6 *chobu*), representing a ratio of 1:4.3.

In terms of scale, the 590 cases promoted by the Japanese consisted of 259 cases (43.9%) of small- or medium-scale projects with an area of less than 50 *chobu* and 331 cases (56.1%) of large-scale projects with an area of more than 50 *chobu*, 210 cases (35.6%) of which were larger than 100 *chobu*. In contrast, the 800 cases promoted by the Koreans consisted of 608 cases (76%) of small- or medium-scale projects and 192 cases (24%) of large-scale projects, 83 cases (10.38%) of which were larger than 100 *chobu*. Compared to the 76% of small and medium reclamation projects by the Koreans, 56.1% of the projects by the Japanese had an area of more than 50 *chobu*, which shows the relatively small scale of the Korean projects. This aspect can also be confirmed in reclamation rights with an area of more than 500 *chobu*, including 12 for the Koreans and 76 for the Japanese. This phenomenon was caused by the gap in terms of capital and technology. Table 5 shows that the average participant in the reclamation projects was an individual, not a company. The average number of participants in a Korean project was 2.64 persons, higher than the average of 2 persons per Japanese project. This outcome was because as ethnic Koreans were relatively inefficient in mobilizing the funds and technology needed to promote a project, they needed more participants to address the problem and avoid business failure.

The scale distribution of reclamation projects of individuals and companies shows that the latter were superior to the former in reclamation projects, because out of the 53 projects promoted by companies, there were no small-scale projects with an area of less than 10 *chobu*, and there were 12 medium-scale projects with an area of more than 10 *chobu* and less than 50 *chobu* and 41 large-scale projects with an area of more than 50 *chobu*. It is not possible to directly compare cases or areas of reclamation projects between individuals and companies, but there was a big difference in average area per case between

individuals (126.3 *chobu*) and companies (542.2 *chobu*). In other words, as in the case of Koreans and Japanese, a company, which was considered to have sufficient fund mobilization capability and technological capability in design, construction, and farming, was inevitably larger. In addition, a similar trend can be confirmed in the reclamation projects of agro-forestry associations and groups and other entities.

Transfers of reclamation rights, which followed almost the same trend as licenses over time, had 378 cases (51.7%) of small- or medium-scale projects with an area of less than 50 *chobu* and 353 cases (48.3 %) of large-scale projects with an area of more than 50 *chobu*, 193 cases (26.4%) of which had an area of more than 100 *chobu*. Comparing the number of licenses, the transfer of reclamation rights occurred mostly in large-scale projects. There were 558 transfer cases within the same ethnic groups, and a majority of the transfer cases (651 cases) were between individuals. Transfer cases from Koreans and other ethnic groups to Japanese numbered 106, while those from Japanese and other ethnic groups to Koreans numbered 56. In addition, transfer cases from individuals to companies reached 59, more than 10 from companies to individuals. These results mean that the transfer of reclamation rights from Koreans and other ethnic groups to Japanese and companies, which had relatively plentiful capital and technology, was more noticeable than in the opposite direction.

On the other hand, according to the completion situation by ethnic group, 242 cases for ethnic Koreans had a total area of 12,009.3 *chobu*, while 236 cases for ethnic Japanese had a total area of 36,113.2 *chobu*. First, it can be pointed out that while the two ethnic groups had a similar number of cases, the project scale for the Korean cases was much smaller than that for the Japanese. This result can be confirmed by the average area per individual and company of each ethnic group. As in the case of licenses, the number of individuals participating in a project also indicates that Korean cases involved 1.07 persons more than Japanese cases to address capital limitations. In addition, even though individual and company cases numbered 430 and 50, respectively, the total area for companies was 4,000 *chobu* more than that for individuals. This result shows how important the ability to mobilize capital was. Comparing the completions with the licenses in terms of each proportion by ethnic group and business entity, the proportion of the cases of Koreans became smaller, but that of the area slightly became larger. This outcome was because the proportion of

the completed area of the Korean companies, which showed relatively better performance, complemented that of individual Koreans, which was relatively low.

The Japanese cases showed more dramatic differences. The proportion of the total number of cases of completed Japanese projects was 48.1%, slightly larger than that of the licensed Japanese projects (41.1%), while the proportion of the total area of completed Japanese projects was 72.9%, lower than that of the licensed Japanese projects (74.3%). Even though the cases for both Japanese individuals and companies became larger, the areas of the cases for Japanese individuals and companies show contrasting differences. The share of individuals became smaller from 61.3% to 35.0%, while that of companies became larger from 13.1% to 38.0%. Similar differences occurred in the cases for Koreans, albeit they were not as significant. As for the differences in the proportion for individuals and companies, individuals became smaller from 84.9% to 52.7% and companies became larger from 14.3% to 44.5%. These results indicate that the difference in average area per case between individuals and companies (especially, between Japanese individuals and companies) became larger at the time of project completion rather than at the time of gaining a license because of differences in capital, management, and construction supervision.

In terms of completion by ethnic group from the viewpoint of scale, the results show 186 cases for Koreans that had an area of less than 50 *chobu*, 56 cases with an area of more than 50 *chobu* and less than 100 *chobu*, and 18 cases with an area of more than 100 *chobu*; the cases for the Japanese numbered 124, 112, and 66, respectively. While the Koreans usually succeeded in small- and medium-scale reclamation projects, the Japanese usually succeeded in large-scale projects. Companies also had larger-scale projects than individuals. Compared with the number of licensed projects, small-scale reclamation projects were successful overall, with the number of completed projects relatively increasing while those of medium- and large-scale cases of completed projects decreasing across ethnic groups and business entities.

Nevertheless, with regard to the extinguishment, or failure of projects, there were 273 cases for Koreans, with a total area of 16,138.8 *chobu*, and there were 315 cases for the Japanese, with a total area of 92,904.3 *chobu*. The extinguished rates, which are calculated as the number of extinguished rights divided by the number of licenses, were 34% for the cases for Koreans (34% for the cases for Korean individuals, 43% for the cases for Korean companies), and

53% for the cases for the Japanese (52% for the cases for Japanese individuals, and 67% for the cases for Japanese companies). These results, unexpectedly, show that the Korean cases had a lower extinguished rate than the Japanese cases, meaning that the cases for companies had a higher extinguishment rate than the cases for individuals. These results are in contrast with the results for completion. How could the contradiction between the project completed rate and extinguishment rate by ethnic group and business entity be like two sides of the same coin? The contradiction can be explained by transfers and recoveries. The transfers of reclamation rights from a Korean transferor to a Japanese transferee and from an individual transferor to a company transferee were stronger than those in the reverse directions. In terms of recoveries of reclamation rights, most of them were undertaken by Japanese, which indicates that the ethnic group that responded sensitively to the colonial reclamation projects was usually the Japanese, in particular, Japanese agricultural companies. Changes in reclamation rights, such as transfers, destruction, and recoveries, were remarkable in Japanese large-scale reclamation projects, which required long-term investment of fixed capital.

Table 6 shows the new land categories of reclamation projects. Under the permitted land category at the time of obtaining a license, there were 1,342 cases for paddies, with a total area of 191,760.3 *chobu*, which means that rice farming was the primary purpose of the reclamation projects. In addition, there were a few cases where the reclamation license was acquired for the purpose of farming, building housing, and building reservoirs. The final land categories at the time of project completion had a total area of 37,176.5 *chobu*, accounting for 75.0% of the overall total area, and the seawall, which was the core of the construction, had a total area of 10,347.78 *chobu*, accounting for 1.4% of the total area. Reclamation and irrigation facilities, such as seawall, drainage, and reservoir facilities, accounted for 20.9% of the total area with 10,347.78 *chobu*. It is important to note that these data do not include the reclamation projects licensed by provinces. According to the *Chosen Land Improvement Booklet* (1941), the completion area under the jurisdiction of provinces was 6,821 *chobu*, among the total area of 56,417.05 *chobu* until the end of 1941. This area is somewhat underestimated in that it does not include the completion area from 1942 to 1945. Nevertheless, these data show that reclamation projects were promoted actively during the colonial period because the total completion area of reclamation projects from 1946 to 1992 was 55,669.8 *chobu*, which is

**Table 6. Land Category of Reclamation Projects**

	Permitted Land Category at the Time of License		Final Land Category at the Time of Completion	
	Case	Area	Case	Area
Paddy	1,247	162,968	478	37,188
Field	53	6,338	190	637
Field and Paddy	95	35,264		
Forest			21	101
Housing Site	2	14	164	204
Miscellaneous Land	6	914	172	1,123
Fishpond			1	7
Seawall			349	676
Drain			312	3,796
Reservoir			244	4,843
Estate	10	347	21	191
Tidal Pond			24	93
Road			191	361
River			17	387
Nonclassifiable	1	44		
Total	1,414	205,890	2,184	49,607

almost the same area as during Korea’s colonial period. Even if this reclamation area was limited to the southern portion of the Korean peninsula, it includes coastal industrial complexes, residential complexes, and harbor quay facilities, as well as agricultural areas.

**Conclusion**

This study collects data from articles about reclamation projects from the *Official Gazette* of the Japanese Government-General of Korea and estimates long-term statistics to analyze the development of reclamation projects throughout the colonial period. The reclamation projects in colonial Korea reached a total area of more than 56,417.05 *chobu*, stabilized the food supply in the Japanese Empire, and promoted the formation of a colonial landlord-tenant system. In other words, it secured high-quality farmlands, expanded agricultural lands, and



increased the food supply through relatively low-cost construction. The Korean peninsula's natural environment features vast tidal flats on both the west and south coasts, which were favorable for reclamation projects. Unlike other land improvement projects, reclamation projects required considerable skill and long-term fixed capital. Even though the reclamation projects helped facilitate the food supply and stabilized the Japanese immigration business in the empire, its main goals were to increase business revenues when the opportunity cost of the reclamation project was taken into consideration.

The number of licenses for reclamation rights increased rapidly from the late 1910s to the early 1920s with increases in rice and farmland prices. On the other hand, the authorization of completion, which signified the success of a reclamation project, tended to increase significantly from the late 1920s to the early 1930s. Not only did the annual completion area increase, but so did the average scale of the projects, exceeding 100 *chobu*, because this period corresponded to the period of the CRPIP, which provided government subsidies of a maximum of 50% of major construction costs. In particular, the Great Depression brought about both cost savings and the negative effects of the collapse of rice prices. The progress of these reclamation projects also became impossible because of the shortage of materials and labor force in the 1940s.

Looking at the trends of the reclamation projects by ethnic group, there were almost the same number of subproject cases for Koreans as for the Japanese, but the project cases of Koreans had a much smaller scale than those of the Japanese. The Korean cases were inferior to the Japanese ones in terms of funding and technology, and to overcome these problems, Koreans increased the number of participants in each project. Nevertheless, the Koreans' reclamation subprojects had a significant average area of about 50 *chobu*. Reclamation projects of Koreans began to increase gradually from the beginning, reaching the level of the Japanese reclamation projects in the late 1930s. Moreover, in terms of business entity, that is individuals versus agricultural companies, the number of projects promoted by individuals was overwhelmingly more than that by companies, but the area of individuals' projects was only slightly more than that of companies' projects. This result shows that agricultural companies were superior to individuals in fund mobilization and civil engineering.

As was shown in the discussions in this paper, reclamation projects in the colonial period were larger than reclamation projects in the Joseon Dynasty period, and civil engineering methods, which used modern design

technology, such as bogies and rails, were introduced in the colonial period. In addition, administrative procedures by the government-general and provincial governments were specified and the institutional arrangements for reclamation projects were improved by providing long-term and low-interest loans and subsidies according to the CRPIP. However, as can be seen from the scale of reclamation projects, this ethnic disparity could not be solved during the colonial rule, although many ethnic Korean entrepreneurs and companies participated. These reclaimed lands became the subject of agricultural land reform as the basis of food production after liberation.

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## Abstract

The purpose of this study is to collect data from articles on reclamation projects from the *Official Gazette* of the Japanese Government-General of Korea to estimate long-term statistics and to analyze the development of reclamation projects and business entities during Korea's colonial period. With regard to the natural environment of the Korean peninsula, tidal flats favorable for reclamation projects are spread on both the west and south coasts. Unlike other land improvement projects, reclamation projects require substantial technology and long-term fixed capital investment. Issuance of reclamation licenses increased rapidly in the late 1910s and early 1920s due to the increase in rice and farmland prices. On the other hand, reclamation completion, which signifies the success of a reclamation project, increased greatly from the latter half of the 1920s to the early 1930s. Not only did the annual completion area increase, but so did the average scale of a project, reaching an average of more than 100 ha per project. The agricultural area developed by reclamation projects in colonial Korea reached a total of about 56,000 ha, supporting a stable food supply within the Japanese Empire and the formation of a colonial landlord system. In other words, quality agricultural land was developed through relatively low-cost projects, and the additional rice produced by this expansion of agricultural land was exported to Japan. Even though the goal of the reclamation projects was to distribute food within the Japanese Empire and stabilize Japanese immigration, it was more about increasing business profit given the opportunity cost of the reclamation projects in the Japanese Empire.

**Keywords:** reclamation, rice production, agricultural land, colonial Korea, Japanese Government-General of Korea

