

Chapter 11

Rural Development, Water Resource Management, and Silver Revolution

A Vicious Cycle of Poverty in Rural Areas

Korea's geography is very mountainous; only 22% of its land is arable. About 2 million hectares (ha) of the agricultural land were farmed by more than 2 million households. So, the cultivated acreage per household was approximately 1 ha. Korea has one of the highest population densities in the world. Its weather is marked by four seasons. Summers provide excellent conditions for rice farming but nothing could be cultivated during the long and cold winters, when the land and labor were left idle, leading to seasonal unemployment and inefficient use of agricultural resources. All put together, it was difficult to raise the standard of living in the agriculture sector.

During the period after Korea's liberation from Japan until the 5.16 Revolution in 1961, the biggest issue confronting the government was to address the food shortage in rural areas in the midst of the political chaos and severe inflation. The food shortage caused by the large influx of Koreans coming back from overseas and North Korea, and by the lifting of food rationing provisions that

was implemented during war time. At the same time, the production of grain could not keep up with demand due to a shortage of fertilizers and lack of farming technologies. As a result, grain prices soared. If not for the emergency aid from the US, Korea could not have survived the food shortage.

Meanwhile, the Syngman Rhee government pursued agricultural reforms under the Land Reform Act, legislated in June 1949. The Land Reform Act was a set of measures based on the principle of farmers owning land, or “land to the tiller.”

The problem was that not many farmers were able to own land after the Korean War. The whole country was devastated, and most farmers lost their farming cattle during the war. After the ceasefire, small farmers with cultivated acreage of less than 1 ha, who accounted for 72% of all the farmers, were financially burdened by having to make in-kind installment payments of 30% of their yearly crop output to farm on the land. On top of this, farmers were subject to a 5% tax on their yearly crop output. Burdened financially, many farmers sold their land; consequently, the tenant-farming system became more pronounced.

However, the government was not in a position, financially and economically, to provide any substantive support to the farmers, despite a number of rural development plans. During the postwar reconstruction period from 1953 to 1960, the government implemented a series of plans to rebuild Korea’s agricultural sector, which was heavily damaged during the war. The plans included: Five-Year Grain Production Expansion Plan (1953-1957), Five-Year Livestock Industry Restoration Plan (1953-1957), Five-Year

Reforestation Plan, Five-Year Erosion Control Plan (1953-1957), and the Five-Year Sericulture Industry Development Plan (1952-1956).

The government also sought to stabilize prices for grain and rice. In the early 1960s, the prices for grains like rice and barley were too low while 80% of the farm households were in debt with high interest rate loans. To keep grain prices low, measures were implemented to support farmers in paying their land income taxes in-kind. Efforts to stabilize rice prices and general prices were made by controlling inflation, maintaining the exchange rate, and implementing the grain-mortgage financing system. Despite these initiatives, the economic plight of the farmers worsened, many suffered from food shortages, forced to eat tree bark and grass just to survive. Poor farmers were caught in a vicious cycle of poverty, constantly in financial debt, often paying an annual interest rate of over 50%, only to have to borrow more or use a decent year's harvest to pay off their debt in the spring and autumn. When the long winters came, farmers would lay idle, often drinking and gambling. Many were discouraged to work hard, feeling trapped under a mountain of debt. It seemed poverty stricken farmers could not escape from this vicious cycle of poverty or “Asian stagnation.”

Improving the Living Standards of Farmers

For 18 years from the time he led the revolution to his death, President Park made two economic policies as his top agenda: economic development through export-oriented industrialization and enriching the lives of farmers. The President was determined to

restore and modernize Korea, and to help farmers attain a better way of life. President Park believed that the chronic indebtedness of farmers was the biggest obstacle to economic improvement in the agricultural sector, declaring, “The starving people will be freed of their financial burdens.”

As the first step to reconstruct the agricultural economy, the President implemented a measure to reduce high-interest loans on May 25, 1961. Then, the National Reconstruction Movement Act was legislated on June 11, 1961, under the banner of “creating a welfare state,” based on the principles of democracy, self-reliance, and self-help, in hopes of helping farmers secure a more prosperous life. The reduction of high-interest loans was a revolutionary method to alleviate absolute poverty in the agricultural sector, which prevailed during the “the farm hardship period.” The National Reconstruction Movement was a national campaign to support farming and fishing villages which had been stuck in a state of dejection and resignation for thousands of years. However, the National Reconstruction Movement was initiated while Korea was trying to rebuild itself economically in the early 1960s. Korea’s financial and banking system were poor; the government lacked financial resources to repay the high-interest loans on behalf of the farmers, and to help improve their economic situation. The government tried to alleviate the indebtedness of farmers, but it took a long time before any substantive progress was made.

The production of rice and barley accounted for most of the income of farming households. The initiatives in the agricultural sector focused on improving the basic conditions needed for farming such as improving soil fertility and constructing irrigation and water

systems. Also, much of the arable land needed to be transformed to mechanize farming and to raise productivity. From the outset of the 5.16 Revolution, President Park emphasized enhancing soil fertility, developing agricultural water sources, and readjusting arable land, setting out to achieve these objectives as an important part of Korea's modernization from the 1960s. In the early 1960s, farmers relied largely on chemical fertilizers to nourish the soil. This was ruinous to soil, lowering the productivity of farmers and causing damage to the environment due to disease or insects. For instance, farmers could have used rice straws for compost to fertilize the soil; instead the rice straws were used to make roofs or straw goods to sell.

To raise agricultural productivity, Korea embarked on a series of agricultural policy initiatives. One small but high-impact initiative, a voluntary-based program, sought to help farmers improve soil fertility by introducing new techniques and providing resources, during the off season. Farmers were given lime, taught to plow fields deeper and to use compost, as ways to be more efficient with the soil.

At first, farmers were less than enthusiastic about the initiatives. To help raise awareness, the President made every effort to personally visit the farmers when he could. It didn't take long before farmers saw the benefits of the new farming techniques, and adopted them. One major objective of President Park's agricultural policy was to improve productivity by mechanizing farming. To mechanize farming, the agricultural land had to be readjusted to accommodate the farming machines. Kim In, the first Governor of Gyeongbuk during the military, government led this project to readjust the land, despite the poor state of the government's finances. Once work had been completed on the farming lands, a push was made to mechanize

farming in the 1960s; however, there were major obstacles to achieving the policy objectives. First, the abundant labor supply in the agricultural sector meant that farmers didn't need machines. Moreover, farmers didn't have the financial means to buy farming



Rice transplanting with a pump (1960s)

machines, which were not readily available in Korea due to its underdeveloped machinery industry.



Mechanized rice transplanting (1970s)

It wasn't until the 1970s that farmers were able to make some progress. By the end of 1979, nearly 323,000 ha of arable land had been readjusted, which accounted for 55% of the total arable land in Korea. The agricultural sector experienced a labor shortage which made farmers rely more on farming machines. By this time, Korea's manufacturing industry had caught up considerably, producing various farming machines including cultivators, sprayers, water pumps, threshers, cutters, rice-planters, and tractors. The use of farming machines became more wide spread, mechanizing Korea's agricultural sector, and raising productivity. Also, the *Saemaul* Movement encouraged shared ownership of farming machines

among individual farmers to maximize its use and to spread out the financial burden of purchasing a machine. President Park was involved at every step of the process and knew every detail of the policies, even making sure that a network of after-sale service was established so that farmers could easily access maintenance and repair services.



President Park harvests rice — Korea attained rice self-sufficiency in 1976

Reviving the Glory of Youngsan River

Korea has four major rivers: the Han River, the Geum River, the Nakdong River and the Youngsan River. Korea receives 980 to 1400 mm of rainfall on average per year, most of it during the rainy season in the summer. Droughts and floods were a constant source of suffering for the farmers due to a lack of dams and poor reservoir facilities. Furthermore, during the cold winter from November to March, all the land and labor were left idle, except when barley and spinach were planted. These were the major reasons for poverty among farming households. To help farmers escape from poverty, President Park sought to prevent droughts and flooding, and to promote year-round farming where various vegetables could be grown during the winter. He did his best to develop water resources and agricultural water, and to introduce greenhouse cultivation.



Korea's main rivers

To prevent damage from droughts and floods, President Park sought to construct large-scale multi-purpose dams along the major four rivers. Several dams were constructed in the rivers connecting to the Han River in the North including the Soyang River Dam, the biggest rock-filled dam in Asia, the Chuncheon Dam, the Uiam Dam, and Paldang Dam. These dams were built to withstand some of the biggest floods of the century. To the south of the Han River, the construction of the Chungju Dam, which began in 1978, was completed in the 1980s. Also, the Imjin Area Project, a large-scale agricultural project, was completed during the 1980s. The Geum River basin covering Chungcheongnam-do (South Chungcheong province), Chungcheongbuk-do (North Chungcheong province), and Jeollabuk-do (North Jeolla province), was at the center of Korea's agricultural sector. A large-scale comprehensive agricultural development project was completed where the Daecheong Dam was built in 1980 in the Geum River to supply water to its basins located in Gongju, Nonsan, Ganggyeong, and Gunsan. The dam also supplied water to the residents in Cheongju and the factories in Daejeon. Also, the Pyeongtaek District Comprehensive Development Plan was completed where a tide embankment was built at Asan Bay to create a huge artificial freshwater lake.

From the tip of Jeollabuk-do (North Jeolla province), the Youngsan River flows through Jeollanam-do (South Jeolla province) to Korea's southern coast. The river was prone to droughts in the dry season and floods in the rainy season, resulting in extreme fluctuations in the water supply, which disrupted the water supply to farmers in the adjacent plains and residents of Gwangju and Mokpo. The lack of a steady water supply had a huge negative impact on Jeolla provinces' agricultural and manufacturing business, a

fundamental reason for the widespread poverty in the region. It accordingly became to be known as the river of tears. The severe droughts of 1967 and 1968 led to a mass migration of farmers out of the region.

To prevent floods and to secure a steady water supply for the region, President Park launched a series of development initiatives. In the First Youngsan River Development Plan, a series of dams including the Jangseong Dam, the Damyang Dam, the Daecho Dam, and the Dongbok Dam were constructed. Furthermore, an embankment at the mouth of the Youngsan River was built in the early 1980s, creating an artificial lake that provided a steady supply of water to Jeolla regions. After these efforts, joy instead of tears flowed down the Youngsan River.

The Nakdong River flowed through Gyeongsangbuk-do (North Gyeongsang province) and Gyeongsangnam-do (South Gyeongsang province), and into the ocean in Busan. The river was an important source of water for residents and farmers living in the Yeongnam region. The water was also important to factories along the southeastern coastline. A series of dams including the Andong dam, the second largest multi-purpose dam, Namgang Dam, and Yeongcheon Dam were constructed as well. Of course, more small and medium sized dams were necessary to fully utilize the water of Korea's major rivers, but the construction of these major dams made it possible to utilize most of the water sources.

In June 1964, Korea experienced severe droughts throughout the region of Yeongnam; its rivers and rice fields were dried, completely bare of water. The rice fields looked like a turtle's dry, cracked shell.

The drought caused considerable economic damage, even threatened the supply of drinking water. Farmers and local officials were left helpless. During his visit to the devastated region, the President tried to console and reassure the people of the region that water would flow again in the region.

Faced with this disaster, the President gave the go-ahead to find and secure other methods for securing sources of water, namely, surface and underground water in river beds and rice fields with water pumps. Surface water could be accessed by digging in the dried river beds, even in dried rice paddies, if it was dug deep enough. This was the first of its kind in Korea. An initial survey conducted of the region concluded the existence of adequate surface and underground water, some only a dozen meters below the surface. A more complete survey of the entire country was conducted later. In 1965, the government initiated a plan to develop other sources of water for year-round farming. This led to the development of water pumping stations and small reservoirs for storing water, followed by larger reservoirs. The plan sought to convert 85% of the nation's rice paddies into well-irrigated ones.

In a letter sent to the Ministry of Agriculture and Forestry on August 26, 1968, President Park wrote: "Our ancestors had put the fate of their livelihood in the hands of the Heaven and Mother Nature; sometimes neither would look favorably upon them. We must break from this old tradition and put our future in our hands. We have overcome the farm hardship period. Now we must overcome droughts." The President's words preceded the policy actions to develop the water supply system for the agricultural sector, a permanent solution to the age old problem of unreliable water

supply that had plagued Korean farmers. The President's mandate of developing a sustainable agricultural water supply was effected under the Governmental Orders #22 and #23, issued in August and November, respectively. The major points of the order were as follows. "The supply of underground water should form the basis of developing a water supply system for the agricultural sector. A plan needs to be prepared after determining the areas prone to drought that need to be well irrigated, then, the areas that can be used for dry farming, and finally, other areas. The development of the water supply system should be funded through domestic means first, and then, other means such as reparation funds from Japan or foreign loans or investments, should be considered. We have to devote our will, knowledge, effort, and endurance to find a tenable solution."

Accordingly, the government put its weight behind a plan to develop a water supply system for the agricultural sector focused on tapping underground water resources in December 1968. As a result, the rate of irrigation of rice fields improved significantly, increasing to 81% in 1971 from 58% in 1967. Much of the water supply development projects were initiated during the Third Five-Year Economic Development Plan. The objective of developing a water system was to secure a reliable supply of water to irrigate the rice fields. A large amount of foreign loans were used to fund these initiatives, which achieved results that exceeded initial targets. During this period, water utilization plans and large-scale comprehensive development plans were implemented in the basins of the four major rivers such as the Han River, the Geum River, the Youngsan River and the Nakdong River. It was a turning point in the history of Korea's agricultural development.

Korea would not have to again face the difficulties experienced in the Yeongnam region during the severe droughts in 1967 and 1968. This was made possible by President Park's decision to use part of the reparation funds received from Japan together with funds from foreign investments to fund the development of the water supply system as well as other large-scale infrastructure. This was truly a turning point in Korea's history of agricultural development. Korea's farmers had overcome droughts by learning to tap underground water in river beds and to supply water to remote places with pumps and hoses. Farmers would no longer have to endure hardships, as their forefathers had done for thousands of years. By the end of 1979, when President Park passed away, the rate of irrigation of rice fields had increased to 87.3%. It was a human victory for the farmers to overcome droughts.

Korea's Silver Revolution

In early 1965, President Park made a visit to Gimhae, during a tour of the country side. During his tour, the President came upon a greenhouse made of polyethylene imported from Japan, which was built by a local farmer. Despite the cold winter weather, the farmer was able to grow a variety of vegetables including cucumber, lettuce, and tomato. The greenhouse must have been the first in Korea. The farmer was able to make a tidy profit from selling the produce considering it was the off-season. In Korea, the winter months of November to March marked the off-season for the agricultural sector. Nothing could be grown in the harsh weather conditions, leaving farmers idle. Finding ways farmers could use the off-season

productively was one of the government's policy objectives. If farmers could be productive in the winter months, it would help to increase farming household income.

After seeing the fruits of the greenhouse in Gimhae, President Park sought the cooperation of local governments to see if greenhouse farming was feasible and a viable way for farmers to make an income like Japanese farmers. With the support of local governments and the Ministry of Agriculture and Forestry and the Ministry of Home Affairs, greenhouse farming was introduced in the southern regions Korea that had more temperate weather conditions. In particular, the towns of Gimhae and Suncheon set up big greenhouse farming complexes, producing excellent results. In urban areas, Daejeon and other big cities south of Daejeon also introduced greenhouse farming with favorable results. However, the greenhouses built in the cities north of Daejeon including Seoul, which had one fourth of Korea's total population, did not have the same success. So, it was thought that greenhouse farming was not feasible in the regions north of Daejeon.

Not to be deterred, President Park believed that greenhouses were sustainable in all parts of Korea with research. In 1970, construction of the Seoul-Busan Expressway and the Ulsan Petrochemical Complex were completed, opening the way to mass production of polyethylene film at affordable prices. This gave President Park the chance to prove that greenhouses with the right resources could work in the northern regions of Korea. Two young upstarts from Gimhae, experienced in greenhouse farming were given a plot of land just outside of Gyeonggi-do, near the Forestry Environment Complex and close to Giheung Interchange (IC) on the Seoul-Busan Expressway.

The greenhouse farmers were given land, a home, and the necessary materials and equipment, to make it happen. The extraordinary thing about this whole venture was that it was all on the President's own initiative and money. If the farmers weren't motivated enough, the President even had the land registered under their names as extra incentive. He expected the farmers to succeed in making greenhouse farming sustainable near Seoul, becoming an example to others. Park Jin Hwan, the Presidential Special Aide, helped manage and support the farmers on the behest of the President.

Also, a team of professors from Seoul National University and a research team from the Gyeonggi-do Rural Development Administration also provided support. After overcoming many difficulties, the two farmers were able to prove greenhouse farming in the suburbs of Seoul during the cold winter was feasible, even profitable. Accordingly, the Ministry of Agriculture and Forestation and the Ministry of Home Affairs encouraged greenhouse farming throughout the country.

Around the time greenhouse farming of produce began to take off, the Monopoly Office, headed by Shin Gwan Seop, initiated work on cultivating tobacco using polyethylene film, which significantly increased productivity. He decided to conduct research on this, which if proved successful, would be introduced to tobacco farmers. Tobacco farming in greenhouses first started in the plains in the southern regions, in the suburbs of big cities, and in the mountain regions where tobacco was cultivated. But, it spread throughout the nation in the 1970s. President Park took a helicopter to inspect the sites. During winter, I could see a sea of silver vinyl greenhouses glittering as far as the eye could see from atop the helicopter.

For thousands of years, farmers were left idle by the doldrums of winter-- a major cause of their economic plight. It was the President's strong will and determination that brought about many of the changes in Korea's agricultural sector through the policies to secure year-round farming. As the national income increased, the demand for agricultural goods increased. Not only could farmers prosper but also the nation could enjoy the bounties of their labor year-round. It was not so much a Green Revolution as it was a Silver Revolution, a symbol of silver colored rooftops of greenhouses scattered throughout the country that marked a turning point in Korea's agricultural history, and in the life of farmers. Hanyang Chemical, a joint venture company between the Korean government and Dow Chemical, produced polyethylene films, the main materials for greenhouses. Until the end of 1960, Korea imported about 2,000 tons of polyethylene films every year. However, this company produced 70,000-74,000 tons per year, contributing to the Silver Revolution. The Chairman of Dow Chemical at the time remarked about the pride he felt in contributing to the development of Korea's agricultural sector and the livelihood of farmers. I echo his sentiment.