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Lawrence Edward Wood

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LAWRENCE EDWARD WOOD. South Korea: Geographic Change Through Central Planning (Under the direction of JOHN D. EYRE.)

The implementation of long-range economic planning by South Korea in 1962 marked the beginning of an era of substantial economic geographic change. The three five-year plans enacted by the Park government have spurred improvement in transportation, communication, population distribution, and industrial and agricultural land use. The spatial restructuring of these economic elements has enabled South Korea to overcome the negative influences of Japanese colonial rule, peninsular division, and the Korean War. Hampered by a scarcity of natural and capital resources, South Korea has effectively utilized its human geographic assets, special relationship with the United States, and firm commitment to planning objectives in order to attain rapid economic growth during the 1960's and 1970's. Regional planning policies were initiated in 1972 to complement the national five-year plans. This centralized planning system provides the main guidelines for the careful geographical structuring of continuing economic growth.

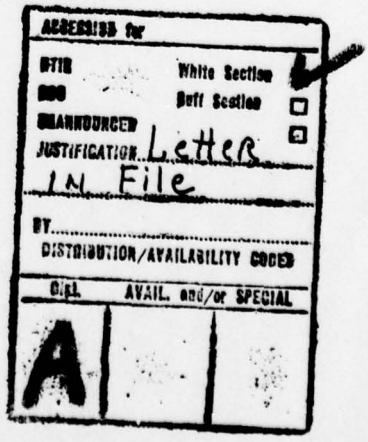


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PREFACE

While stationed in the Republic of Korea as a member of the United States Army, I became increasingly aware that it is the geography of South Korea which necessitates a large standing army with massive firepower capabilities and a high state of readiness in the face of military threat from North Korea. Topography requires the forward deployment of forces to prevent penetration by attacking forces into the Seoul region, which is the backbone of the Korean economy and modern culture. The city of Seoul, which lies less than 40 miles from the demilitarized zone, has a population which exceeds 6 million and produces nearly half of the GNP of South Korea. Seoul's geographic location virtually dictates the defense of the entire nation. The Taebaek Mountains run through the east-central part of South Korea, providing an obstacle to communications and mobility across the peninsula. Consequently, there is a real absence of battle space for South Korean forces in the Seoul region.

Because of the importance of these geographic factors in assessing the military balance on the peninsula and the fact that South Korea is now the only nation on the Asian mainland where the United States maintains a sizable presence of Army combat units and Air Force tactical aircraft, I became interested in discovering if anything was being accomplished to make South Korea less vulnerable to Communist aggression, especially through a redistribution of

population and vital production facilities away from the core area of Seoul.

My initial research revealed that although strategic factors do influence all South Korean policy, the military perspective does not provide the only or main key to changes in the national structure. Political and economic factors working in a complementary fashion have produced rapid national development in new geographic patterns that have been created by the central planning process. For this reason, this study focuses on long-range national planning as a vehicle for explaining and describing geographic change in South Korea.

I would like to express my appreciation to those who have aided me in the completion of this thesis and to the members of the Geography Department, both students and staff, who have made my stay in Chapel Hill a learning one. I owe a special debt of gratitude to Dr. J.D. Eyre for his assistance and encouragement.

Finally, I would like to thank my wife, Cheryl, for her patience and understanding during this period of graduate endeavor.

INTRODUCTION

"Making a beginning is half the job".
(Korean proverb)

The Republic of Korea (South Korea) has achieved one of the fastest growth rates of any nation since World War II. Most of its economic transformation has been concentrated in the last 15 years, making it the most recent economic miracle of East Asia. The South Korean Gross National Product has averaged a ten percent per annum growth rate over the past decade and the per capita Gross National Product now ranks third in East Asia behind only Japan and the Republic of China. The unified pre-1910 Korea was known as "the land of the morning calm"; today in South Korea, the prevailing sounds are the harsh, discordant symphony of modernization. The typical work day is filled with the raucous clatter of factory machines, the impatient blowing of automobile horns, the roar of heavy construction equipment and the bustle of South Korea's 34 million vibrant, mobile, and resolute people. The process of change in South Korea is dramatically linked with how it has dealt with the problem of equating available land and technical skill to the ever increasing demands of the expanding population.

The character, pace, and geographical structuring of economic development in South Korea has been due primarily to the enthusiastic endorsement and application of comprehensive long-range planning

by the strongly centralized national government. Prior to World War II, the Soviet Union was the only major nation engaged in systematic long-term development planning. However, the experience of World War II, when even the industrialized free-enterprise economies used planning to ensure that scarce commodities went to priority production, demonstrated that ambitious programs could be completed when the people of a nation were mobilized behind a common planned goal. At the war's end, Asian countries embraced planning with enthusiasm; today, most have prepared a development plan of some kind.

South Korea emerged from the war and 35 years of harsh Japanese colonial rule as a newly independent nation. It was fortunate from the outset to have had to strong military and financial support of western nations, especially the United States, who could make available through grants and loans the sums needed to stimulate economic recovery and development. With donor nations requiring the formulation of plans prior to the extension of aid, South Korea became plan-minded. As in other Asian nations, the South Korean leadership felt that central economic planning was a powerful tool which would allow them to pass through the barrier dividing their low standard of living from that of the prosperity of their former colonial rulers. In this big effort to catch up, to bridge the gap, to achieve true independence and respectability, a central plan was considered essential. During the period from 1950 to 1953, South Korea suffered severe damage from an invasion by North Korea in a bloody and destructive war. The bitter memories of that conflict coupled with the diametrically opposed political and social philosophies of the two Korean regimes have provided a special incentive to South Korean economic development. With war damage

repaired, the South Koreans are determined to develop their economy and to enhance their technical skills to a level where they cannot be physically consumed by North Korea.

Intensive study of economic development during the past twenty-five years has indicated that there is no universally applicable theory or a model by which growth and development can be adequately explained. Nevertheless, the complex process of development is characterized by some normative patterns of economic growth and structural change. Industrialization, which calls for increasing shares of manufacturing and less shares of agriculture as a percentage of Gross National Product, is a universal component of growth. So, too, are urbanization and expansion of education, transportation and communications. These changes all necessitate large quantities of capital. Hence, it is imperative that increasing shares of the total amount of resources be switched from current consumption and directed to capital formation in order to accelerate growth.[1]

There is great variation in the effectiveness of applying selected economic development policies in different societies. The South Korean experience has been one of experimentation with new policies that deviated from previous domestic patterns as well as from the policy orientation pursued by the bulk of the underdeveloped countries. Thus far, these policies have been very successful in promoting the structural changes in savings, investment, and production that have led to rapid growth. The ever-increasing level of sophistication of long-term planning has also been a major factor in the South Korean accomplishment. Perhaps the most significant

aspect of the South Korean experience has been the total commitment of the central government to the planning concept. This steadfast support has permitted many economic policies time to reach fruition where a less resolute government may have wavered, as is the case in numerous underdeveloped countries. In many ways, the processes of economic and political development in South Korea have matured in a mutually reinforcing way during the last fifteen years.

It has been the recent policy of the Republic of Korea to pursue dual themes of national self-reliance and national development. Twenty years ago, few would have thought it possible for South Korea to have achieved its present level of growth. The reasons for pessimism were many. South Korea is not well endowed with a rich natural resource base. There are limited coal deposits, but no confirmed oil resources; relatively abundant tungsten minerals but no adequate iron ore supply; and sufficient agricultural land to furnish food grains but extremely limited forests for the production of lumber products. When the Korean peninsula was liberated from Japanese colonial rule in 1945 and artificially divided by agreement of the victor nations, major electric power stations and other industrial plants were located in North Korea, leaving South Korea industry-poor. There were critical shortages of capital and technology. A large unskilled labor force had to be fed under circumstances of high unemployment due to the absence of industry. Even the agricultural sector, which was the primary employer and predominant contributor to Gross National Product, had become incapable of feeding the rapidly expanding population. The division

of the Korean peninsula added several million refugees from the north who intensified the strain on the south's agriculture. Chemical fertilizer and pesticides had to be imported. The national transportation and communications network was incomplete, rundown, and inadequate.

South Korea's First Five-Year Economic Development Plan, which was initiated in 1962, established a foundation for economic development. During the plan period, the economy recorded an average annual growth of 8.3 percent which greatly exceeded the targeted growth of 7.1 percent. The Second Five-Year Plan (1967-1971) increased the annual growth of the Korean economy to an incredible 11.4 percent. The third plan (1972-1976) envisions an average growth of 8.6 percent which is more modest but nevertheless quite substantial in light of the Arab oil embargo and the world-wide recession of 1973 through 1975.[2]

Many factors account for the soaring growth of the Korean economy. Not the least of these have been systematic planning and extensive research into new export markets, both of which have been either implemented or strongly supported by the central government. Other prerequisites to achievement include the will to work and the high educational level sought and attained by the Korean people; the relatively low prevailing wage scale; and the efficient procurement and utilization of domestic capital, foreign aid, and international loans and investments.

The job of nation-building in Asia is an enormous task which involves more than half the world's population on a disproportionate

share of the earth's land surface. The stimulus for this new and awesome period has come from a combination of three influences; the end of imperialism and colonialism, the revolution of rising expectations, and the competition between communist and non-communist forces in the political, economic, and social spheres.[3] A revamped social system within these new nations will be based on an extensive period of pervasive social mobilization which will elicit dramatic changes in the standing political, economic, and social orders. Some of the characteristics of change include: (1) increased exposure to modern communications, (2) growth of mass media, (3) increase of formal political participation, (4) growth of literacy, (5) change of place of residence, (6) population growth, (7) decreasing percentage of the work force in agriculture, (8) urbanization, (9) growth of national income, and (10) growth of per capita income.[4] These elements of change in a transitional society are obviously extremely complex. The process of change is additionally complicated by many new state's deficiences in human and material resources. Thus, the role of outside powers in promoting modernization is a crucial one for the developing states who must balance selfish foreign interests with the domestic need for assistance. The South Korean experience is representative of these common dilemmas.

Study Objectives

This study will concentrate on describing and assessing the economic development, or modernization (the phrases are considered

interchangeable), of South Korea in the post-World War II period with particular emphasis on the formal planning era from 1962 through 1981. Specific focus will be on the role of central planning in promoting change and determining the location of economic activity. Political, social, and physical geographical factors bearing on the planning process and the changing economic geography will be introduced where pertinent. Gunnar Myrdal supports the integrative approach to the social sciences in his statement that "economies cannot be studied in isolation but only in their demographic, social, and political setting". There is a dominant spatial ingredient inherent to economic activity. The factors and processes that stimulate the production and consumption of goods and services deeply influence the ultimate composition of the cultural landscape. Economic functions, either direct or indirect, contribute to the diffusion of man, objects, and ideas throughout earth space. The construction of transportation and communication networks, industrialization, urban growth, agricultural advances, land-use patterns, perception studies, and demographic shifts are all subjects of common concern to the geographer and economist. Therefore, the study of economic development in South Korea goes hand in hand with gaining an insight into the causes of the rapidly changing economic geographic patterns of South Korea.

Nations, here represented by South Korea, are the ideal political-geographical unit in which to study economic changes through planning on a broad scale. They are the primary accounting units for which comparative data of a statistical nature are published;

they are decision-making units in which the central governments can affect the relationships between the population and the environment; and they are clearly defined by boundaries that distinguish them from their neighbors. Their boundaries form significant discontinuities in the pattern of human organization, sometimes in the landscape itself (this is particularly true of the Korean peninsula). Boundaries delimit the national territory which represents a particular share of the earth's stock of natural resources and may act as a barrier or filter to spatial interaction between regions. This can have a marked effect on the diffusion of goods, services, resources, people, ideas, and technology. Nations are increasingly being organized as integrated economic units. Geographers tend to regard them as the individual tiles out of which the world mosaic is formed. The importance of central authority within a country is related to the amount of decision-making power the central government has acquired.[5] To an increasing extent, decisions on resource exploitation, patterns of settlement, population growth, and regional development are being made at the central government level.

Geographers and other scholars interested in economic development would optimally prefer to compute and chart a quantitative index that would serve as an unbiased measure of the economic performance of a nation. However, no single index such as wealth nor a composite index of technical and demographic information is adequate in this regard due to definitional and data accumulation problems. Similiarly, climate, environment, race, and culture are inadequate single explanations of economic development not because they play no role, but rather because their effect is neither simple nor always the same.

As previously noted, the relative shares of agricultural and industrial production tend to move in opposite directions as per capita output rises. However, the absolute shares of agriculture and industry within a nation are influenced by natural resource endowment and by such human factors as education and work habits. Likewise, the relative importance of foreign trade is linked to a nation's size, allocation of natural resources, and level of per capita income.

From an American standpoint, South Korea has a military strategic importance that is closely related to growing national economic strength through central planning (Fig. 1). In geo-political terms, South Korea is part of a land-bridge connecting both Soviet Asia and one of the primary industrial areas of Communist China (Manchuria) with Japan, with only the narrow Tsushima Straits in between. The Korean peninsula, thus bounded on the north by Communist China and the Soviet Union and to the south only 30 miles from the closest Japanese island, is the one region where the interests of the four great powers in Asia (the United States, the Soviet Union, the People's Republic of China, and Japan) converge. By military jet performance standards, it is approximately an hour from Seoul to Tokyo, 50 minutes to Peking, 40 minutes to Vladivostok and two and one half minutes to North Korea.[6] Hence, the thrust of the United States' foreign policy is that the key to preserving Japan's independence rests in the maintenance of a free South Korea. Similar to Berlin, South Korea is the focal point and symbol of Western defense in East Asia.

In light of this importance, it is all the more striking that western social scientists have paid South Korea such relatively

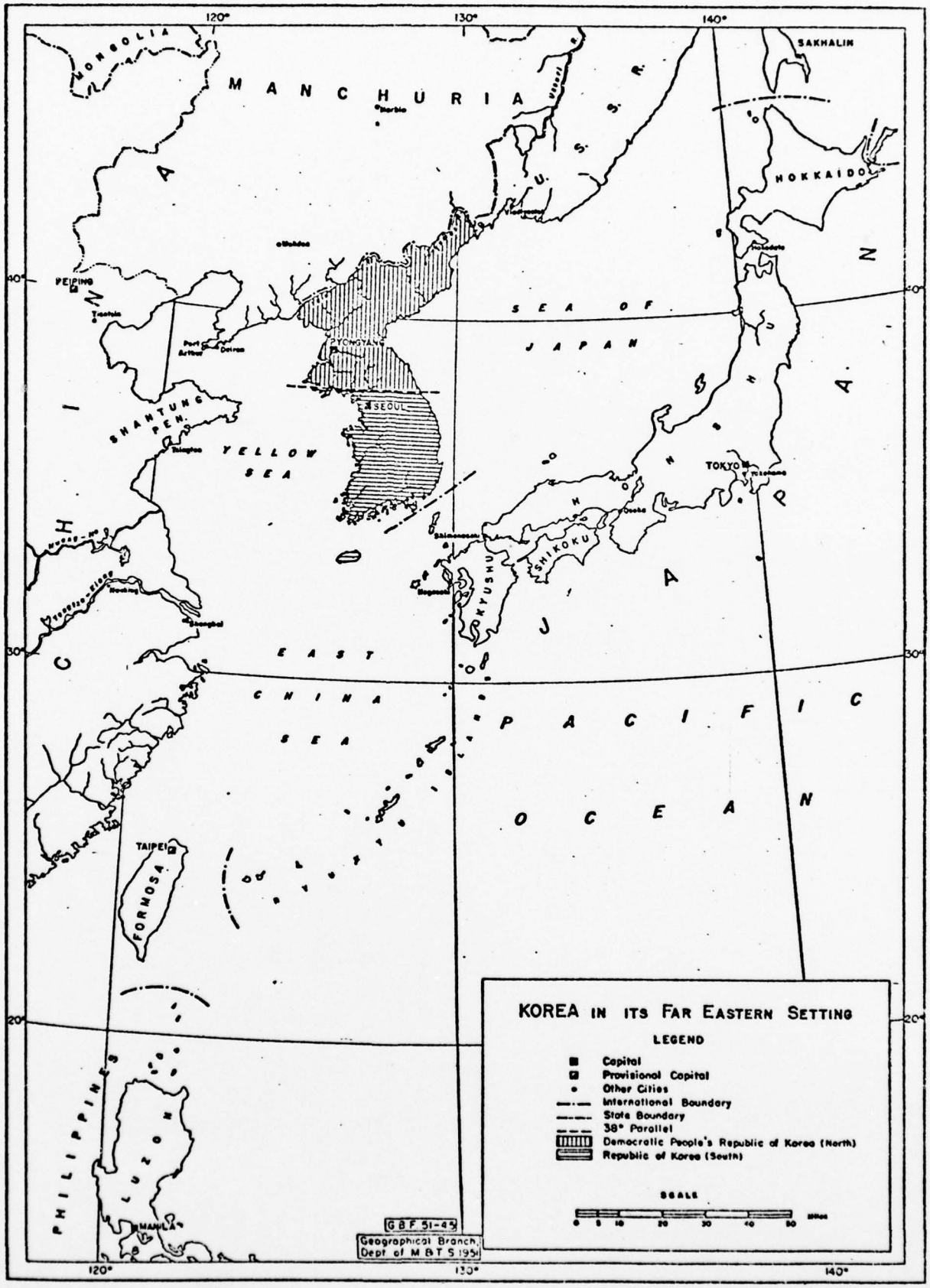

KOREA IN ITS FAR EASTERN SETTING
LEGEND
Capital
Provisional Capital
Other Cities
International Boundary
State Boundary
38° Parallel
Democratic People's Republic of Korea (North)
Republic of Korea (South)
SCALE
GBF 51-49
Geographical Branch,
Dept of M & T S 1951
MANCHURIA
MONGOLIA
SAKHALIN
HOKKAIDO
PEIPING
PYONGYANG
SEOUL
SHANTUNG PEN.
YELLOW SEA
SEA OF JAPAN
EAST CHINA SEA
PACIFIC OCEAN
TOKYO
KYUSHU
SHIKOKU
TAIPEI
FORMOSA
PHILIPPINES
LUZON
MANILA
120°
130°
140°
40°
30°
20°

Figure 1

little attention. There is a noticeable dearth of geographical literature in which the works of Shannon McCune, whose family had deep roots in Korean religious and scholarly life, and Patricia Bartz, an Australian who published the only national geographic survey of any substance, stand out as exceptions. It is hoped that this study will take a small step in remedying gaps in our knowledge of South Korea's changing economic geography and its causes. Especially for Americans, who have invested so much in terms of lives and dollars in South Korea and who could be caught once again in an unwanted war on Korean soil, the continued study of South Korea remains an urgent priority.

The Physical Backdrop

The geographical structuring of economic development through planning in South Korea must be viewed against the physical framework set by topography and climate (Fig. 2). South Korea is a relatively small (38,000 square miles) and compact nation where approximately 70 to 80 percent of the land surface is occupied by hills and mountains. Low hills, which are more frequent in the south and west, gradually yield to higher more rugged mountains toward the east and north. Generally, the western and southern slopes of South Korea are very gentle with different types of plains and basins developed along the large rivers. The bulk of the national population, the main cities, most of the cultivated land, industry, and transportation facilities are found in these relatively small western and southern lowlands. The eastern slope, conversely, is very steep with no

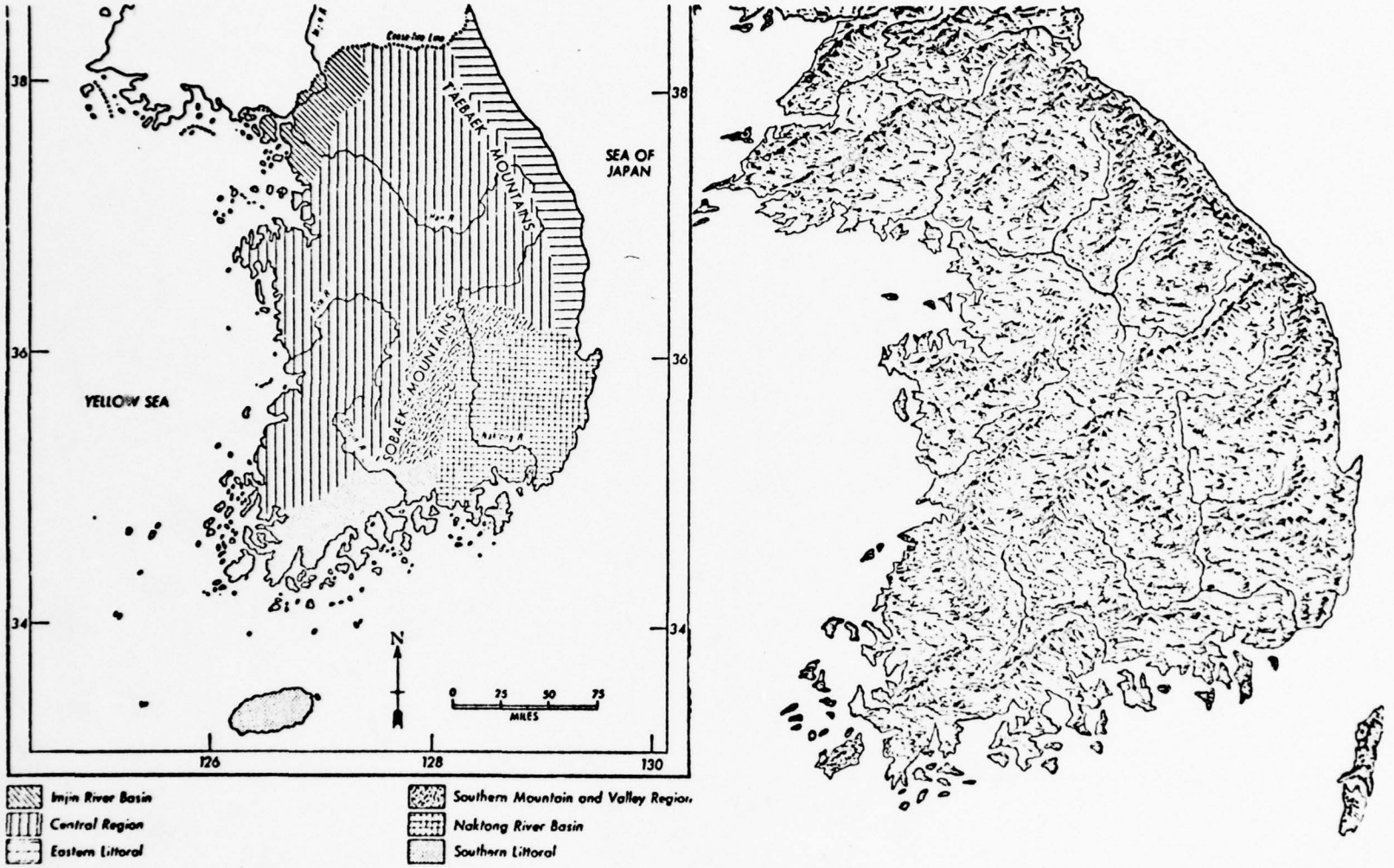


Figure 2

PHYSIOGRAPHY OF SOUTH KOREA

significant rivers or plains. The western and southern coasts are highly indented with numerous islands while the eastern coast is basically smooth with few islands.

Mountains form the skeleton of the Korean peninsula. The Taebaek Range, the mountainous backbone of the nation, extends south for about 160 miles from the demilitarized zone that separates North Korea from South Korea to just north of Pohang. These are the highest mountains, with crests some ten miles inland, roughly following the east coast. The Taebaek is the primary watershed between drainage to the east and west coasts. The east coast streams are short and small, while those flowing west are longer and more irregular.[7] The Taebaek Range has two branches - the Charyong and Sobaek. The more northerly Charyong Range is lower and less continuous but does reach to the west coast just south of Taechon. The Charyong Mountains are not high enough to be a real obstacle to transport, nor do they serve as a major watershed. However, they do separate the drainage of the coastal plain south of Seoul from that of the Kum River Basin.

The Sobaek Mountains, the great mountain divide of the nation, also branch westward from the Taebaek Mountains and bend southward. These mountains have an average elevation of 3,500 feet and present a real barrier to travel. Thus the Sobaek Mountains distinguish the north-western region of South Korea, centering on Seoul, from the south-eastern region, centering on Pusan.

There are four major river systems - the Han, the Kum, the Naktong, and the Yongsan. However, due to the dissected nature of

the topography, South Korea contains in its small land area a total of twelve main river basins, not including the many short streams of the eastern and southern coasts. Most of the rivers flow into the Yellow Sea and the East China Sea after draining the western and southern slopes of the mountains. River discharge, which is directly related to the summer monsoon, fluctuates, widely with the seasons. In summer, the rivers fill with rainfall stimulated by the monsoon, and the valley plains are flooded several times a year. In other seasons that are relatively dry, the water level often gets low enough to expose much of the river beds. Thus the problem of developing South Korea's rivers for irrigation or electric power generation is not so much an absolute shortage of water as how to impound and retain a greater amount of the summer flood flows. This requires dams of large capacity with sufficient vegetative cover to prevent siltation.

South Korea has a humid, monsoonal climate. The average monthly temperature during winter is generally below freezing. Summers are hot and rainy. The East Asian monsoon is marked in the winter months by a continental high pressure cell over Siberia which causes dry cold winds to blow from the interior. These northwesterly winds bring cold temperatures to the peninsula. The winter temperature is very important to agriculture. If the cold is not overly severe, two crops, usually rice and barley, may be grown. This is generally the case south of Taejon. With the approach of summer, a high pressure cell develops over the Pacific which blows winds into the low pressure area of the continent resulting in the summer monsoon. It

is not as strong as the winter monsoon; but it does bring large amounts of moisture from the ocean, thereby producing a heavy summer rainfall. Therefore, about 70 percent of the rain falls during the four months from June through September with the amount of rain gradually decreasing from south to north. One thousand millimeters of annual rainfall is generally considered to be the minimum required for rice cultivation. According to 178 years of precipitation records in Seoul, less than 1,000 millimeters occurs once every eight years.[8] Therefore, without a perennial irrigation system, the Seoul area is statistically eligible for a failure in rice crops once every eight years. The same situation applies to much of South Korea.

Structure of the Study

A brief account of recent Korean and South Korean history is provided in Chapter I as background to the need for national planning and economic development. Chapter II focuses directly on the planning process - its beginnings and the impact of and changes made by the three five-year plans to date. The National Land Development Plan - its objectives and goals in reshaping the national economy and economic geography - is treated in Chapter III. In the concluding Chapter IV, significant changes brought by planned economic development are summarized, and opinions are given on planning as a tool to promote economic geographical change.

NOTES

[1]Irma Adelman, ed., Practical Approaches to Development Planning (Baltimore: The Johns Hopkins Press, 1969), p. 273.

[2]Republic of Korea Economic Planning Board, Economic Survey (Seoul: Economic Planning Board, 1973), p. 73.

[3]David W. Chang, "The Military and Nation-Building in Korea," Asian Survey, Nov. 1969, p. 818.

[4]Wayne A. Wilcox, Asia and United States Policy (Englewood Cliffs, N.J.: Prentice Hall, 1967), pp. 39-40.

[5]Peter Haggett, Geography: A Modern Synthesis, 2nd ed. (New York: Harper & Row, 1974), p. 460.

[6]Peter T. White, "South Korea: What Next?", National Geographic, Sep. 1975, p. 413.

[7]Patricia M. Bartz, South Korea (London: Oxford University Press, 1972), p. 13.

[8]Pyoung Choon Hahm and others, Korea: Past and Present (Seoul: Kwangmyong Publishing Co., 1972), p. 30.

CHAPTER I

THE EVOLUTION OF SOUTH KOREA

"A shrimp among whales".
(Korean proverb)

In Korea: Politics of the Vortex, Gregory Henderson hypothesizes that the homogeneity of Korean culture and the fluidity of the class structure have been detrimental to the growth of modern political organizations in South Korea.[1] He emphasizes that entrenched historical and cultural influences have stifled modern Korean political actions. This assumption may be borne out by the fact that Korea did retain, following World War II, its distinctive homogeneous culture, which was not greatly transformed by the 35 years of Japanese colonial rule. However, in contrast to this strength of culture argument is the reality that Korea has witnessed a series of drastic political, social, military, and economic disturbances in the last 30 years. The peninsula was divided for the first time in 12 centuries; a destructive peninsular war was fought; four extremely contrasting governments have been in power in South Korea; and a dramatically altered economic structure has resulted from South Korea's goal of national survival. It was the blend of traditional outlook coupled with the dynamics of rapid change that created the

ripe environment for planning and economic development in the 1960's and 1970's.

As used in this study, development and modernization mean the significant changes affecting human society that have been taking place in recent times. As stated previously, industrialization is a recognized component of growth; in an applied sense, it means the achievement of industrialization, the planning objective of most Asian nations. An outgrowth of this drive toward industrialization has been the almost inevitable assumption by the state, in the absence of a sizable middle class, of the role as the effective driving force. Often this has occurred under the leadership of a strong personality, such as Park Chung-Hee in South Korea.[2] It is also generally agreed that the success of modernization depends on the adaptability of the native tradition and culture to western techniques and social institutions. Therefore, it is important to examine what historical events peculiar to the South Korean experience ave resulted in the seemingly very successful South Korean modernization drive.

South Korea's economic tribulations can be traced back to its unfortunate geo-political past. South Korea has a population of 34 million in an area not much bigger than the state of Indiana and a population density of 892 per square mile, which surpasses even Japan's. However, its location among nations of larger populations and land masses - Russia, China, and Japan - has placed it in an inferior role in Asian developments.

This is not a new situation; over the centuries, the geographic position of a united Korea has served as both an advantage and a detriment. Korea's land connection with China through Manchuria was important for the historical transmission of Chinese culture to Korea and Japan. In addition, Korea was the recipient of other cultural movements from the north, including the Mongols and Manchus. The ability of a distinct Korean culture to develop and survive in the face of this long history of foreign domination and continual invasion is all the more remarkable. Although greatly influenced by Chinese culture, Korea was able to absorb it while giving it a distinctly Korean interpretation.

Location functioned as a negative factor when stronger neighbors looked upon Korea as a stepping stone to launch conquests and also as a worthwhile prize to be taken. The invasion of the Mongols in 1231, accompanied by widespread destruction, made Korea a vassal state of the Mongols. Japanese pirates continually plundered the Korean coasts in the decades that followed, and there was finally a full-scale Japanese invasion in 1592 as a planned first step toward the conquest of China. During this era, many battles between China and Japan were fought on Korean soil. Location has continued to play an adverse role in Korean affairs in the twentieth century. Korea underwent an extensive period of colonial rule by its more powerful neighbor, Japan, and then the northern one-half of the peninsula fell victim to the forces of Communist control in the post-World War II period.

From the latter portion of the seventeenth century until the early years of the nineteenth century, Korea enjoyed a relative peace, but fear of foreign powers was so intense that it completely isolated itself from the rest of the world. This self-imposed isolation earned Korea the label of the "Hermit Kingdom". Foreign trade, except for a limited amount with Japan and China, was discouraged, and foreign travel by Koreans and visits by foreigners were prohibited. At the beginning of the seventeenth century, the lines along which Korean-Japanese relations were to move for almost two hundred years were established by treaty. Pusan was the only port which could be visited by Japanese ships, and trade was virtually strangled by bureaucratic procedure. Pusan became the only point of contact that Korea maintained with the outer world.[3] Even there, Korea's contact with Japan up to the Meiji Restoration in 1868 was peripheral and without significant consequence to Korea's internal affairs. Yet, the king of Korea continued to send an annual tribute mission to Peking on the continent, and several trade towns were opened along Korea's northern border where Korean merchants periodically traded with Chinese merchants under strict government control. By the nineteenth century, Korean-Chinese relations followed an established procedure with Korea a vassal of China.

Japanese Domination

It was, however, in the second half of the nineteenth century that previously accepted values and fixed relationships in East Asia began to disintegrate under the steady onslaught of the Western powers

and the subsequent local institutional and social changes. The nation most resistant to the change was Korea; the Taewon'gun who ruled Korea from 1864 to 1873 insisted on preserving the nation's policy of seclusion. However, when he retired, the political atmosphere shifted and Korea eased its isolationist stance. In 1876, Korea and Japan concluded the Kanghwa Treaty, which was the first modern treaty for Korea and marked the beginning of a new era in Korean history. Pusan, for centuries the only point of contact between Korea and Japan, was selected as the experimental focus of their new relationship. The opinion in Seoul was that the Japanese were a necessary evil and must be allowed to operate only under the most rigid control. However, by the end of 1876, Japanese and other foreign-made goods were on commercial display for the first time. Most important among the Japanese goods were different kinds of silk and daily necessities. Another incentive to trade was the opening of a steamship line which was scheduled to run once a month between Nagasaki and Pusan. The Japanese community at Pusan grew gradually and, by mid-1877, some two hundred Japanese trading establishments were in operation.[4]

The Japanese had obtained the right to trade in two additional ports by the treaty of 1876. Since the coast of Korea was unmapped, the Japanese dispatched surveying missions along the coast to locate suitable places for trade. The search for a port on the west coast became a sensitive issue once the Japanese surveys concluded that Inchon was the only adequate location. The Korean government, located in Seoul, feared that the opening of Inchon would have detrimental

effects on the commercial life of the metropolitan area. After a number of public disturbances, Inchon was opened to Japanese trade in 1883. This marked the end of the resistance of the Korean government to foreign relations.

By the early 1880's, Japan was no longer the only nation that demonstrated interest in Korea. The United States had a letter of contact delivered by Commodore Shufeldt at Pusan in May, 1880. At this time, Russia was becoming a growing power in East Asia, and Korea's weakness and backwardness in the face of Russian strength filled Japan and China with apprehension. The Russian's were eager to obtain year-round access to the open sea because their northern ports were ice-bound during the winter months. By staking a claim to the Korean peninsula, they threatened Japanese and Chinese domination of the Yellow Sea. Furthermore, Japan had not yet fully developed its treaty relations with Korea, while China fretted over its dwindling control of Korean affairs. Both Japan and China became convinced that only treaties concluded by Korea with Western nations would safeguard the peninsula's security. The Korean government also came to the conclusion that if the country was to survive, it would have to initiate some fashion of a self-development program.

The early 1880's were marked by the Korean government's vigorous attempt to strengthen the country and the conclusion of its first treaties with western powers. A major innovation introduced into Korea as a result of treaties with foreign powers was the maritime customs service, which was quite a financial boon for the lean national treasury. One of the most conspicuous results of the

treaties was the establishment of foreign settlements in the three open ports of Pusan, Inchon, and Wonsan. In 1882, the Japanese steamship line started to include Inchon in its monthly run from Nagasaki to Pusan.

The Japanese dominated Korea's import trade from the beginning even though many products were European-made. The largest export item from Korea was gold; cereals, ginseng, hides, and raw silk were exported in much smaller amounts. However, Korea did not expand its levels of production and consumption enough to make trade very profitable. Nevertheless, by the mid-1880's, Korea's opening had become institutionalized as foreign powers (the United States, Japan, Britain, and Germany) established settlements in the three treaty ports. For the West, the opening of Korea had become expedient in the larger picture of East Asian politics; for Korea, the new relations with the West had been forced upon it by its neighbors.

In 1894, an armed rebellion broke out led by a strongly nationalistic and anti-Christian religious sect whose intent was to drive the Japanese from the peninsula. The Korean king requested and received Chinese soldiers to put down the rebellion; the Japanese also sent forces to the peninsula. The Japanese proposed a joint reform of the Korean government by Japan and China, but China refused as it still claimed Korea as a vassal state. The Japanese proceeded to take possession of the royal castle and shortly thereafter declared war on China. China was handily defeated after a brief struggle and was forced to sign the treaty of Shimonseki in 1895.

This startling victory, in such a short time by a Japanese nation itself so newly reoriented and converted to westernization, provided a major lift to Japanese nationalism. The Japanese proceeded to commit social and administrative excesses of a deplorable nature in Korea. By 1903, there were approximately 25,000 Japanese in Korea, many of whom had a disposition to bully and coerce the Korean people.[4] This behavior succeeded in intensifying the aversion most Koreans already felt for the Japanese. The Japanese gained rapid control of Korea's limited export trade and began to push for various governmental changes favorable to Japan. They met opposition not only from the royal family but from the Russians, who were now Japan's only serious competitors in Korea. While steadily increasing its domination of Manchuria, Russia had arranged a commercial agreement with Korea in 1888, had established telegraphic communications in 1893, and had provided advisers to the Korean government.[5]

The deteriorating Japanese-Russian relations and conflicting interests in the Korean peninsula and Manchuria led to the Russo-Japanese War of 1904-1905. As the victor, Japan gained complete power over Korea through the Treaty of Portsmouth in 1905. In 1909, Japan was provided a reason for total annexation when the first Japanese Resident-General was assassinated by a Korean patriot during a visit to Manchuria. A treaty concluded in August 1910 made Korea a Japanese colony.

Until 1919, Korea was ruled by a Government-General headed by a senior Japanese army officer. All administrative posts in the government were held by Japanese. What made Japanese rule so harsh

by comparison to other colonial powers was the ruthless manner in which it attempted to eliminate Korean resistance. The police were a particularly brutal tool in this repression and became notorious world-wide for their despicable actions. A second feature of the Japanese rule which further embittered the Koreans was the revamping of the educational system. It was modified to give the Koreans the kind of education that would make them second-class Japanese citizens and more useful in subordinate positions in the government and a new economy. This policy, along with the compulsory use of Japanese language to the extent that even Korean personal names and names of towns were changed to Japanese, was deeply resented by Koreans as an attempt to destroy their national identity.

It was not only the Government-General that was so distasteful to the Korean people. Many of the Japanese immigrants looked to reap quick profits by unscrupulous means. Quite a number of these opportunistic Japanese openly despised the Koreans and mistreated them. The acquisition of land by these immigrants was expedited by the Oriental Development Company, which was established in 1908 and subsidized by the Japanese government. This firm dealt in the sale, purchase, and renting of Korean land and was responsible for the recruitment and distribution of Japanese and Korean settlers.[6] Between 1910 and 1918, a total of 17,741 acres was appropriated for Japanese settlement and 7,035 Japanese families arrived in Korea to occupy it. In addition, there were sizable land purchases by Japanese private enterprise - as in industry, the zaibatsu played a prominent role. The Mitsubishi Company, for example, owned large holdings.

The dispossessed Koreans either continued on the land as tenant laborers, took advantage of the policy of subsidized Korean emigration to Manchuria, or moved to the towns.

There were two phases to the Japanese modification of the Korean economy. Before moving into Manchuria in 1931, the primary Japanese goal was to make Korea a place for the overflow of Japanese population, a supplier of foodstuffs and fertilizer for Japan, and a market for Japanese manufactured goods. After an altercation with China over Manchuria, it was decided to organize Japan's continental acquisitions on a war footing. From that point on, the policy of developing an industrial base to complement the supply of raw materials in Korea and Manchuria received top priority. While there was more emphasis on agricultural development during the first phase, the transformation of a peasant subsistence economy into a more diversified and modern one had begun even prior to annexation. The vital Japanese contribution was the installation of modern communications for both economic and military reasons. The system of railways and bridges which linked Korea with Manchuria was mainly completed by 1928.[7] A major north-south rail line was built connecting Pusan with Sinuiju on the Manchurian border and linkage with the Manchurian rail network. This line passed through Taegu, Seoul, and Pyongyang on its way north, linking the major cities of the peninsula. A second line was built from Seoul to Wonsan on the east coast and along the northeast coast. A third line was constructured from Taejon to the southwest port of Mokpo. Seoul and Pyongyang had short lines to their outports of Inchon and Chinnampo.

The main skeletal system was like an offset X from which tributaries and connecting lines developed. The result was a total rail network which served to tie together major parts of the peninsula as a single economic unit (Fig. 3). Korea was also linked with Tokyo and Dairen (Manchuria) by regular air flights.

A thorough reorganization of Korea's finance, budgetary system, and taxation policies, together with the introduction of a central bank and other credit institutions, opened Korea to trade, commerce, and some manufacturing. By 1917, a large amount of Japanese capital had been invested in the development of the infant industries of ore smelting, cotton ginning, electricity, rice-cleaning, tobacco cultivation, brewing, and tanning. Mining had becoming increasingly profitable with the outbreak of World War I. The Japanese recognized mining rights previously obtained by foreigners - the two largest gold mines remained under the control of American syndicates - but under a new rule, further mining privileges could only be obtained by Japanese citizens or Japanese corporate entities. Once again the zaibatsu took advantage of this new law to entrench themselves in the budding Korean mining industry. In agriculture, better seed and stock, model farms, improved irrigation capabilities, and the reclamation of wasteland all contributed to higher yields. The construction of roads, public buildings, harbor improvements, hospitals, schools and colleges contributed to Korean modernization.

During the second phase of development following the Manchurian takeover in 1931, the large Supung Dam on the Yalu River was built and the mining and the processing of minerals needed for the war

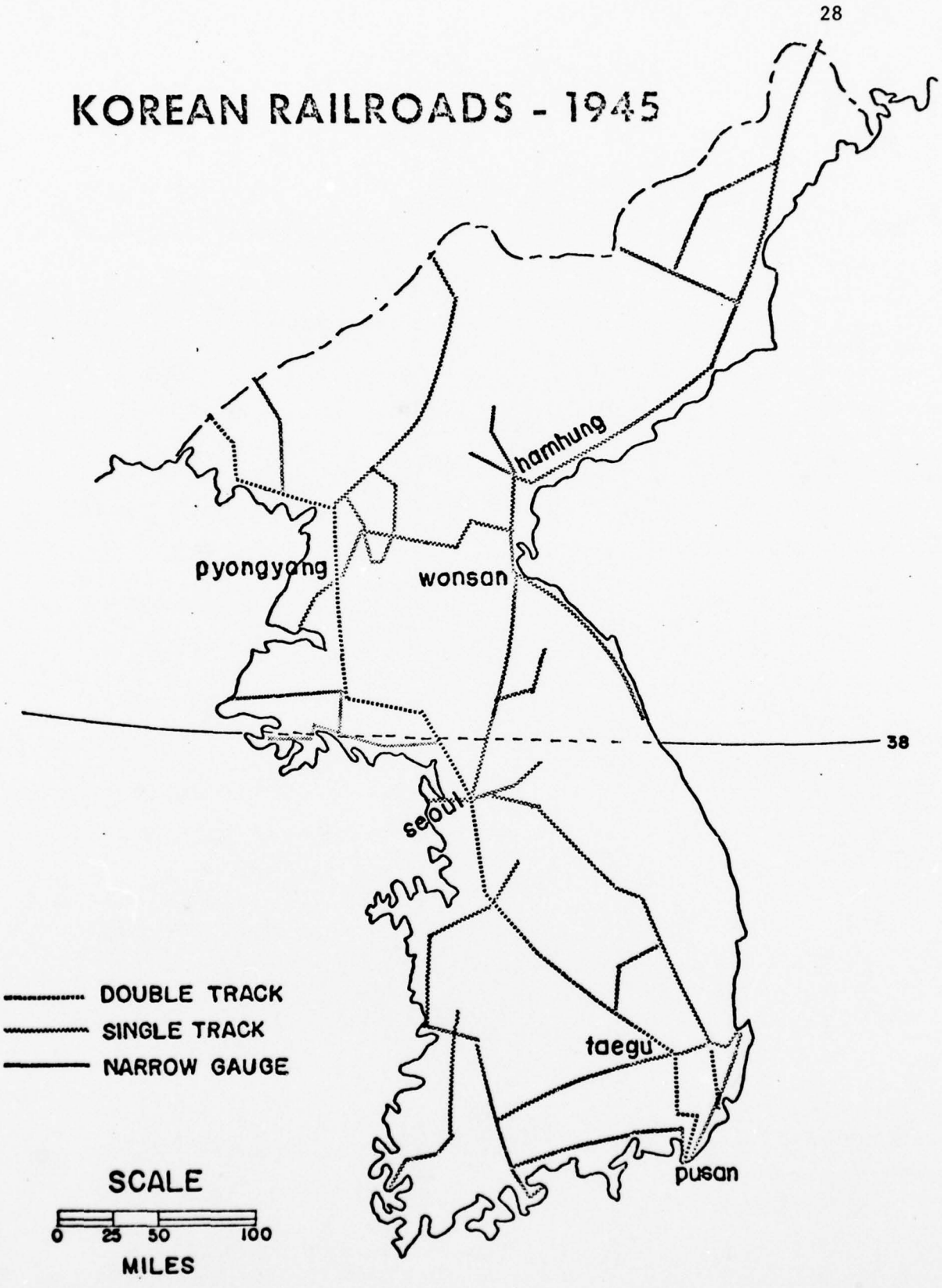

KOREAN RAILROADS - 1945
28
hamhung
pyongyang
wonsan
38
seoul
taegu
pusan
DOUBLE TRACK
SINGLE TRACK
NARROW GAUGE
SCALE
0 25 50 100
MILES

Figure 3

effort became the dominant activity. During World War II, industry became run-down and in some cases a cannibalization of the economic machinery installed by the Japanese was necessary as repair parts grew scarce and production facilities were pushed beyond the limits of their design capabilities. Nevertheless, in 1945, Korea was hardly the simple agrarian nation that had succumbed to foreign powers only a generation before. Modern Korea, molded by the Japanese colonial experience, was in its embryo stage. One of the real injustices of the colonial period was that the Koreans themselves had not been given the training required to administer a developing new nation. The Government-General of Korea had been the largest entrepreneur in Korea; it managed all the public utilities, the bulk of the forest areas which were stripped for fuel, and the monopolies of ginseng, salt, tobacco, and opium.[8] All of the administrative positions in the government and its agencies were held by Japanese.

During the Japanese occupation, from 1910 to 1945, a considerable level of industrialization was attained. According to one study, the value of output in 1910 constant prices had grown during the 30 year period from 1910 to 1940 at an annual rate of 3 percent for agriculture, 5 percent for forestry, 8 percent for fishing, 9 percent for mining, and 11 percent for manufacturing, with a composite growth rate of 5.6 percent. By 1940, the value of manufactured output was greater than that of agriculture.[9] This represented a turnaround for a previously agrarian peninsula. The transport system had grown similarly; by 1944, 3,911 miles of rail lines had been constructed, no small achievement in light of

the rugged topography. A nation is developed when its population is educated, sufficiently trained, reliable, and efficient in the use of modern means of production. The situation in Korea, however, reflected the artificial nature of its national development because most of the increase in physical assets and output had resulted from Japanese management and technical skills. On the basis of limited statistical data, it appears that only 20 percent of the manufacturing sector's engineers and technicians were Korean.[10]

An important aspect of the Korean economy, at this point, is the geographical location of the various economic groupings. The northern part of Korea was well supplied with mineral deposits of coal, iron, graphite, tungsten, copper, gold, kaolin, mica, and mining enterprises to extract them. The mineral supremacy of North Korea is illustrated in table 1 whereas figure 4 reflects the distribution

Table 1. Division of mines between North Korea and South Korea

Mineral	North Korea	South Korea
Alunite	4	2
Chromite	2	0
Coal	67	20
Copper	13	24
Gold	39	40
Graphite	147	35
Iron	19	5
Lead	45	30
Tungsten	20	23
Zinc	15	10

of mineral resources in the peninsula.[11] Foundries and other linkage industries needed to refine and process the minerals were located in northern Korea, as were the main hydroelectric power sources. The substantial concentration of industry in the north was governed by

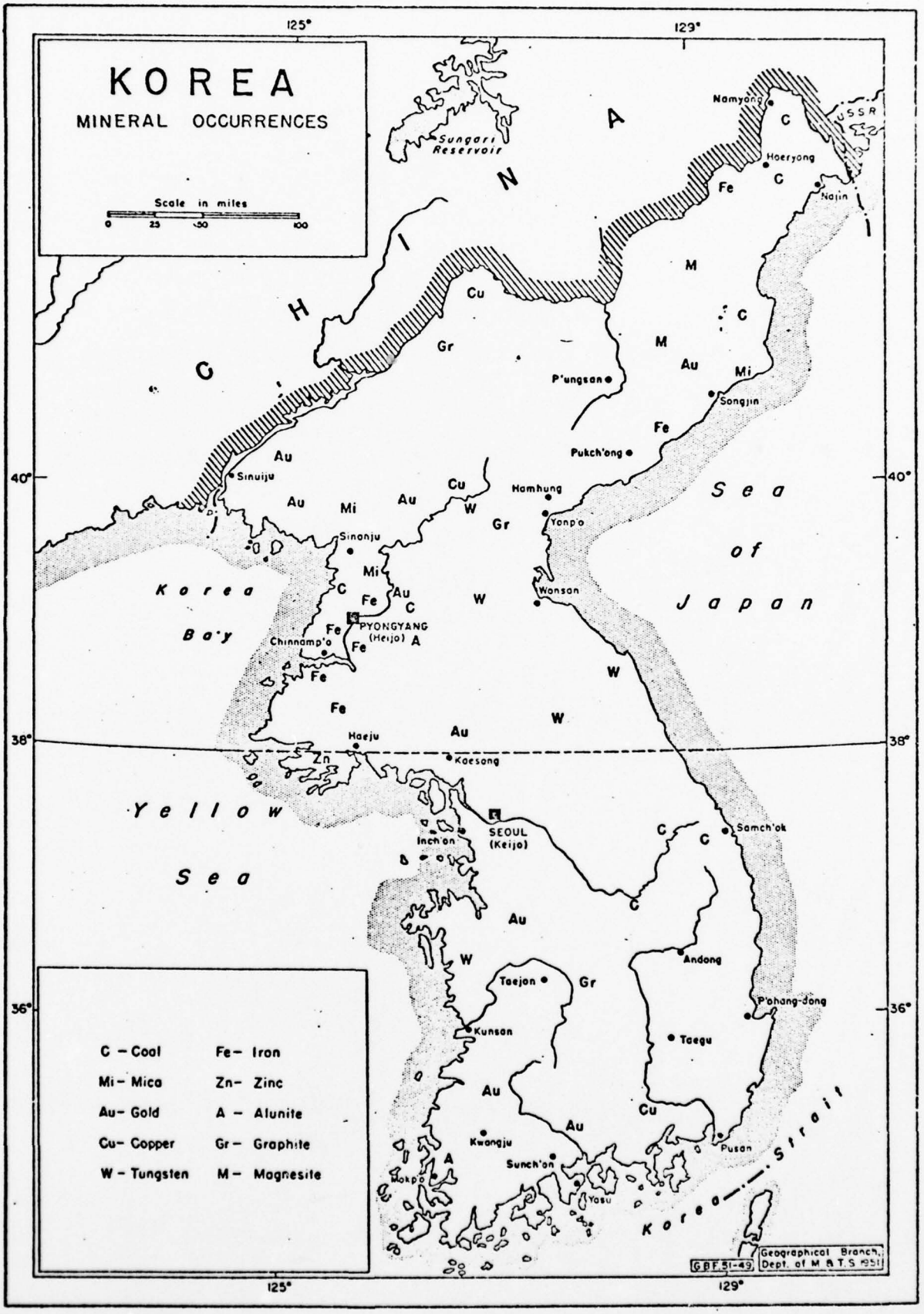

KOREA
MINERAL OCCURRENCES
Scale in miles
0 25 50 100
125°
129°
40°
38°
36°
Sungari Reservoir
Namyong
Hoeryong
Nanjin
USSR
Sea of Japan
Korea Bay
Yellow Sea
Korea Strait
P'ungsan
Songjin
Pukch'ong
Hamhung
Yonp'o
Wonsan
Sinuiju
Sinanju
Chinnamp'o
PYONGYANG (Heijo)
Haeju
Kaesong
SEOUL (Keijo)
Inch'on
Samch'ok
Andong
Taejon
P'ohang-dong
Kunsan
Taegu
Kwangju
Pusan
Sunch'on
Mokp'o
Yosu
C – Coal
Mi – Mica
Au – Gold
Cu – Copper
W – Tungsten
Fe – Iron
Zn – Zinc
A – Alunite
Gr – Graphite
M – Magnesite
GBF 51-49
Geographical Branch, Dept. of M.R.T.S. 1951

Figure 4

economic and geographical considerations. Pyongyang became the iron and steel center for the peninsula. On the other hand, agriculture and related consumer goods industries were found in southern Korea. This was because of the presence of the best agricultural land on the fertile plains and river valleys where there was a probability of double cropping due to a more moderate climate. Also, the bulk of the population resided in the south. When the Japanese occupation ended in 1945, North Korea and South Korea were operating as complementary regions within a single economic unit.

Post-1945 Conditions

Disintegration characterized the immediate post-war South Korean economy. Korea emerged from World War II as a divided country with its imposed boundary along the 38th parallel arbitrarily determined and rapidly hardening into a disputed border with the Communist North Korea. In South Korea, economic reorientation had to be conducted in a predominantly agricultural economy with a rapidly rising population, a problem compounded by the departure of the Japanese managers who had administered the colonial economy. The division of the country meant the loss for South Korea of heavy industry, primary coal deposits, and almost all the developed power capacity. It also produced a massive flow of refugees from north of the 38th parallel.

Under these conditions, South Korea experienced a drastically curtailed industrial production, an inflation that had by 1946 raised food prices a hundredfold over their pre-war level and raised the

question of how to dispose of Japanese industries and properties for which there was no plan. The agricultural land of South Korea was separated from supplies of essential chemical fertilizers whose entire Korean production was located in the north. The exchange of foodstuffs between south and north, resulting from greater specialization of the south in rice and barley, was terminated. Furthermore, the severance of economic ties with Japan, Manchuria, and China meant a severe reduction in the market for Korean products. This bleak picture of the South Korean economy directly after World War II resulted in immediate dependence on the United States, a consequence of tremendous significance for South Korea's political and economic development.

The argument has been presented that the industrial facilities which the Japanese left behind were not appropriate for the development of the domestic economy because they were built to serve the war effort and not for the production of civilian consumer goods. However, it may be equally argued that these facilities could have been modified to manufacture consumer goods. What appears to have really happened, regardless of the argument, was a gross mismanagement of the Japanese legacy. The wartime stockpiles were squandered and many of the physical productive assets were dismantled by petty thieves or unscrupulous profiteers.

There was an American Military Government administering the southern portion of the Korean peninsula from 1945 to 1948 as a result of the 1945 Potsdam Declaration. The division of the peninsula at the 38th parallel became permanent in August of 1948

when the Republic of Korea was formally born under the auspices of United Nations' supervised elections. Syngman Rhee was chosen to head the new Government. As some degree of political stability was achieved, the Gross National Product registered a slight gain in the 1947 to 1949 period. This achievement was in large part attributable to foreign aid from the United States, which helped to reduce the rate of inflation by permitting South Korea to import goods required to feed and clothe its population. Hence, some South Korean resources could be diverted from agricultural production and employed in capital goods production. This stimulated production and employment enough to enable South Korea to begin to supply a larger portion of its domestic market with manufactured goods. For the first time, South Korea was beginning to foster some indigenous entrepreneurial talent.

Unfortunately, the positive trend was short-lived as the North Korean army invaded South Korea in June, 1950. A large-scale destruction of productive assets, which did not occur during World War II, was affected during the Korean War by Korean, Chinese, and United Nations forces. The extent of wartime damage is estimated at 3 billion dollars. Industrial plant, transportation networks, power facilities, coal and other mining operations, dozens of towns, and hundreds of villages were completely or partially destroyed. At one time, in 1951, the only cities not in Communist hands were Pusan, Taegu, and Masan, all in the southeastern corner of the peninsula. A city, in the Korean context, has a population greater than 10,000. Virtually all of the remaining fifty-two cities, at that time, had

been fought over, bombed, and literally devastated. In Seoul, over 80 percent of industry, public utilities, and transportation, 75 percent of the offices, and more than half of the housing were in ruins. Almost a million South Korean civilians plus some 320,000 soldiers were killed. Farm production was reduced by some 27 percent and the overall Gross National Product fell 14 percent between 1949 and 1952.[12] A new wave of some 1.5 million North Korean refugees added to the disorder so that by the time of the armistice in mid-1953, there were about 2 million displaced persons. An acute housing shortage was spawned which has persisted to the present.

Post-Korean War

At the conclusion of the war, the proportion of South Korean development, in terms of problems and requirements, had been substantially altered. The war had changed South Korea from a small country with modest economic resources related to its size and capabilities to a defensive bastion with a military force ten times larger than pre-war levels (700,000 compared to 65,000). To maintain such a force was far beyond the capability of the South Korean economy and was possible only with the economic aid of and increased dependence upon the United States. In the social spectrum, the war levelled previous social distinctions and weakened the bonds of traditional Korean society. Urbanization and education were also stimulated by the war and combined to create new public interest in the nation's political and economic structures. The era of Japanese occupation, with its industrialization, increase in social overhead capital, and real hunger during the thirties and forties,

had produced a rapid rise in the number and size of cities. During and after the Korean War, however, the growth of urbanization in South Korea was accelerated, with the population in the largest cities (those over 100,000) practically doubling between 1949 and 1960 to a level of 23 percent of the total population. In all cities over 20,000 persons, the percentage of the population went from 28 percent to 41 percent in this period. Table 2 shows the rising rate

Table 2. Percentage of urban versus rural dwellers in 20th century Korea.

Year	Total Pop	Urban	Rural
1910	13,129	578 (4.4%)	12,551 (95.6%)
1920	16,916	1,201 (7.1%)	15,715 (92.9%)
1930	19,686	1,969 (10%)	17,717 (90%)
1940	23,653	3,690 (15.6%)	19,963 (84.4%)
1944*	25,120	4,270 (17%)	20,850 (83%)
1948*	20,167	5,445 (27%)	14,722 (73%)
1955*	21,489	8,381 (39%)	13,108 (61%)
1960*	25,117	10,558 (42%)	14,559 (58%)
1965*	28,639	12,827 (45%)	15,812 (55%)
1970*	31,566	17,134 (54%)	14,432 (46%)
1973	33,177	18,532 (56%)	14,645 (44%)

data in 1,000's

*data for South Korea only

of urbanization from 1910 through 1973. The growth of urban areas was linked with a fantastic demand for education. After 1945, primary education became universal. In the 20 years following independence, the number of university students increased eighteen times, while middle and high school students increased fourteen times.[13] There was a strong relationship between the increase in higher education and urbanization. By 1960, 72 percent of those with a university degree lived in cities with populations greater than 50,000.[14] Thus with

the growth in cities, a more literate populace, expanding mass media, and a concentration of students, the urban population grew increasingly vocal. In the years following the Korean War, this urban population came to be more and more critical of both the economy and the Rhee regime.

The armistice of 1953 that brought the Korean War to an end also brought temporary political and social stability during which the economy could grow. The reconstruction effort fueled by foreign aid was massive and resulted in a rise in the Gross National Product from 1953 through 1956. However, the rate of growth in Gross National Product tapered off as the pre-Korean War level was reached. By 1960, the growth rate was only 2.5 percent, which was below the rate of growth in population, meaning a negative growth rate in per capita income.

Between 1955 and 1960, the population of South Korea increased from approximately 21.5 million to slightly less than 25 million. The level of per capital income was below 100 dollars, about the same as India's and less than the 400 dollar figure for Japan and 150 dollars for Taiwan.[15] When the Rhee Government attempted to initiate price stabilization measures in 1958, the economic growth spurred by reconstruction activity came to a grinding halt due to crucial weaknesses in the economic structure. Productivity was low relative to capital expenditure and little was accomplished in terms of expanding and diversifying the economic base to ensure viability. Poverty among the expanding population became more prevalent as the pressure on the land became more intense, and there were high rates

of both unemployment and underemployment. The low productivity in the agricultural sector was highlighted by the fact that almost two-thirds of the populace worked in farming but produced less than two-fifths of the Gross National Product in 1959 and 1960. South Korea was compelled to import large quantities of foodstuffs in order to maintain a minimum national food supply.

The poor agricultural production in 1959 and 1960 initiated a recession that lasted for several years. These economic ills combined with previously mentioned social factors forced the Rhee Government into a pattern of political repression. This action stimulated student unrest and demonstrations that ultimately led to the collapse of the Rhee regime in April, 1960. A new government under the direction of Chang Myon was formed with a slogan of "economic development first".[16] However, confronted with the aftermath of the Rhee repression, a virtually bankrupt treasury, and a police force incapable of maintaining order, the Chang government was doomed to failure. Hastily implemented monetary policies backfired and increased the cost of imports, thereby stagnating production further and intensifying unemployment. The Chang regime was toppled by a military coup in May, 1961. The Korean coup occurred shortly after similar events in Burma and Pakistan. What was unique was the absence of colonial roots in the military. The Korean Army had never been restored during the Japanese colonial period; hence it was primarily a product of the Korean War.[17] The coup leaders stated that economic resurgence was to be an integral part of a more independent and stronger South Korea. It was in this light that economic

development in South Korea came to the forefront of the political scene. A military junta ruled South Korea for two years and then gave way to a civilian form of government. This government has persisted to the present under the leadership of Park Chung-Hee, who as a Major General led the coup. For the new government under Park (military and civilian), self-sustained economic development became the immediate political objective. The spatial structure of the nation had been destroyed and a new pattern of economic integration was required because it was obvious that the reunification of the peninsula would be a long time coming - if ever. The mechanism decided upon to pursue this ambitious goal was the five-year plan, the first of which went into operation in 1962.

NOTES

[1]Gregory Henderson, Korea: The Politics of the Vortex (Cambridge, Mass.: Harvard University Press, 1968).

[2]Chang, p. 820.

[3]W.D. Reeve, The Republic of Korea (London: Oxford University Press, 1963), p. 13.

[4]Reeve, p. 16.

[5]Reeve, p. 17.

[6]Bank of Korea, Economic History of Korea (Seoul: 1920), p. 33.

[7]Reeve, p. 20.

[8]Hahm and others, p. 78.

[9]David C. Cole and Princeton N. Lyman, Korean Development (Cambridge: Harvard University Press, 1971), p. 122.

[10]Youngil Lim,"Foreign Influence on the Economic Change in Korea," Journal of Asian Studies, No. 1, 1968, p. 84.

[11]Department of Mines and Technical Surveys, Korea, A Geographical Appreciation (Ottawa: Dept. of Mines, 1951), p. 18.

[12]Cole and Lyman, p. 22.

[13]Cole and Lyman, p. 24.

[14]Cole and Lyman, p. 24.

[15]Reeve, p. 125.

[16]Cole and Lyman, p. 31.

[17]Cole and Lyman, p. 34.

CHAPTER II

SOUTH KOREA'S FIVE-YEAR PLANS

"The times in which we live are most trying, to this land of rivers and mountains may peace and prosperity come".
(Korean folk refrain)

The experience of South Korea since the transition in 1963 to the civilian government headed by Park has demonstrated how economic and political development can be mutually reinforcing. In this relatively short period of time, South Korea has undergone a remarkable change. The economy grew at an average rate of 8.3 percent during the first five-year plan and increased to 11.4 percent during the second plan. In perspective, prior to the Park takeover, the growth rate was hovering at a rate of barely 3 percent, and by 1969 it had soared to a rate of 15.9 percent. At this point, the excess of investments over savings threatened to literally blow the economy up. The growth rate was brought under control and reduced to approximately 9 percent in 1970 and 1971. 1973 saw another incredible leap to 15 percent that was short-lived as the effects of the Arab oil price increases and a world-wide recession reduced the 1974 growth by half (Fig. 5).

The Gross National Product grew about four times from 2.3 billion dollars in 1960 to 9.5 billion dollars in 1973. Per capita national income increased by a smaller, but still significant, multiple of 3.5

GROWTH RATE OF GNP

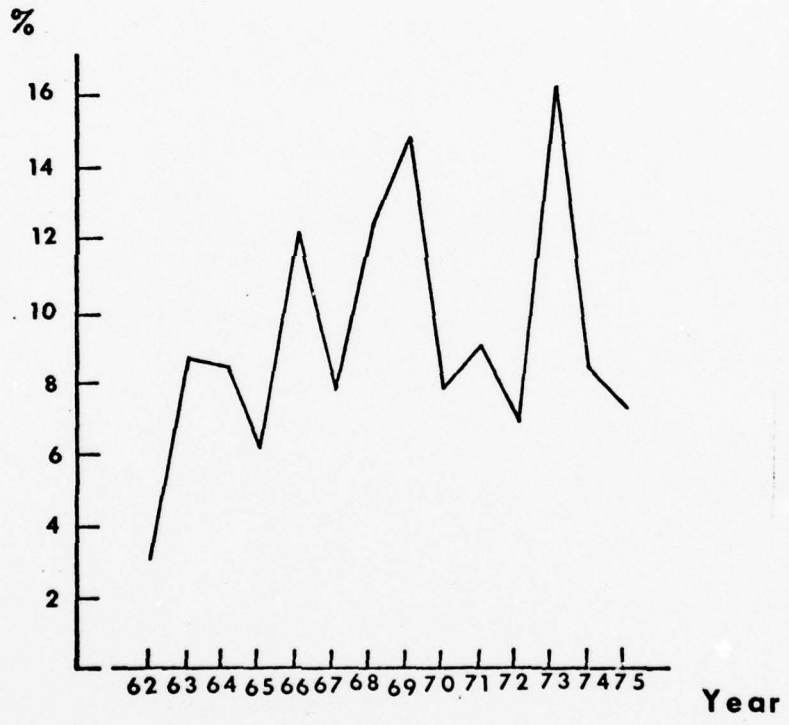


Figure 5

from 90 dollars to 320 dollars. Personal disposable income rose at an even lower rate reflecting the ceiling on wage levels and reduced consumer spending in favor of capital investment. The per capita income figures do disguise the inequitable distribution of income which is a sensitive social problem yet to be addressed by the central government. Exports during the 1962 to 1972 period rose at an average rate of 40 percent annually, and in 1973, the rate jumped to 80 percent, raising exports to an estimated 3.1 billion dollars relative to the 1961 figure of .4 billion dollars. The emphasis on exports resulted in a restructuring of the economy from one largely dependent on agricultural products to one with greater balance in all economic sectors. Manufacturing increased ten times during this period.

These eye-opening statistics raise the question of how South Korea's economic progress measures against the principal models of economic development built by Paul Samuelson, Walt Rostow and Gunnar Myrdal. Samuelson believes that there are four fundamental factors essential in promoting development - population, natural resources, capital formation (domestic or imported capital) and technology.[1] Each factor intersects with the others, and a country to have continued growth must do well in all four areas. He contends that underdeveloped countries have a high natural population growth rate, a low level of education and skills, and inadequate health facilities. In regard to capital formation, underdeveloped countries are characterized by pervasive poverty and limited savings, failure to invest savings in a productive fashion, and nationalistic limitations on foreign capital investment. In the field of technology, Samuelson sees underdeveloped

countries with traditions that frustrate innovations, low borrowing rates from external sources, and a limited capacity for inventiveness or resourcefulness. In the area of natural resources, he states that underdeveloped countries have poor mineral and agricultural bases, cultural restrictions that frustrate adoption of improved methodologies, and political barriers that prohibit resource exploration.

In the Samuelson model, a nation reaches the developed stage when the score in all four factors is represented by a common point very close to or at the exact intersection of the four factors. The available evidence about South Korea indicates that it is moving in the developed nation direction per Samuelson's model. It is moving ahead in all aspects of population. Regarding capital formation, it is still hampered by wide-spread poverty, a low volume of savings, and a substantial foreign debt due to heavy borrowing from external sources. South Korea has made large strides in technology because of the erosion of cultural barriers which inhibited the adoption of western methods. However, it still suffers from a lack of capital to invest in research and development. The shortage of natural resources is South Korean's most significant problem, and this is highlighted by the Samuelson model. The deficiencies in key natural resources, such as iron, coal, and petroleum required for an advanced industrial economy can only be overcome by means of expensive imports. The political atmosphere which shrouds the peninsula does retard resource development, particularly in regard to continental shelf exploration for petroleum and other desperately needed mineral resources.

The Samuelson model is helpful in pointing out constraints to modernization in underdeveloped countries. But it is also important to know how economic development takes place, how you can plan for it, where planners and government should interfere with the dynamics of development, and what policy instruments are best suited to direct growth. Such insights into the process of economic growth are provided by the historical model of growth of W.W. Rostow. Rostow's descriptive model depicts five stages of economic expansion, each chronologically and economically more advanced than the preceding. The first stage is the traditional society, which is characterized by limited technology and no growth. The bulk of the labor force is involved in primary activities and social mobility is non-existent. This stage can last indefinitely. The second stage is the pre-condition for take-off. It is marked by an external influence which causes an internal awakening to new ideas; initial investment in the primary extractive industries; installation of social overhead capital in the form of an infrastructure of roads and other facilities; and the evolution of a new political power structure. The third stage is take-off. It is a relatively short period of some 30 years during which phenomenal growth occurs. It is distinguished by a substantial increase in new capital investment and new technologies and a transfer of technology from one location to another. Investment is usually in the development of one or two large manufacturing industries, normally textiles followed by iron and steel. In this stage, Rostow predicts the emergence of a political institutional framework which encourages and protects the growth of industry. Stage four is the drive to

maturity. During this longer period (60-100 years), Rostow sees great expansion of the sub-divisions of manufacturing industries with principal activity still centered on the two dominant industries and the rapid expansion of the tertiary sector. The final stage is the period of high mass consumption. Diversification of industry, sizable growth in the tertiary and quaternary sectors, and an environment where a population can readily find all the goods and services they require highlight this stage.

The major criticism of Rostow's model has been that there is no definitive time separation between the developmental stages. In more recent times, as the international communication network has improved and barriers to the flow of information have been eliminated, countries have become more aware of factors that influence economic growth. Hence, they can speed up or retard the process affecting the time span of a given stage. Nevertheless, the value of Rostow's model is that it provides a scenario, so to speak, by which one can follow and compare development on an international basis. It also allows one to obtain a more generalized perspective of national development as opposed to a particular area, such as industrial location or transportation. The Rostow model is very useful to this study as it helps identify where South Korea has been, where she is today, and what the future portends in terms of its development. Based on the information presented to date, it appears that South Korea presently fits in the heart of Rostow's third, or take-off, stage.

Myrdal has developed a general model of economic development which in its simplest form bolsters the important position relegated to

South Korean Planning in this study.[3] This model depicts a process of economic development that can be adopted for use at the urban, regional, or national level. When applied on the national level, which is the primary focus of this study, the model is better because there is higher quality data available. National input is closed in a statistical sense, which makes data concerning such items as imports and exports easy to compile.

The model depicts a cumulative causation process in which industrial development in an area has multiplier effects. The significance to South Korea is that the model concludes that the most important way of influencing industrial growth is through the provision of services, i.e., roads, sewerage systems, vocational training, plant and machinery, interest free loans, - items which enhance localization and urbanization economies. Therefore, the way to encourage basic industrial growth and attract industry is to influence the infrastructure by promoting the construction of those elements of social overhead capital which lead to reductions in the per unit costs of production. The second most promising policy for stimulating growth recommended by the model is to increase the pool of skilled labor available for industrial employment. A third approach is to enhance the development of external economies by such means as government purchases of land, plant, and equipment for resale or lease at low cost to industrial concerns. Thoughtful South Korean planning has pursued all three of these avenues.

The Pre-Planning Period, 1954-61

The period prior to the adoption of the first comprehensive national five-year plan was marked economically by reconstruction

(1954-57) and stabilization and stagnation (1958-61). It was highlighted at times by substantial development but generally had uneven growth with no forward-looking discernable national objective. The bulk of the growth achieved was absorbed in the reconstruction and recovery from war damage. Some significant progress was made in the restoration of elementary infrastructure needs, such as power, mining and industry, which had been lost following the formal political separation of the peninsula. The economy, in the pre-1962 time frame, was highly resistant to any measure that would foster internal modernization. The major reason was the repressive and corrupt nature of the Rhee regime. The massive dependence on foreign imports continued, and little was done to stimulate any sort of export market. The business community focused on low-risk, short-term investments that often yielded profits due to the excessively high rate of inflation.[4] As a consequence, domestic savings were virtually non-existent, and although the economy superficially appeared to be making strides, there was in actuality no basis for long-term stable growth.

The general economy was inhibited by a pervasive administrative incompetence in both the public and private sectors, governmental corruption at all levels, and the inflationary spiral alluded to earlier. The primary industries - agriculture and fishing - continued to employ the bulk of the labor force but in turn contributed a very low level of production for the percentage of workers involved. The agricultural sector, still dominated by the Japanese legacy in which the majority of the populace was geared to agricultural activities, featured an excessive utilization of manpower on increasingly

fragmented plots. The smallness of the plots made it almost impossible to implement new farm techniques or to utilize machinery. There were only the most primitive of attempts made during this period to improve irrigation or construct dams for flood control. Use of chemical fertilizers was random at best and the cost, because they were imported was often prohibitive. There was in reality virtually no concentrated effort on behalf of the South Korean government to improve the lot of the agricultural sector. The consequence was a dismally low farm income, a lack of purchasing power by the vast majority of the population, and food shortages for the nation as a whole which could only be alleviated through costly imports. The farmer's predicament was further compounded by low prices for his products, high costs for imported industrial materials necessary to enhance production, and the ever-present inflation. The fishing industry was no better off than agriculture. Secondary and tertiary activities made limited progress due to the absence of investment capital. The machine, tool, and electronics industries were non-existent; textiles and similar light industries stagnated; supplies of electric power were inconsistent; and there was no attempt to improve or expand existing transportation facilities.

With the ascendancy of the Park government to power, South Korea had come to a pivotal point in its brief existence. A new economic course of action based upon long-range national planning was adopted with the goals of creating a truly independent and internationally recognized nation, the eventual severance of her relationship of dependency on the United States, the accumulation of

sufficient economic and political strength to ensure that she would not be consumed by a belligerent North Korea, and improvement in the standard of living of the South Korean people on a par with that of developed nations. Fundamental national strengths and weaknesses confronted the new government during its economic decision-making process.

The main strength of the South Korean economy is the South Korean people themselves. As previously noted, the individual levels of literacy, skill, and energy are relatively high due in part to the cumulative influences of military training. Literacy stands at over 90 percent, and close to 10 percent of the entire population has had college training. A second strength has been the political leadership's willingness to diversify. There has been a conscious recognition by planners and decision-makers alike that flexibility offers the best protection against world market price fluctuations which often frustrate economies based upon one or two dominant export commodities. They have also recognized the need for the central government to construct a basic economic infrastructure marked by adequate power supplies, cement for construction, modern transportation networks, and a supply of industrial water. A fourth strength is South Korea's comparative labor advantage in relation to other countries. The competitive advantage of a large pool of skilled or highly trainable labor at low-cost is quite a stimulus to foreign and domestic investment in the labor-intensive industries of the private sector. A fifth strength has been the external support South Korea has derived from its special relationship with the United States. This support has been in the form of manpower for defense and industry,

technology, capital - grants, loans, and investment - and political backing in the international arena.

On the negative side, there is a strong correlation between the dearth in natural resources pointed out previously and the numerous inadequacies in people's living conditions. In the harsh economic environment of 1961, South Korea's population growth rate was among the highest in Asia at just under 3 percent, arable land was only 20 percent of the nation's total, and 25 percent of the labor force was unemployed. Requirements for social services expanded at a phenomenal rate as a large-scale rural to urban migration attempted to reduce some of the intense pressure on agricultural land. In many areas, particularly Seoul and Pusan, this mass movement of people did little to resolve the problems in rural areas and created significant new problems related to rapid urbanization. Perhaps the most important and therefore the most challenging weakness for the South Korean economy was the almost complete dependence on other nations. South Korea has relied heavily on exports to stimulate development.[5] This has made it vulnerable to shifts in world demand. Because of the lack of resources, much of the inputs for the export industries have had to be imported.

The First Five-Year Plan

The initial national planning effort in South Korea was a study done for the United Nations Korean Reconstruction Agency by an American firm, Robert Nathan Associates. The report was published in 1954 but it was not adopted by the South Korean government for petty political

reasons. The government established an internal capability for economic planning in 1958 by creating an Economic Development Council, which was charged with the responsibility of preparing a long-term plan for national development, devising public sector investment plans, and performing the required economic research. In early 1959, a three-year plan based on the United States' Colm-type model which stressed employment objectives was presented to the Cabinet. The aims of the plan were to reduce unemployment and to increase the Gross National Product by 5 percent annually. The plan was adopted by the Cabinet in the spring of 1960, but shortly thereafter the Rhee regime was toppled and the plan was tabled.

At the end of 1960, the new prime minister directed the Economic Development Council to come up with a new five-year plan that would improve upon and supercede the previous plan. In May, 1961, a five-year plan based on the capital-oriented Harrod-Domar model was completed.[6] Rather than the balanced growth structure of the three-year plan, it stressed a need for concentrating investment in a few important commodities, such as power, coal, and cement. Growth, rather than employment, was the main objective. This plan suffered the same fate as the earlier plan due to the military coup of May, 1961. However, it did provide the nucleus around which a new plan could be prepared. The Economic Development Council was replaced by the present Economic Planning Board, which has been a strong operational unit since its inception. This new planning body was ordered to quickly complete a new five-year plan. Drawing heavily on the May, 1961 plan, a draft was submitted for approval in November and was

implemented in January, 1962, as the First Five-Year Economic Plan.

The general strategy underlying the plan was to concentrate on three essential sectors - electric power, agriculture, and social overhead capital.[7] The intent of expanding hydro- and thermal-power capacity was to provide a foundation for the expansion and construction of vital industrial production facilities, largely in the private sector. Target industries were cement, fertilizer, and iron and steel. The goal in the agricultural sector was to achieve self-sufficiency in food grain production and consumption by 1966. Social overhead capital was to be improved by utilizing unemployed and underemployed rural labor to construct roads, multi-purpose dams, and urban public works under the guidance of a government agency. A final plan objective was the improvement of balance of payments through export promotion. The plan emphasized that the road to the development of the Korean economy was through industrialization by private enterprise, particularly import-substituting industries.

The government began to establish an institutional framework. Late in 1961, the Medium Industry Bank was founded with the purpose of promoting small and medium industries, and in May, 1962, laws concerning the Bank of Korea were amended in order to give the government control over the central bank. Unfortunately, despite this extensive background work and noble objectives, the plan met with early setbacks. Consecutive bad harvests in 1962 and 1963 (primarily due to harsh weather) coupled with an excessive growth in the money supply caused inflation to worsen. This had the impact of drastically reducing foreign exchange holdings and severely damaging the balance

of payments. Under these unfavorable circumstances, South Korean planning demonstrated its flexible character: the direction of government policies switched to stabilization. Rapid changes in early 1964 included the attraction of foreign capital, currency devaluation, and the raising of interest rates. It had become painfully clear to planners and government officials alike that a rapid growth in industrialization could not be financed by domestic savings alone.

The new government began to stabilize and with it the economy as the agricultural sector perked somewhat from the earlier disasters. Recovery was spurred by unexpected developments external to the parameters of the First Five-Year Plan. The resumption of diplomatic relations with Japan in 1965 was one such development. It was immediately followed by a massive injection of Japanese capital and goods and services into the South Korean economy. Japan most certainly had its own security and economic interests at heart when agreeing to the 1965 normalization. The prevailing Japanese opinion was that they had to intervene in order to stabilize the South Korean economy before a major economic imbalance between North Korea and South Korea led to a disruption of the status-quo in Northeast Asia. Such a disruption could prove to be disastrous for Japan, who had fears of Soviet or Chinese encroachment, an interesting contrast to the turn-of-the-century Japanese foreign policy. Regardless of the motives, preliminary Japanese financial assistance was pumped into building projects for basic economic growth. When the formal agreements were completed, a total of 800 million dollars was provided by Japan to South Korea in the form of reparations, government loans, and private

commercial loans.[8] These monies were immediately channelled into agriculture, fishing, raw material acquisitions, development of small and medium size industries, transportation improvements in rail and coastal shipping, and other construction projects.

The second external development was the concurrent accelerated spending by the United States due to the expansion of the Vietnam War. This resulted in South Korea supplying large amounts of food, tires, parts, and other small manufactured goods to South Vietnam. South Korea was contracted by the Saigon government to assist in various public works projects, such as road-building and the dredging of ports. South Korea was able to obtain a significant portion of its budgetary needs from this windfall relationship. This unexpected market for the export of goods and services late in the first plan period, provided further investment capital for domestic planning projects, reduced the mounting balance of payments deficit, and improved the position of foreign exchange reserves. The economic involvement with South Vietnam which led eventually to the actual deployment of South Korean soldiers to South Vietnam was instigated by the United States for both political and economic reasons. The Vietnam involvement served as a watershed for South Korean's economic growth.

United States' grants-in-aid played a major role in South Korean development during this period. Although the grant type aid declined steadily each year from 232 million dollars in 1962 to 103 million dollars in 1966,[9] United States' development loans offset the decreases. What is significant is that this initial plan period witnessed the transition of the South Korean economy from grant-oriented

to loan-oriented, tangible evidence of South Korean's take-off toward a mature economic standing.

Buoyed by the above developments, economic growth during the First Five-Year Plan was remarkably steady upward. By 1966, a tremendous increase of some 70 percent was realized in the level of exports. The Gross National Product rose by an annual average of 8 percent and per capita national income by 4.6 percent. The mining and manufacturing sectors, which had received the greatest priority for capital investment, recorded the strongest growth rates, both in excess of 15 percent. This capital productivity was also related to improved managerial and technical skills, the sum of which was reflected in the rising export level. Labor-intensive industries, primarily textiles, which needed little capital, expanded dramatically. The agriculture, fishing, and service sectors all yielded more modest growth performances ranging from 4 to 7 percent per annum. With the completion of Pusan and several other power plants, the nation's supply of electricity was almost doubled, and the power shortage that had existed since 1945 was largely overcome. Economic planning proved flexible enough to allow for continued modifications and adjustments in view of experience or information gained during the plan period. This realistic approach to the role of planning, as a process which seeks to guide development through constant revision and adaptation, has remained a key to the success of South Korea's economic growth.

The Second Five-Year Plan

Preparation of the Second Five-Year Plan extended over a longer period and was more thorough and open. American planners were requested

to work on an equal footing with South Korean planners, which had not been the case earlier. Consideration of alternative planning models was initiated in the fall of 1964, nearly two years prior to the second plan's completion. Because of the inadequacies of the economic data base, it was necessary to estimate most of the second plan's macro-economic targets on a primarily intuitive basis, emphasizing recent structural shifts rather than using a formal model based on longer-run trends and relationships. Because of the insufficient time series data, work also began on the construction of a formal national model that could utilize the reasonably accurate and available current inter-industry input/output information.[10]

On the basis of experience gained from the first plan, the principal objectives of the second plan (1967 to 1971) were to encourage the modernization of the outmoded industrial structure and to construct a firm foundation for a self-supporting national economy. Specific goals of the plan included self-sufficiency in food production; increased output in the chemical, machine, and iron and steel industries; export expansion and continued import substitution; family planning measures and the reduction of unemployment; increased national income levels with particular emphasis on raising agricultural productivity through diversification; and improved technology and management skills.[11] The strategy proposed to attain these goals was greater emphasis on export promotion and agricultural development and investment in heavy industry.

The main issues involved in modifying the industrial structure in the second plan were how quickly exports could be increased; whether

there would be sufficient growth in demand to warrant the construction of large-scale plants; and whether to allow massive importation of machinery and equipment to encourage a swift rise in investment, or to try and shift some of the demand to existing domestic machinery and capital goods industries. While the second plan was being conceived, two major construction projects were under consideration that would supply materials for export industries thereby paving the way for increased emphasis in heavy industry - an integrated steel mill and a petrochemicals complex.

These two huge industrial projects were studied from the standpoint of the composite growth of industrial demand and of the investments needed in medium industries to maintain their growth. The conclusion reached was that the petrochemicals complex should be constructed first. It required a smaller total investment and the likelihood of adequate demand for its output appeared more probable. It was further decided that the steel plant would be built later in the second plan with production to begin during the third plan. These decisions highlight how the planning process seeks to reconcile conflicting interests in order to achieve satisfactory overall development.

Because growth was the keynote of the second plan, much of the capital investment was funneled into electric and mechanical products for export and consumer markets rather than into the heavier machine tool industries which would not attract foreign capital. By taking advantage of the swift increase in exports, which originated primarily from the less capital-intensive manufacturing industries, by

delaying some of the more capital-intensive projects until sufficient demand for their output was certain, and by depending almost entirely on imported machinery, the plan was designed to achieve a high rate of growth and increased efficiency. Growth turned out to be so rapid in 1966 and 1967 that what had appeared earlier to be sufficient capacity in the areas of power and transportation turned out to be inadequate.

Because of the large rise in external capital resources, combined with increased indigenous capital accumulation, the amount of investment ran significantly higher than plan projections. This massive volume of investment spurred the growth of the South Korean economy considerably during the Second Five-Year Plan: 8.9 percent in 1967, 13.3 percent in 1968, 15.9 percent in 1969, 8.9 percent in 1970, and 10.2 percent in 1971. This growth record is remarkable even for an underdeveloped nation. The growth rate of 15.9 percent attained in 1969 was the highest in the world for the decade of the 1960's.[12] Where Gross National Product was concerned, the objective of the second plan was exceeded by 1969. The irregular nature of the growth rate indicates the inconsistent performance of the agricultural sector during this period. Agriculture had not received the attention specified by the plan, and the weather once again caused very poor harvests two times in the five years.

Economic expansion during the second plan focused even more sharply on the urban-industrial sector than did the first plan. Mining and manufacturing activity, in particular, increased by slightly more than 20 percent per annum during the five years. This progress in

industrialization, when contrasted to the annual average growth rate of 2.3 percent in agriculture, highlights the lack of proportionate capital investment in agriculture. The Second Five-Year Plan resulted in a widening earnings gap between the rural and the urban communities. By 1971, agriculture contributed only 24 percent to the Gross National Product, whereas half the population lived on farms.

Despite the stagnation in agriculture, the vigorous industrial upsurge of the late sixties permeated the economy and caused the index of industrial production to rise almost threefold in the period from 1966 through 1970. Examples of production increases include: food processing, up 300 percent; textiles, up 400 percent; wood products, up 420 percent; paper goods, up 220 percent; chemicals, up 450 percent; metals up 310 percent; machinery, up 170 percent; electrical products, up 340 percent; and transport equipment, up 270 percent.[13] Mining was virtually static in terms of total output as increased production of tungsten and limestone was offset by curtailed coal production due to a gradual industrial transition to petroleum fuels.

The development of the economic infrastructure complemented and enhanced the industrial growth despite its uneven growth tendencies. Modern expressways were built connecting the major population and industrial centers, but the number of motor vehicles available to utilize the roads was still too small to provide any substantial return on investment. Many other key intercity roads remained unpaved at the expense of completing expressways. As production increased and the inadequate supply of motor vehicles could not handle the freight load,

the generally ignored railroads became overburdened with mounting freight volume. The problems which afflict modern cities became increasingly apparent to South Korea in the form of persistent housing shortages, traffic congestion, and pollution.

The results of the second plan were highlighted by an average annual growth rate of 12 percent; exports continued to increase annually by 44 percent; and per capita national income almost tripled from 1960 levels. These positive trends were somewhat negated by a persistent inflationary spiral throughout the period. As indicated by the index of industrial production, it was the manufactured goods ctivity which spurred both the real growth in Gross National Product and the commodity export levels. By the plan's end, almost a billion dollars in foreign exchange had been earned. However, almost 50 percent of that figure resulted from Vietnam transactions. The excellent growth was almost overshadowed by the negative trade balance being generated. The reality of the matter was that increased industrial production had required the importation of a larger quantity of more expensive raw materials not available in South Korea. Hence, in the early 1970's, the export/import gap was expanding at close to a one-to-five ratio and the level of foreign debt was approximately 2.5 billion dollars in 1971.[14] Much of this foreign debt was in short-term loans with Japan. Critics of the Park Government began to warn that if there was not a reversal of the deepening trend of economic reliance on Japan, the South Korean economy would soon become dominated by the Japanese. This threat invoked fears of a distasteful

economic imperialism along the lines of the bitterly remembered Japanese colonial experience.

Nevertheless, investment capital was poured into the economy with particular emphasis given to mechanical and electronic goods as planned. These were the industries that attracted foreign capital. Furthermore, only minimal industrial research was carried out in the private sector due to obvious funding constraints. The technological dependence alluded to previously remained a characteristic of the economy. Electric power capacity continued to grow as multi-purpose dams were constructed at several locations for both power generation and flood control. An oil refinery and the petrochemical complex were completed and placed in operation at Ulsan. The cement industry grew rapidly enough to produce an export surplus. A modest iron and steel works was put into operation at Inchon, and the larger integrated plant, considered by the plan, was begun.

The national economic picture at the completion of the Second Five-Year Plan in 1971 was one of expanding industrial growth delicately balanced on a precarious financial structure. Unfortunately, the average South Korean had experienced little personal improvement in his daily struggle as a result of this dynamic economic growth. Steady inflation had eroded a considerable portion of the nation-wide increase in per capita income. Low wages prevailed in the industrial sector, and the work day was long, often 12 to 16 hours a day, 6 days a week. The poor performance in agriculture and fishing was particularly perplexing to a population still 50 percent agrarian. Agriculture had averaged a mere 4 percent growth for the five years of

the second plan. Deficiencies in foodstuffs had occurred in every year forcing rice imports of 3.5 million tons during the plan period. The planning goal of self-sufficiency in foodstuffs had proven elusive. It is remarkable that Park was able to maintain the support of rural voters in the national elections of both 1967 and 1971.

The position of the planners and decision-makers was that the long-term gain to be derived from capital investment in the industrial sector far outweighed the import cost of foodstuffs resulting from the failure to invest additional capital in the agricultural sector. In simplest terms, there was a trade-off between rapid unbalanced manufacturing growth and more balanced modest growth. The government perceived the economic future of South Korea to be in the industrial sector, due primarily to the mounting intensity of land use, and hence it opted for dynamic growth. Planners also recognized that, in order to affect any significant changes in South Korean agriculture, massive development projects in the major river basins were required. Therefore, additional aims of the rapid growth option were to accumulate sufficient export earnings or to establish a firm enough international credit position in order to initiate the required corrective action in the agricultural sector.

The theme of strong ties between political factors and economic development was reinforced during the second plan period. The increase in foreign investment reflected international confidence in South Korea's security. Investment laws made such investment attractive; 100 percent foreign ownership and liberal repatriation of capital and profits were permitted. As examples of American investments,

Ford decided to assemble cars and trucks in South Korea in 1968; Caterpillar and International Harvester granted long-term credit extensions; Baldwin pianos opened a production facility; National Distilleries started a program to extract synthetic alcohol from petrochemicals; and Union Oil of California contracted for a joint project to construct a large thermal power plant near Seoul. When construction began on the integrated iron and steel plant complex at Pohang, seven American firms arranged to participate. The petroleum refining industry was also a beneficiary of substantial foreign investment. In 1965, South Korea had to import all refined petroleum products. By 1969, there were two refineries in operation at Ulsan and two more under construction. Despite these gains, the economic hazards of an unservicable debt structure and mounting inflation shrouded the future with uncertainty. Many cities felt that the political component of the developmental process was trying to push for too much too soon. They predicted that the economy would literally explode from the forces of uncontrolled growth and spiralling inflation. Critics further attempted to expose corrupt practices in business and government as a fatal flaw. Corruption was virtually a way of life in South Korea, and the Park regime tacitly accepted it while continuing to promote big business and industry as the fastest means of achieving economic development.

The Third Five-Year Plan

The Third Five-Year Plan was conceived for 1972 through 1976. Because of the experience gained in the first two plans and the beginnings of a sound statistical base, planners were able to utilize

their quantitative tools in a more refined manner in preparing it. It was felt that the first two plans had paved the way for economic self-sufficiency by fostering industrialization, expanding social overhead capital, laying a foundation for agricultural development, and significantly increasing exports. The first two plans had emphasized industry, infrastructure, and exports for rapid capital accumulation, while the third plan recommended more balanced growth between agriculture and industry. It also advocated a more modest annual growth rate and a substantial increase in per capita income. The inclination of planners was to promote a stronger regional flavor in the planning process due to an increased acceptance of a growth center philosophy, and a greater awareness of financial constraints. They perceived the drive for basic industrialization as succeeding and encouraged greater attention toward the acquisition of technology required for more sophisticated capital goods industries. South Korean planners and policy-makers stressed the labor productivity and comparative advantage of economic development in South Korea.[15] At the same time, there was a growing appreciation that growth was not adequate as a social goal, that income distribution and social welfare issues must be dealt with. However, due to political constraints and the constant military threat that overshadows all policy in South Korea, the government has not sought to address these issues directly.

The official emphasis of the third plan was the rapid improvement of the rural economy, a substantial increase in exports, and the establishment of additional heavy and chemical industries. Major goals included increased production of all food grains and self-

sufficiency in major food grains such as rice and barley, with farm and fishing income raised and farmland rearrangement promoted to enhance modernization; expanded rural medical and social facilities and improvement of rural electrification and roads; raised commodity export levels to improve the negative international balance of payments situation; construction of heavy and chemical industrial plants; development of manpower and improved employment opportunities through expansion of educational facilities; and balanced growth of electric, transport, storage, cargo handling, and communications facilities.[16]

This third plan responded to some of the criticisms of previous plans and did project a slower and more balanced rate of growth. The heart of the effort to improve the balance of payments dilemma was increased production in core industries, such as steel and chemicals, which would insure a continued high level of exports while reducing dependence on imports. If food grain self-sufficiency could be achieved, it would eliminate a significant import cost. Social ills were expected to be partially alleviated by the slowdown in the national population growth rate resulting from the government's family planning policy. The stated goal was to keep the growth rate below 2 percent and to achieve a like reduction in unemployment. Incredibly, by diligently pursuring the aforementioned plan objectives, the economic statistics recorded for 1972 and 1973 were even more spectacular than the final years of the second plan. The plan achieved an annual average growth rate of 10.7 percent for these two years. Gross National Product had leapt from 2 billion dollars in 1961 to 16.7 billion dollars at the end of 1973, and per capita income

had increased from less than 100 dollars to 500 dollars during the same period. With the boom of 1973, during which the growth rate jumped to 16.5 percent, South Korea gained semi-industrial status and appeared on the verge of attaining many of its development goals.[17]

One of the major planks of the third plan was the expansion of heavy and chemical industries. The underlying logic for this policy is that these industries are essential to foster mature growth (the experiences of developed nations bears this out) and reduce the impact of negative restrictions by foreign nations on the importation of industrial goods. Expansion of the Pohang Iron and Steel Works and the completion of ten inter-linked plants for the chemical industry are examples of this policy. Efficiency and reduced costs are the bywords of production in this arena because higher prices for synthetic rubber and textiles are driving world demand back toward natural materials.

Despite initial successes during the third plan, dark clouds loomed on the horizon. There was a decline in new orders in ship-building. For many of the export industries, the challenge of increased competition from other developing countries with low labor costs was growing. The demand within South Korea for a more equitable wage structure was becoming more vocal. Heavy industry means concomitant pollution; water pollution represented a danger to the fish export industry. Threats of isolationism in the United States following disillusionment over Asian involvement posed a problem, as did protectionist sentiment among American manufacturers and unions. Despite domestic policy efforts, mounting exports necessitated even greater

importation of material and equipment, further aggravating the balance of payments. United States' aid and military spending were far from guaranteed. Foreign capital dependence was perceived as increasingly risky as Japan now controlled a substantial portion of South Korean business. During the first two plans, foreign capital had accounted for some 40 percent of total annual investment, but the third plan is expected to precipitate an increase to close to 60 percent.[18] In other areas, rural incomes were still well below those in urban areas, and grain imports continued to erode foreign exchange earnings. The problems of inflation and unemployment still haunted the government. The inflation rate which was reduced from some 17 percent to 9 percent in the sixties was increasing again in the seventies due to higher import prices and a larger money supply. Indicative of the problems was the 30 percent rise in export prices in 1973, while import prices rose even quicker at a 50 percent rate. Seoul's unemployment rate hovered at 10 percent and for South Korea as a whole the average was 5 percent. The Economic Planning Board estimated that 3.8 million new jobs would be needed by 1980 to cope with the unemployment situation.[19] Displaying a mixed array of positive and negative conditions, the economic scene coupled with the government's tendency toward repressive measures appeared explosive.

Then came the crunch. The most sophisticated input/output model available to the Bank of Korea was unable to forecast the oil crisis of late 1973 and the world-wide recession that followed. Prices of petroleum products and other commodities sky-rocketed, and the export-oriented economy of South Korea, heavily dependent upon such

imported raw materials suffered a crippling blow. Even though the OPEC nations treated South Korea as a friendly nation, it did not help it pay the higher oil prices. At this time, oil was providing some 60 percent of South Korea's energy needs and plans had called for an increase to 70 percent in the next 10 years. Because South Korea relied so heavily upon export markets in the United States and Japan (70 percent of 1973 total exports) and as sources of investment capital - public and private - the recession in those two industrial giants reduced South Korea's boom of 1973 to a comparative whimper in 1974. The Gross National Product slipped from a 16 percent rate of increase during the first three months of 1974 to a meager 3 percent in the last half of the year. Even though the export totals for 1974 were exceptionally large import totals also reached an all-time high. The total cost of petroleum, which had only been 296 million dollars in 1973, rose to 1,020 million dollars in 1974, and South Korea's deficits jumped 6.5 times from 309 million dollars in 1973 to 2,023 million in 1974.[20]

As the recession deepened and extended into 1975, reports that the South Korean economy was on a disaster course and that Seoul might default on some foreign debts surfaced. This possibility stemmed from the 6 percent growth reported for the first half of 1975 in exports, whereas the average growth in the previous five years had been 35 percent annually, and the soaring prices of raw materials and capital. Also, the fall of South Vietnam to the forces of Communist North Vietnam had induced the North Koreans to initiate some rumors about a possible invasion of South Korea. Political tensions were

reduced when the United States reaffirmed its commitment to South Korea and Kim Il Sung failed to generate international support for his invasion scheme. On the economic front, the government took strong positive actions. Policy measures were taken to adjust to the price shock and promote business recovery. Increases in tariffs on luxury consumer items were imposed to reduce imports of non-essentials. Extensions of credits enabled businesses to carry raw material inventories in order to cope with less demand. Public investment in labor-intensive sectors, such as agriculture and housing, attempted to spur employment. The devaluation of the won enabled South Korean exports to resume their attractive position in the competitive international market. Good weather and the additional capital investment in agriculture produced excellent rice crops in 1974 and 1975 which enabled South Korea to eliminate most rice imports.

Generally, South Korea's performance during the past two years, though pale by comparison of 1973, was extremely good by normal standards. Optimistically, the trend now appears to be on the upswing. The deficit balance of payments for 1975, though high, was well below the 2.5 billion dollars projected. Twenty-eight million dollars in short-term debts were paid off early and foreign exchange earnings increased to 1.5 billion dollars.[21]

The impressive resiliancy and elasticity shown by the South Korean economy in the face of crisis indicated the soundness of its development base and the logic of its planning philosophy. It also showed the exceptional national pride and confidence of the South Korean people. This pride is reflected in the clean scrubbed look of

the cities and by the formerly barren hillsides now resplendent with millions of replanted trees. The South Korean workmen have proven, whether in the older light textile industries or in the new highly technical fields, that they learn quickly, are conscientious, and that their productivity increases dramatically in a short time. South Korea is now a major supplier of hardware, plywood, textiles, clothes, televisions, radios, household appliances, semi-conductors, calculators, automobile castings, and much more to the United States. Japan views South Korea as both a supplier of light goods and as a nearby region to establish or transplant industries its own higher production costs have outgrown.

This third plan period has probably been the most challenging of the South Korean planning experience in the face of the setbacks of late 1973 through mid-1975. There has been no analysis of the specific achievements of the plan. However, it is obvious that considerable development has occurred. The scale of the economy in terms of the Gross National Product has risen substantially and has produced a per capita income in excess of 500 dollars. The mining and manufacturing sector has assumed the dominant role in the production of the Gross National Product and accounts for close to 25 percent of national employment. The expansion of exports has increased by approximately six times from a 1970 level of 882 million dollars to more than six billion dollars in early 1976. Manufactured goods account for 90 percent of this total. Rice production through the use of new rice strains (Tongil - a new variety developed for use in South Korea) and supplemented by increased use of fertilizers and pesticides has

increased output to a level of self-sufficiency. A basis for greater farm mechanization was created by rearranging some 250,000 hectares of farmland. In order to expedite the modernization of the rural economy, inter-village and village to highway roads were built or improved. The ratio of electrification of rural areas was increased to 70 percent, and rural communications, sanitation, and health facilities were improved. The share of heavy industry to total industrial production was increased with the completion of the integrated iron and steel mill at Pohang; a pig iron foundry and a special steel plant were also constructed at Inchon; and shipbuilding capacity was doubled. New technology promoted the growth of the electronics industry, while petrochemical industries at Ulsan and elsewhere have produced chemicals, fibers, resins, and synthetic rubber for domestic manufacturers. The balanced expansion of power facilities was accomplished by doubling the 1970 power capacity level (Fig. 6). Transmission and distribution facilities were constructed simultaneously to ensure a smooth supply of electricity. The volume of freight and passenger traffic also doubled from 1970 levels. Some 600 miles of expressways were completed and a substantial mileage of non-expressway roads were paved. In addition to the subway construction in Seoul, railroad service was improved by electrifying some 350 kilometers of industrial lines. Cargo handling capacity was increased at Inchon, Pusan, Mokpo, Mukho and several smaller ports through the expansion of port facilities. The supply of industrial water, a vital component of the industrial infrastructure, was tripled from 1970 levels. There was also important activity in the area of dam construction for flood

ELECTRIC POWER GENERATED

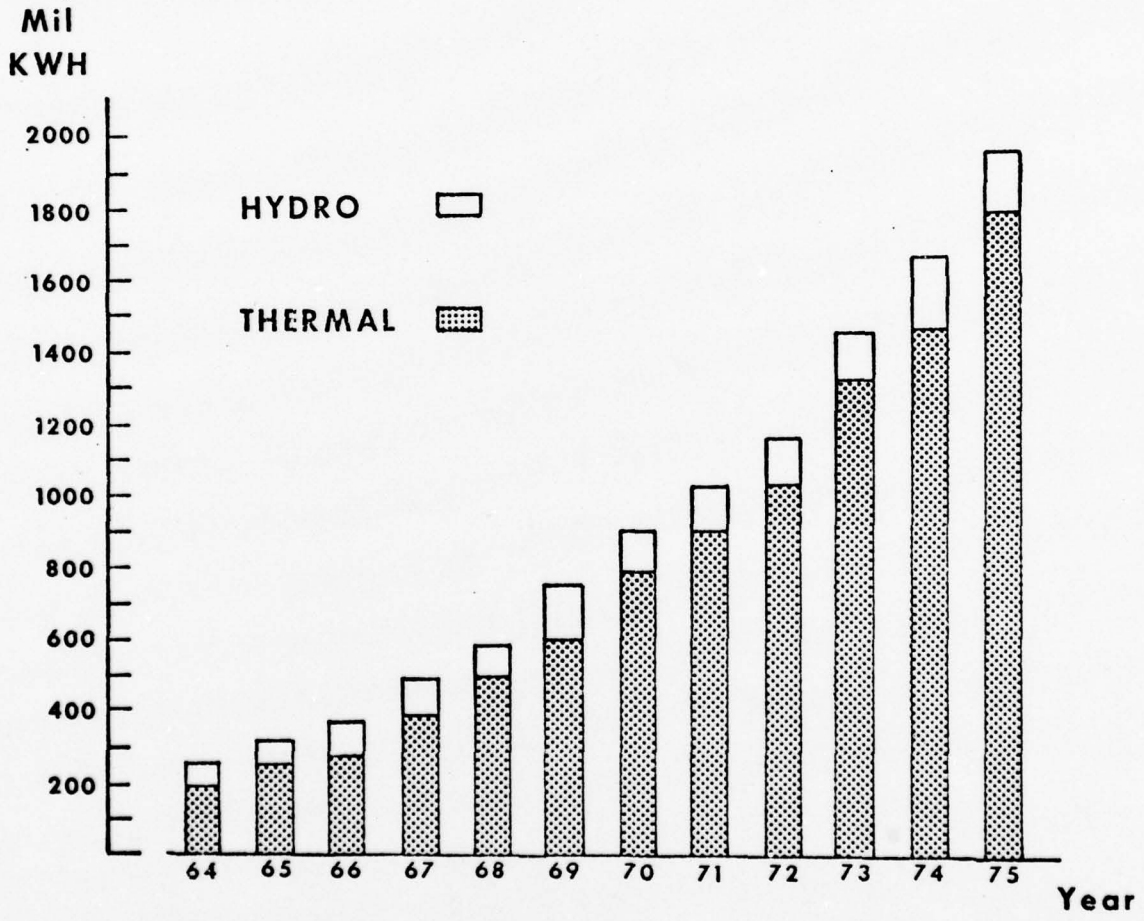


Figure 6

control and irrigation purposes. Education continued to contribute significantly to development due to improved primary school facilities and better working materials at vocational schools. The construction of some 500,000 housing units, primarily of the low-cost variety, was a much needed accomplishment.

Early in 1975, Japan and South Korea agreed to a long-term Japanese investment program in South Korea that calls for approximately 300 million dollars annually over the next ten years.[22] This will provide a substantial portion of South Korea's investment needs for that period. Further uncertainties regarding South Korea's economic development appear to be primarily political, with the most obvious menace the mounting tensions stimulated by confrontations with North Korea. However, the modernization of the South Korean military, with the bulk of the expense borne by the United States, keeps this menace from having a discouraging impact on planning. Seoul is actually trying diligently to loosen its dependence on the United States - American nonmilitary loans topped 200 million dollars in 1975. The government's stated objective is to establish joint foreign and South Korean, private sector and government owned, military and civilian product concerns that will make South Korea essentially free from its support on the United States for heavy military goods within three to five years. One undesirable aspect of this policy is that South Korea may be moving too fast and too far into capital-intensive heavy industry projects which have military applications. Examples are a huge industrial complex under construction on the southern coast at Changhung, where eleven foreign investors have entered into joint

agreements with either the domestic private or public sectors for an initial investment of half a billion dollars, and a second petrochemicals complex at Yosu, with construction to start in late 1976. Another aspect of development that is linked to self-reliance in military hardware is nuclear power. South Korea has planned for and is constructing a facility to house a nuclear power plant. The United States has thus far remained successful in delaying the sale of the nuclear package by Canada. However, the South Koreans continue to persist and they have made a down payment to France for a small nuclear disposal plant.

Toward the Fourth Five-Year Plan

The final touches are now being put on the Fourth Five-Year Plan (1977 to 1981). The plan will include a mechanism designed to allow for annual extensions, which will hopefully allow the government to cope with any significant changes in the domestic or international situations during the plan period. It is further evidence of the striving for flexibility that has marked South Korean planning. Under the plan, the Gross National Product will grow at an average annual rate of 9 percent in real terms; in a dollar perspective, it will rise from 18.7 billion dollars in 1975 to 31.1 billion dollars in 1981 at 1975 constant prices. This growth is expected to be stimulated by shifting dramatically into the production of heavier machinery and other industrial goods for export. The agriculture, forestry, and fishing sectors are expected to see an annual growth of some 4 percent, while the manufacturing sector will continue to receive the emphasis

required to grow annually by more than 13 percent. In order to keep pace with industrial expansion, social overhead capital and other services will grow at an average annual rate of approximately 8 percent. The mining and manufacturing sector's share of Gross National Product will increase to 37.5 percent, while agriculture will decline and social overhead capital remain about constant.[23] As a result, South Korea's industrial structure is expected to improve significantly by 1981.

The foreign loan picture for South Korea is promising through the plan period based upon the renewed interest of foreign bankers in loans for South Korea's industrial projects. Additionally, the diversification of markets through trade with other underdeveloped nations in South America, Africa, and the Middle East is expected to boost export levels. South Korea is already committed to a billion dollars worth of construction contracts, primarily in the Middle East. Iran has promised 200 million dollars to finance joint-ventures in petrochemical facilities and Saudia Arabia has submitted a proposal calling for seven billion dollars of investment in South Korea over the remainder of the decade. These developments are viewed as tangible evidence of the Government's success in efforts to reduce its economic dependence on the United States and Japan. The ultimate goal of the fourth plan is national economic independence, a goal that appears unattainable given the present state of affairs. Along with their other attributes, South Korean planners are undeterred optimists.

The Emphasis Upon Exports

Of the various policies woven through the first three five-year plans, three can be singled out for their special significance to changes made in South Korea's economic geography. They are the importance of export industries, the use of industrial estate cornerstones in national industrial location, and the emphasis placed upon improvements in agriculture. The South Korean government nurtures an outward-looking trade policy aimed at promoting exports. The pattern of exports has changed along with the pattern of industrial development - since the mid-1960's, there have been more processed light industrial products and fewer processed food and crude products. It is estimated that every million dollar increase in exports of manufactures from South Korea will create jobs for approximately 500 workers in export industries, about 150 jobs in their supporting industries, and another 150 jobs in consumer goods and service industries.[24] In the long run, the total effect should be much greater partly due to the multiplier effect in employment and partially because capital investment and construction works will be stimulated as a result of export expansion.

Because of South Korea's almost complete dependence on imported raw materials in the manufacturing sector, the importance of foreign exchange exports to provide capital for investment and for meeting the demands of the debt structure is paramount in economic policy. Products like sweaters, wigs, plywood, raw silk, and garments top the list of foreign exchange earners. Some of these products have extremely low rates of foreign exchange earning but contribute heavily due to their large volume of exports. The rapid growth in South

Korean exports has been assisted by many factors besides the promotional policy orientation of government (Fig. 7). On the demand side, the prosperity of the developed American and Japanese economies led to domestic shortages of unskilled workers and a large increase in labor costs. This stimulated the importation of South Korean goods, such as textiles, whose production required mostly unskilled labor. On the supply side, South Korean secondary industries have demonstrated the capability to adjust their capacities in order to take advantage of the export opportunities. This reflects the support of the government and the expertise of management to successfully compete in the international business arena.

South Korea's exceptional export record would not have been possible without the tremendous volume of capital and technical assistance realized from abroad. Between 1948 and 1970, it received over 5,700 million dollars in grants and loans, primarily from the United States.[25] Japan provided an additional one billion dollars in the form of grants, loans, and commercial credits following the normalization of relations. This enormous flow of capital contributed substantially to building up export industries. In the area of technology, the United States Agency for International Development provided assistance to numerous export industries after the Korean War.[26] As with the pattern of capital investment, the primary source of technical assistance also shifted to private foreign firms that established South Korean subsidiaries or subcontracted work to South Korean firms. The pattern of the late sixties to the present has been for foreign firms to promote South Korean industries through the

EXPORTS AND IMPORTS

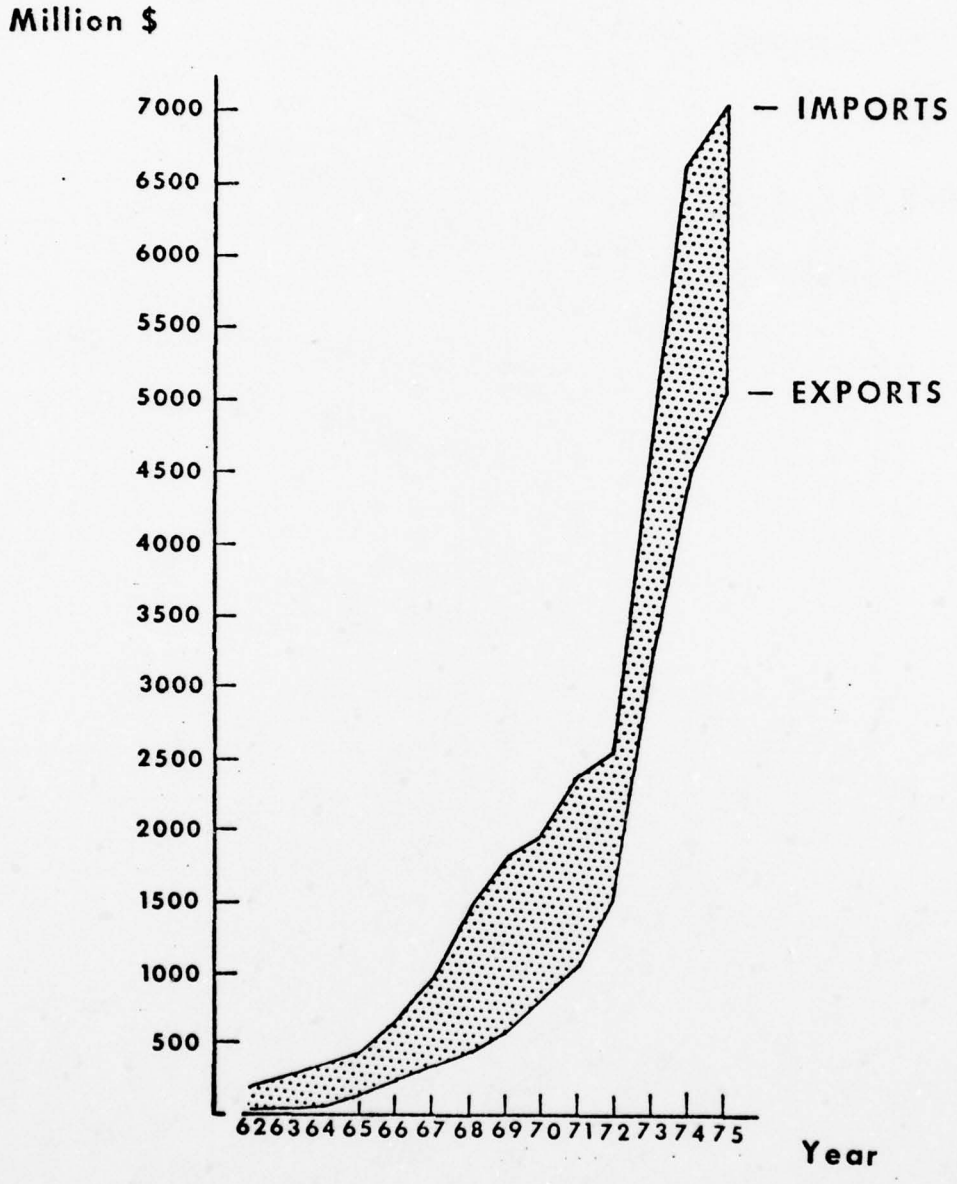


Figure 7

training of local workers and the solution of marketing problems abroad.

Many developing countries have made little progress in export promotion because they insist to an impractical extent on the use of domestic materials. The success of South Korea, like Hong Kong and Singapore, owes much to the flexibility of its import policy. The import linkage effect of plywood exports on South Korean service industries provides an example of the soundness of this approach. Workers in jobs created by using imports to produce exports will spend a certain proportion of earnings on personal consumption, which in turn will create still more employment opportunities. Thus, expansion in an export industry using imports can influence growth in other industries with which it is linked. The government discourages imports of consumer goods and directs most of the available foreign exchange to the purchase of capital goods.

Unlike the governments of Hong Kong or Singapore, the South Korean government controls imports so as to conserve foreign exchange. However, it does have policies to provide an advantage for export manufacturing companies who need to import. The most successful of these measures is the "bonded processing" system, under which the government permits foreign buyers to supply raw materials duty-free for processing in South Korea.[27] Foreign parent firms provide materials, designs, and technology. While the imported materials are being processed, import duties on them are kept by the South Korean government and are remitted when the import is re-exported in processed form. The growth in exports of clothing and electrical

appliances owes much to this policy. It has proven to be a fairly effective means of direct employment creation and a substantial contributor to industrialization.

Industrial Estates

South Korea is faced with a great industrial regional imbalance. There are two large anchors in the system and a sparse interlinking chain. One is the Seoul-Inchon complex in the northwest and the second is the Pusan-Ulsan complex in the southeast. These two geographic regions dominate the national economic scene. The dynamics of urbanization and the strategic necessity to relocate vital cogs in the industrial machine far from the immediate dangers of the D.M.Z. are responsible in large part for this unbalanced structure. The result of such a concentration has been a massive rural to urban migration because the industrial sector and, therefore, wage levels were growing faster at these locations. In reality, Seoul, Pusan, and to some extent Taegu, have been caught in a cumulative process whereby the initial concentration of economic activities resulted in external economies to other commercial activities and the attraction of new investment, which raised the productivity of labor and stimulated additional migration. Thus, with the skills of the labor force enhanced, the attractiveness of these large urban areas for even more investment was improved. Recognizing the benefits of such agglomeration economies and the fact that the early plan objectives concentrated on dynamic growth, South Korean planners are now shifting to a growth center philosophy due to a combination of strategic and social

factors. They hope to make selected regional centers more attractive to prospective investors thereby promoting more balanced regional economic growth.

One of the methods being used to attract industries to lagging areas is the industrial estate policy. The government is encouraging the establishment of industrial sites at strategic points across the country. At present, there are 24 industrial zones, including the Masan and Iri Free Export Zones. More than 1,300 business firms are operating on the industrial estates; of these, 280 are foreign-owned.[28] The estates run by the Korea Export Industrial Estates Corporation are available to medium and small firms from practically all branches of industry. This corporation was the first of its kind and its six estates have actually succeeded in increasing the concentration of industry because they are all located in the Seoul-Inchon area. A total of 343 companies housed at the six estates employ in excess of 100,000 persons.[29] Factory sites are available for sale at low prices payable on an installment basis; supporting services such as bonded warehouses, water, electricity supplies, communication facilities, customs offices, banks, and postal services are available; firms may or may not be bonded for duty-free imports of raw materials; and firms are permitted to sell up to 30 percent of their production on the domestic market in order to cushion short-term fluctuations in export markets.

A better, more recent example of the industrial estate program is provided by the Kumni Estate located along the Seoul-Pusan highway 28 miles north of Taegu, where the government has built a dispersed base

to stimulate development of the domestic electronics industry. The largest of the 24 estates, it is built on a 2,600 acre lot and is designed to become South Korea's main source for electronic components. As of mid-1976, 62 companies were in operation and plans called for 24 more plants to be constructed.[30]

The Masan Industrial Free Export Zone was conceived in 1970 as a zone to accomodate foreign firms. Located on reclaimed land on the southern coast, the entire zone is bonded so that businesses may import required equipment and raw materials tax-free for re-export. Goods produced in the zone are generally not allowed entry into the domestic market. Labor intensive industries are promoted for admission. Foreign firms may purchase or lease either vacant factory sites or prefabricated factory structures. Firms in the zone enjoy certain tax benefits. Profits and dividends are permitted to be paid abroad from the first year of operation, without restriction, and the repatriation of capital is also condoned. The zone, when completely finished in 1977, is expected to occupy some 420 acres housing some 110 companies. The director of the Industrial Estates Administration claims the zone has already generated in excess of 200 million dollars in exports while creating thousands of job opportunities.[31]

The government's devotion to this policy is shown by its plans for massive new developments. The Changwon Machinery Industrial Estate, adjacent to Masan, where Union Carbide and some two dozen other international firms have signed agreements, is under construction.[32] The complex, which will cover some 10,700 acres, is designed to be a totally integrated community with an eventual population of some

400,000 persons. It is expected to become fully operational in 1981 as the supply center for all of South Korea's machinery needs. At the same time, the government is promoting other areas for its new priority industries - Ulsan and Yochon for petroleum and chemicals, Changwon for heavy machinery, Onsan for nonferrous metals, and Kumni for electronics. It has also established a second free-export zone at Iri, halfway up the west coast.

Improvements in Agriculture

Until the past few years, the emphasis on industrial development had been at the expense of the agricultural sector, whose languid growth necessitated a huge increase in the importation of food grains. This was a price South Korean administrators were willing to pay in order to ensure accelerated industrial growth because imported food supplies were plentiful and relatively cheap. However, along with the oil crisis came a steep rise in the prices of imported grains, and South Korea came to the realization that it could no longer neglect her rural development. Past experience was that small increases in agricultural productivity could in no way keep pace with the accelerating food demands of an expanding and more affluent population. To move toward self-sufficiency in foodstuffs, planners were directed to devise new strategies for increasing agricultural output.

Despite the industrialization effort of the past 15 years, South Korea may still be viewed as an agrarian-based society. The farm population leveled off at approximately 16 million in the late 1960's, and it has been declining in absolute terms ever since. Nevertheless,

it still is the largest segment of society with some 45 percent of the total population and is the largest employer. Cultivated land shortages underlie the agricultural situation; the total cropped area is but 20 percent of its total land area. The area under cultivation is about the same as it was 40 years ago, but the number of farms has increased by close to 40 percent. The average size of a farm is now about 2.2 acres, even less than in Japan, where only 16 percent of the land is under cultivation. Consequently, South Korea has one of the highest densities of farm population in the world - approximately 1,295 to 2,590 persons per square mile. The bulk of the farm population is found outside the mountains generally west and south of a line stretching from Seoul to Pohang. Rural areas do not appear so densely occupied because most villages normally extend linearly along valley walls in a clustered pattern and thus they do not infringe on any low paddy land for living space.

The First and Second Five-Year Plans did include provisions for increasing agricultural output. However, investment for agricultural development had a very low priority in the government's investment program. When tradeoffs were made and planning goals modified or eliminated, agricultural projects were normally the victims. Nevertheless, some improvement programs entailing rural electrification, irrigation, soil improvement, and reorganization of collectives were instituted. Through the mid-1960's, programs for water supply and the increased use of fertilizers and pesticides were the major policy concerns. With improvement in these areas, more attention was shifted to seed improvement and farm mechanization. While the agricultural

sector was receiving these inputs, it was also steadily losing its labor force. The 1960's and the 1970's have been marked by a massive rural to urban migration stimulated by the relatively higher wage rates in industry. The rate of exodus of young workers was particularly high in rice and monoculture areas.

By the time the third plan was prepared, South Korea realized that agriculture ought to be developed to ensure self-sufficiency in basic staples and to provide the industrial sector with some raw materials. It had become clear that balanced national development was not possible without additional investment in agriculture. The Third Five-Year Plan has focused heavily on the needs of the farmer. The specifics of the program have changed due to the oil crisis and other factors, but the main emphasis remains on seed improvement, increased use of insecticides and fertilizer, expansion of irrigation and water storage facilities, farm mechanization, and rearranging farm plots. Farmers have also been encouraged through government loans and pricing policies to boost the output of cash crops. The goal was that through increased productivity and the success of family planning, self-sufficiency in rice could be obtained by 1976. Government spokesmen have claimed that goal was achieved in 1975.[34] Some help may have come from a government policy calling upon the public to have two riceless days each week. The policy required that rice dishes be replaced with millet or other grains and further specified that rice was to be mixed with barley for which there is less demand and greater potential for expanded output.

A paddy rearrangement program was designed to prepare the way for mechanization of at least ploughing activities. It utilizes modern bulldozing machinery to realign fields and irrigation ditches into larger rectangular units. Some 70 percent of the paddies on level land have been rearranged since the program began in the late 1960's, and it will be extended to half the nation's total paddy land.[35] Rearrangement has facilitated the use of small hand tillers, which number more than 50,000 today as compared to 1,000 in 1965. Spraying, cultivating, and harvesting are facilitated by this process, thereby inducing better yields. As farm incomes creep upward, the hope is for increased purchases of tractors by individuals to reduce the present reliance upon manual labor and greater loan assistance from the government for technological improvements. Irrigation and reservoir construction projects undertaken during the second and third plans are first steps toward protecting agriculture from the problem of too little or too much rainfall during the cropping season.

There has also been substantial development in other facets of rural living, although the pace of change has not been as hectic as in secondary industry. In October, 1970, a program called the Saemaul, or "New Village", movement was initiated by the government to improve the living conditions and cultural opportunities of the rural populace. It has called upon villagers to display diligence and self-reliance in their daily living as the means of realizing increased farm output and higher farm incomes. If successful, the urban/rural socio-economic gap and related migratory flows to cities will be reduced.

The method of operation has been for villages participating in the movement to undertake special projects, such as the increased production of various farm products, reclamation of arable land, cultivation of low hills, afforestation, and the improvement of irrigation and other water control facilities. Specific projects underway for improvement of the environment include construction and repair of farm roads, replacement of thatched roofs, soil conservation, and expansion of rural communication facilities. Projects designed specifically to increase rural income include joint communal efforts to improve related infrastructure or share machinery, dissemination of improved farming techniques, and the improvement of storage facilities and distribution systems.

A valid assessment of the Saemaul program is very difficult because the extent of participation is really unknown and very little direct capital investment has been made in the program by the government. Many critics have been skeptical of the program, describing it as a token gesture to rural South Koreans in order to keep them on the farm and as a political ploy for North Korea's benefit. However, the program has been successful to the extent of disseminating good ideas from the planning process down to the local level and demonstrating that organization on the local level can achieve substantial developmental results in the form of increased production, better infrastructure, and higher incomes.

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CHAPTER III

THE NATIONAL LAND DEVELOPMENT PLAN 1972-1981

> To work, to learn, and to construct.
> We stand erect upon the earth.
> One solid mass of heat and force have we become,
> Our path who would dare to block.
>
> (Korean verse - author unknown)

The five-year plans have produced the dynamic industrial growth desired by South Korean planners and government officials. Nevertheless, this growth has been unbalanced due to lag in the agricultural sector and the concentration of industrial expansion in relatively few locations. The legacy of rapid growth has been swift urbanization in the areas of industrial concentration, which has led to the modern maladies of pollution, congestion, and housing shortages. As South Korea entered the decade of the 1970's, it was faced with an additional planning dilemma. Should the government intervene to adjust regional inequities in development, or should it permit the normal equilibrium-seeking forces such as migration to operate? South Korean planners and officials could not hope to achieve a complete equalization among the sectors of the economy. They must have recognized that the blight and decay of urban areas have been part of the cost of achieving industrial expansion in developed nations. However, because of the strategic factors peculiar to South Korea and the social problems evolving from a widening rural/urban gap, the decision was made to intervene in the regional growth process.

There are three universally accepted strategies which governments can employ to influence regional development, and South Korea has utilized all three.[1] The first type of strategy involves investment in the public sector in the area of social overhead capital, which is aimed at improving the basic infrastructure of a region. Transportation and power are typical targets for improvement. Dam building for power, irrigation, water supply, flood prevention, transportation, industrial, and recreational pursuits and road construction to enhance accessibility are the two major projects of this strategy. A second strategy involves inducements to companies in the private sector encouraging them to make regional investments. Inducements may be positive or negative, ranging from capital grants, facilities and services, and tax concessions for industries willing to operate in less desirable areas to high interest rates and direct controls for companies in highly concentrated areas. An example is the industrial estates program. The third strategy is centered on inducements to individuals. Migration from a declining area may be retarded by the availability of new job opportunities, training, and education at a local level. This strategy is usually linked with the first two through investments by the public and private sectors. However, the "New Village" movement is a good example of a program which is directed at individuals.

The regional thrust of South Korean planning has been growth pole oriented. The basic idea of the growth pole is that it consists of expanding industries that are spatially concentrated and set off a chain reaction of economic activity and growth throughout

the adjacent hinterland. Growth pole policy in regional development is the purposeful selection of one or a few potential poles within a given delimited region. Into these, new investment is concentrated rather than spread thinly over the whole area. The rationale behind this policy is that public expenditure will be more effective when concentrated in a few clearly defined areas and that new industries there will stand a better chance of generating enough external economies to achieve some degree of self-generating growth.

The broad guidelines for regional development for the period 1972-81 were set forth in the government's National Land Development Plan, which was designed to be coordinated with the third and fourth five-year plans. In it, systematic land use policies were established on the basis of (1) effectiveness of national defense; (2) intensity of land use; (3) the creation of regional order, (4) the efficient distribution of social overhead capital, and (5) the best possible development, conservation, and use of scarce natural resources.[2] The spatial enigma for South Korean planners is how to achieve the greatest national land use efficiency with the ongoing processes of industrialization and urbanization in a nation with such a high population density. It was determined that policies should be designed to take into account regional conditions with primary emphasis on the development and readjustment of industrial base locations, the improvement and expansion of transportation and communication facilities, and the commensurate need for better water and energy supply networks. The plan emphasizes the decentralization of population and the dispersion of industries from metropolitan areas, the fostering of local cities,

and the orderly development of the major social overhead capital facilities in order to accomplish a more balanced improvement of the national land.

In the following review of the major provisions of the National Land Development Plan, it must be remembered that regional planning in the South Korean view is a long-range proposition. National growth and the attainment of national self-sufficiency and developed status remain the dominant goals of the government. Hence, it is probable that careful regional structuring will be a secondary consideration, even a residual by-product of the five-year plans, in the period through 1981.

Regional Planning Units

The spatial structure and the political administrative organization of South Korea are well adapted for regional planning purposes. Geographically and sociologically, South Korea is very well integrated. It is small, area wise, and the expanded transportation networks have placed virtually any location within easy reach of any other location. Similarly, the society is very homogeneous and there is very little regional antagonism in culture.

Beneath the national level, South Korea is divided into eleven administrative regions - nine provinces which have long historic foundations and the two "Special Cities" of Seoul and Pusan.[3] The two cities are independent of the provinces in which they are located because of their large populations and national importance. They are, like the provinces, a regional subdivision of the national

territory. The territory of the provinces is subdivided into shi (cities) and gun (counties). Shi have populations of 50,000 or more; in the 1970 census, there were 32, including the Special Cities. No South Korean city allows the built-up area to come close to its legal limits, hence all cities consume a sizable portion of rural land.

Because the cities contain so much rural land, statistics involving the agricultural sector, particularly those dealing with farm population and employment, are often difficult to gather and/or interpret. South Korean cities are not evenly distributed geographically and are few in number in comparison to the size of the national population. This reflects the dominance of Seoul on the urban scene and the agrarian background of the nation. Of the total of 35 cities, 14 are ports, 8 more are adjacent to the coast and the remainder have interior locations.

The counties are further categorized into areas with 20,000 to 50,000 population known as Eup and more rural areas with less than 20,000 known as Myon. South Koreans identify locations by counties as opposed to province, city, or eup.[4] The final subdivision is of Myon into ri and burak, the villages of South Korea.

South Korea retains a strongly centralized system of government. No office below the national level is elective; from provincial governor to rural myon chief and city mayor to dong head, officials are appointed. The provinces and the two Special Cities, Seoul and Pusan, also receive about 60 percent of their budget from the central government. Henderson has described this pattern of extreme centripetal political dynamics as a vortex which pushes all aspects

of national life to a focus of central power. That the Park Government has employed this power to achieve the tremendous industrial growth of the past fifteen years serves as the binding link in the chain of political and economic factors resulting in economic development. The direction in which this power is exercised will determine the amount of regional structuring achieved through 1981.

South Korea comprises some 98,447 square kilometers of land. Of that total, approximately 66,800 are devoted to forested areas, 23,300 to farmland, and 8,300 to rivers, marshlands, and miscellaneous uses. Urban areas occupy about 6,800 square kilometers or 6.9 percent of the land. There is a lopsided pattern of national development, with the principal economic concentrations along the Seoul-Pusan axis and the Taejon-Mokpo axis, both of which are well developed in terms of transportation. The area of these regions accounts for 21.7 percent of the total land, more than 50 percent of the population, approximately 80 percent of the industrial productivity and some 30 percent of the farmland. A further attempt has been made to establish a national spatial land order by classifying the land area into five land use categories to promote management. These are: (1) agricultural area - to provide food and industrial raw materials and to regulate usage in order to prevent any activity except farming; (2) forest area - to be conserved for water resources, timber production recreational services, and natural wildlife preserves; (3) urban area - defined by the highest land use ratios in terms of input of public investment and population density, to be regulated to prevent fertile suburban land from encroachment by horizontal urban

expansion; (4) nature and culture conservation area - to protect historical items, shrines, and natural attractions; and (5) the continental shelf area - to promote exploration for potential resources from the sea bottom and the reclamation of tidelands for agricultural use.[5]

The following guidelines are set forth in the National Land Development Plan to bring about a better regional balance as development in industry, energy, agriculture, transportation and telecommunications, cities, and water resources takes place.

Industry

The establishment of regional industrial bases is one of the Plan's prime objectives. During the third five-year plan, heavy industry started to assumed greater importance over light industry. Where new large-scale factories are located as South Korea modernizes will have a lasting impact on the regional economy. Vital considerations in this process are regional assets, industrial combinations, dispersal from Seoul, Pusan, and Taegu, and the development of a central terminal system.[6]

As the plan is unfolding, further industrial location will probably be divided into two different categories: locations decided upon at the option of the entrepreneur and planned locations within an industrial estate developed by the government or a private corporation. These locations will follow two broad patterns - coastal and inland - according to the character of the industry involved. It is anticipated that over the long-run the estate option will become more popular

because of the establishment of the estates at optimum locations in rural areas where they can be fitted with the necessary social overhead capital facilities. The dominance of coastal locations over inland is expected to continue in view of the importance for development of coastal industrial areas and their need for imports. The most pronounced development location is the southeastern coastal heavy and chemical industrial belt (Fig. 8). Such cities as Pohang, Ulsan, Masan, Samchonpo, and Yosu situated along the coast with favorable conditions for industrial location such as port facilities, rail and highway access, industrial water, manpower, and energy are ideal for such core industries as steel, oil refining, petrochemicals, fertilizers, and machinery. These will be the pillars of a developed industrial economy. The integrated iron and steel works is in operation at Pohang; Ulsan is expanding its petrochemical, fertilizer, and oil refining capacities; Pusan is a growing mixed industrial area of large-scale heavy and light industry; Masan is the location of the initial free-export trade zone; and Samchonpo is being developed as an industrial conurbation linking Sachin and Chinju. Planners foresee this southern coastal collection of cities as providing an additional commercial base for foreign interests to help promote international trade expansion.[7]

Development of the Kyonggi Bay coastal industrial area from Inchon to Asan Bay is a promising second region to which to disperse industry from Seoul. This area is being promoted for light industry which uses advanced processing technology to meet the market demands of Seoul. Primary development areas include Inchon, Suwon, and

MAJOR INDUSTRIAL LOCATIONS

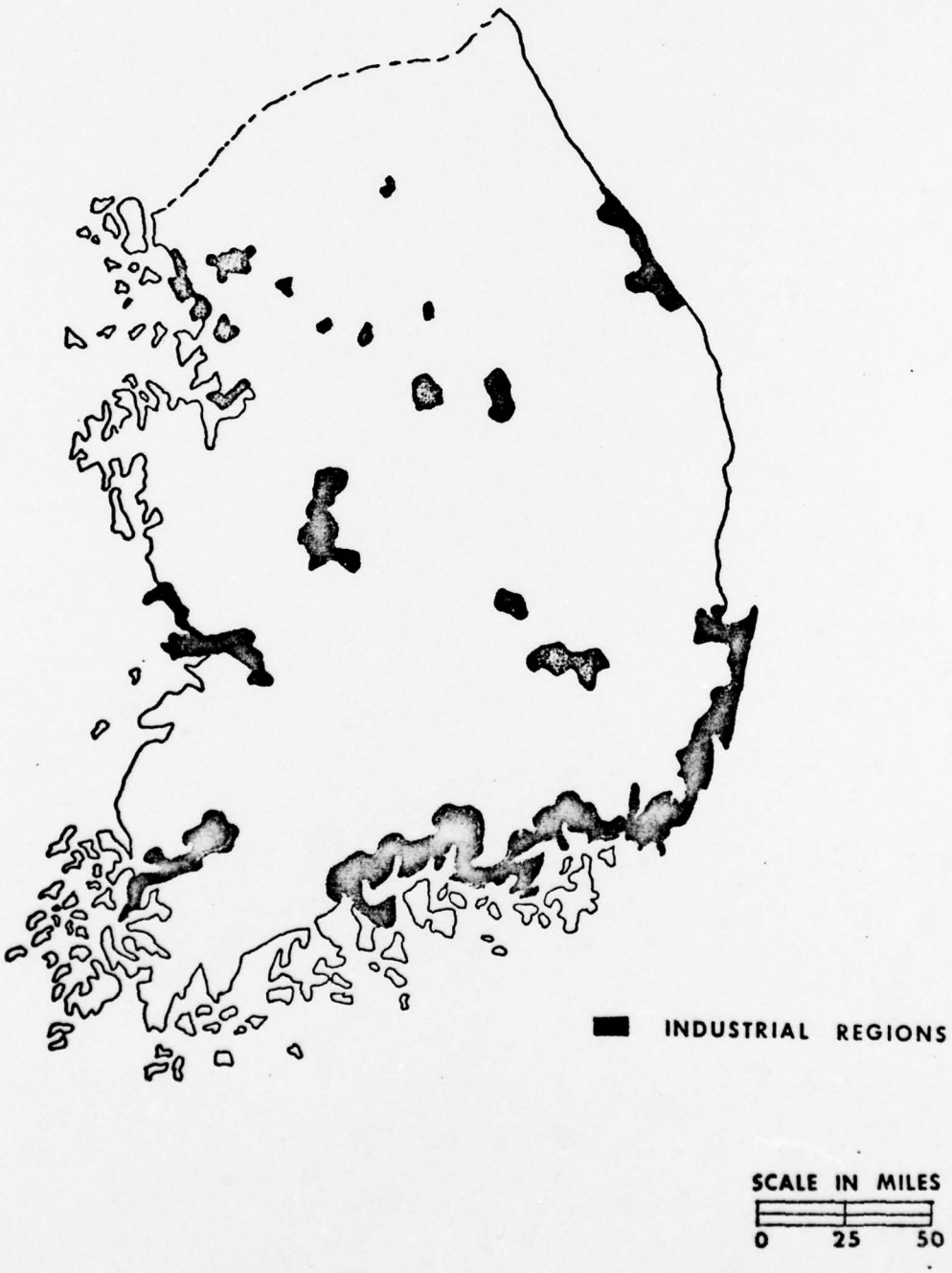


Figure 8

Pyongtak. Inchon is the gateway to the capitol with vastly improved port conditions and sufficient industrial water. It is developing as a mixed area of heavy and light industry with metals, machinery, earthenware, textiles, and foodstuffs. Suwon is characterized by the availability of low-cost industrial land, access to skilled labor, and proximity to the Seoul market. Pyongtak is a site that will be developed later using water from the Ansong River for industrial purposes.

Kunsan, Chanhang, and Iri are collectively an intermediate coastal industrial area. Their location along the central west coast is the basis for great potential for industrial development, as indicated by the decision to place the second free-export trade zone at Iri. Such industries as oil refining, chemicals, pulp, rubber, and machine manufacturing are being established there. Farther to the south, Mokpo serves as the port-gateway to the Honam area of southwestern South Korea. It should realize substantial improvement through control of natural disturbances when the Yongsan River Basin development is completed and hopefully it will grow into a sizable mixed-industry center. The Samchok area of the east coast with its limestone and its anthracite has already been developed for cement and plans call for expansion into chemicals.

In 1970, Seoul, Pusan, and Taegu accounted for 57.4 percent of all industrial output and 60.4 percent of the labor in manufacturing.[8] In order to control the ill effects of over-concentration and to disperse the industries to local areas, strong measures are required. The plan has stipulated that maternal foot-loose industries are the

type to be dispersed. However, those market-oriented industries such as printing, clothing, etc. with locational constraints will be grouped in a selected urban area where pollution will be minimized and the general living environment enhanced. This is a tall order that has met with little or no success to date. At South Korea's level of expansion, it has very few industries which meet the foot-loose criteria. The principal step proposed to induce urban-oriented industries to disperse is to develop industrial estates within commuting distances of urban areas. Fruitful areas for such inland developments include the Taejon-Chongju, Taegu-Kumi, Kwangju, and Chonju-Iri areas.

For local areas containing industrial raw materials, such as minerals, clay, stones, and agricultural products, resource utilizing and processing industries will be developed to ensure an improvement in the economic well-being of the local populace. Cement and chemicals will be developed inland in the Taebaek regions of Tangyang and Yongwol as well as adjacent to Samchok. In the Chinju area, ceramics and glass manufacturing will be expanded. Optimum locations will also be sought for agricultural and stock processing centers in order to promote more efficient marketing of rural products.

In the area of natural resources, it is projected that domestic demand will increase with economic progress. In 1970, mineral products accounted for only 1.1 percent of Gross National Product and coal accounted for 44 percent of that small share. Even though mining is expected to grow, it will probably maintain the same relative position in regard to Gross National Product unless more economical means of extracting the scarce mineral wealth can be devised. The major

mineral producing areas are in or near the Taebaek Mountains. Not only must mining capabilities be modernized but transportation facilities in the form of industrial roads require expansion and new construction. This does not appear to be a viable regional project at this time. On the other hand, the coasts, particularly to the south and west, offer a large continental shelf area with potential for various mineral deposits. There are exploratory surveys underway but due to the proximity of mainland China and Japan and the whole issue of ownership of the sea-bed resources, future development is uncertain. In January, 1976, South Korea officially announced that it had discovered oil off the coast of Pohang. The existence of such oil would paint a much brighter picture for the future prospects of South Korea due to present total reliance on foreign oil imports. However, since the initial announcement, the entire matter has been shrouded in such secrecy by the South Korean government that most observers feel that the find was a hoax or a failure.

Energy

The successful establishment of an energy base sufficient for a rapidly growing modern economy has been among the outstanding achievements of the five-year plans to date. Long-range national planning has the aim of fostering a large-scale energy supply to satisfy the needs of a developed nation, so even with the increase in the cost of imported oil, there is no present viable alternative to the continued shift to petroleum as the main energy fuel. The present main use for coal is fuel for heating, and the demand is

increasingly attributed to medium and small cities and rural villages as opposed to large cities. Thermal power will continue to be developed as the nation's main source of electric power. Even though there is a shortage of favorable sites for hydro-electric power dams, their construction will be pursued wherever possible. The status of nuclear power has been described earlier.

The aim is to construct large thermal power plants in the coastal cities where they will have easy access to oil supplies. It is there that new energy demands are expected to be highest resulting from the development of industrial estates and complexes at Pohang, Ulsan, Masan, Kunsan, Inchon and other places. An additional hydropower component in excess of 700,000 KW is expected from nine dams, including the Soyang and Andong dams completed in 1972 and 1975, respectively, as part of the plan to develop the nation's four major river basins. The energy supply network will be expanded and improved by linking large urban areas and industrial estates through the installation of high capacity trunk power lines.[9] South Korea is also exploring the possibility of tidal power generation. There are several sites along the west coast, particularly in the vicinity of Inchon, which have uncommonly large tidal ranges favorable for such an energy supply.

Agriculture

Long-range planning proposes that the establishment of agro-fishery production bases will aid in the solution of the socio-economic problems which have arisen from the development gap between agriculture-fishing-forestry and industry. As the population continues to grow at

a more gradual rate and personal income levels rise from the industrial expansion, a greater demand for more and better quality food grains is being generated. To meet this increasing demand, supply bases must be expanded by means of creating new farmlands, advanced technology, and more diversified production. The agricultural production pattern began to gradually change in the early 1970's, in the direction of commercial farming of cash crops and dairy products and away from the staple crops-oriented farming of rice, barley, and wheat. This shift indicates a more diversified agricultural production. The implication of this shift is that productivity is being improved through new technology and paddy realignment in the food grains. Furthermore, the economic well-being of the farmer should improve due to higher prices for agricultural products, particularly the more profitable cash crops.

The fishing industry has also demonstrated a changing pattern of operation. It has progressed from a petty coastal operation carried out with small unpowered vessels to a deep-sea operation with large, modern fishing craft. Likewise, it has progressed from a total reliance on extractive fishing which depletes fishery resources to the development of a fish farming industry.

The development plan for agro-fishery industries calls for the conservation and expansion of farmlands.[10] In order to minimize the use of farmlands for urbanization, industrialization, and highway construction, the rational use of farmland is being promoted by a government-sponsored conservation program. This is a sophisticated scheme that takes into account such essentials of land use as the

size of the cultivated land, the rate of cultivation, soil conditions, degree of gradient, irrigation facilities, and the farmland conservation districts. Farmland expansion will come from the reclamation of hilly land, tideland, and river basin development. However, in the overall plan of national development, it is also anticipated that several hundred square kilometers of farmland will be encroached upon for housing, highways, and industrial sites.[11]

Farmland consolidation will be accomplished, in part, by paddy rearrangement. This provides a basis for farm mechanization which further enhances farm-labor efficiency. Output is being increased to levels commensurate with advanced countries by means of improving soil conditions, developing and diffusing new plant species, and improving the quantity and quality and fertilizer application. Additionally, all but several hundred of the original 11,760 square kilometers of farmlands requiring agricultural water improvements have been developed, and the remainder are scheduled for conversion to fully irrigated paddies during the fourth five-year plan.[12]

The establishment of chief producing estates which are designed to play an integral role in the development of projects to increase farm and fishery income has begun. Projects that are being pursued under their guidance involve sericulture, mushroom raising, orange and other tree species, dairy farming, and clam and shellfish farming. The purpose of these chief production estates is not only to reduce the rural income inequality but to actively promote commercial farming and fishing through enhanced land use efficiency. The scale of the estates and their development will be determined to suit the needs of a given region.

Another step to improve the situation in the agricultural sector is the construction of farm roads. Over the ten-year period of the National Development Plan, more than 25,000 kilometers of rural road construction are planned, of which more than 10,000 kilometers have been completed.[13] The bulk of this effort is to improve the accessibility of villages by linking them with the national highway network. A much smaller portion of the program has been devoted to constructing farm truck roads within areas of land consolidation. The impact of this farm road construction has been to facilitate the farm-to-market haulage of products and to improve the interchange at all levels between rural communities. Modernization through farm mechanization is also made possible because large items of machinery can now be transported to rural regions.

Transportation and Tele-Communication Networks

The improvement and expansion of transportation and communication facilities has been an integral part of South Korean planning from the beginning as the government built an infrastructure to support economic growth. The future outlook is that the total transportation demand will rise and the composition of demand will become increasingly diversified. Table 3 shows the projected increase in transportation demand during the plan period.

Before five-year planning, South Korea relied almost solely on the railroad for its transportation needs. However, economic development has stimulated transportation demand rapidly to the point where the railroad is no longer the most efficient or desirable

Table 3. Traffic demand and trends among modes of transport.

	1970 Volume	1970 Ratio	1976 Volume	1976 Ratio	1981 Volume	1981 Ratio
Total Passenger Demand	30,362	100%	67,173	100%	153,046	100%
Railroad	9,819	32%	15,768	24%	24,871	16%
Highway	20,045	66%	49,537	74%	121,071	79%
Sea	241	1%	410	1%	567	1%
Air	257	1%	1,458	2%	6,537	4%
Total Freight Demand	13,382	100%	26,636	100%	48,044	100%
Railroad	7,709	58%	13,423	50%	20,531	43%
Highway	1,441	10%	3,985	15%	9,658	20%
Sea	4,232	32%	9,228	35%	17,855	37%

units: Pas - mil pas/km
Frt - mil ton/km

mode of transport. General planning objectives have been modified to foster a more balanced development of various modes following three guidelines. First, the improvement of transportation facilities is to satisfy regional demands generated by industrial and urban forces. The aim is to ensure balanced development throughout the country by effectively linking large cities with small and medium cities and industrial bases and production areas with supply and consumption areas so that commodity flows and social needs can be favorably accommodated. Second, maximum investment efficiency is to be achieved by optimizing the location of facilities so as to extract the most from each mode's unique advantages. Third, the transportation networks between rural and urban areas are to serve as a means to promote less concentrated domestic and industrial occupational spheres. The development of local highway networks will serve to meet increasing traffic demands as well as to expedite the marketing of agricultural goods.

South Korean planners have given highway construction high priority. In 1970, the freight traffic volume of highways was 1,440,000 tons/kilometer. This figure is expected to grow at an average annual rate of 18.6 percent to approximately 10 billion tons/kilometer by 1981. The passenger traffic volume of highway transportation was 20 billion passenger/kilometers in 1970 and is projected to increase through 1981 at an annual rate of 17.7 percent to some 121 billion passenger/kilometers. In 1970, South Korea had 40,244 kilometers of highways, and plans call for an increase of some 14,000 kilometers by 1981. Most of this increase will be in the form of general purpose roads linking rural areas with the national highway network. Some 1,900 kilometers will be in high-speed expressways.[14] The general design of the long-run program is to complete the paving of national highways so as to link them with the expressway system, whose main arteries may be well-integrated with the predominantly unpaved, rural, general-purpose road network.

Primary emphasis has been placed on the creation of a skeletal expressway network. Table 4 presents a summary of the expressway construction plan. The envisioned network depicts large cities being connected with large-scale industrial areas by trunk highways. The first stage of the scheme was the selection of some 2,600 kilometers of expressway construction to be completed by 1981. As a first step, an expressway from Inchon to Seoul to Pusan was begun late in the second plan and finished during the third plan. The goal of the expressway system to be shaped around this central link is to place every corner of the country within a one-day travel zone by linking

Table 4. Expressway construction plan.

	1972-1976	1977-1981	Total
Total	1,000	944	1,944
Chonju - Sunchon*	189	-	189
Wonju - Kangnung*	100	-	100
Pusan - Sunchon*	177	-	177
Sokcho - Pohang	280	-	280
Taegu - Masan*	92	-	92
Wonju - Taegu	162	-	162
Inchon - Suwon	-	51	51
Wonju - Chunchon	-	193	193
Chonan - Kunsan	-	146	146
Mokpo - Sunchon	-	141	141
Chechon - Chonju	-	110	110
Seoul - Kimchon	-	220	220
Nagu - Kangjin	-	43	43
Pohang - Kyongju	-	40	40

unit - km
*completed

Note - as of 1971 there were 656 km of existing expressway.

large cities with local center cities and large industrial areas (Fig. 9). As the network expands, so does the attractiveness of more remote regions as both potential locations for industrial production and as markets. Then, hopefully, locational conditions of existing cities will be relatively improved to the extent where they can contribute to the development of the regional and national economy.

Small and medium cities will be linked with the arterial expressways by the national highway system and with distribution centers, freight terminals, airports, and marine ports. The national highway net will not be expanded but rather existing roads are being improved by expanding the width, straightening the curves, and completing the paving. Large urban centers will be tied to the national highway by local roads which will be continually improved in order to foster the development of the local economy. This will ensure the expansion

EXPRESSWAY PLAN

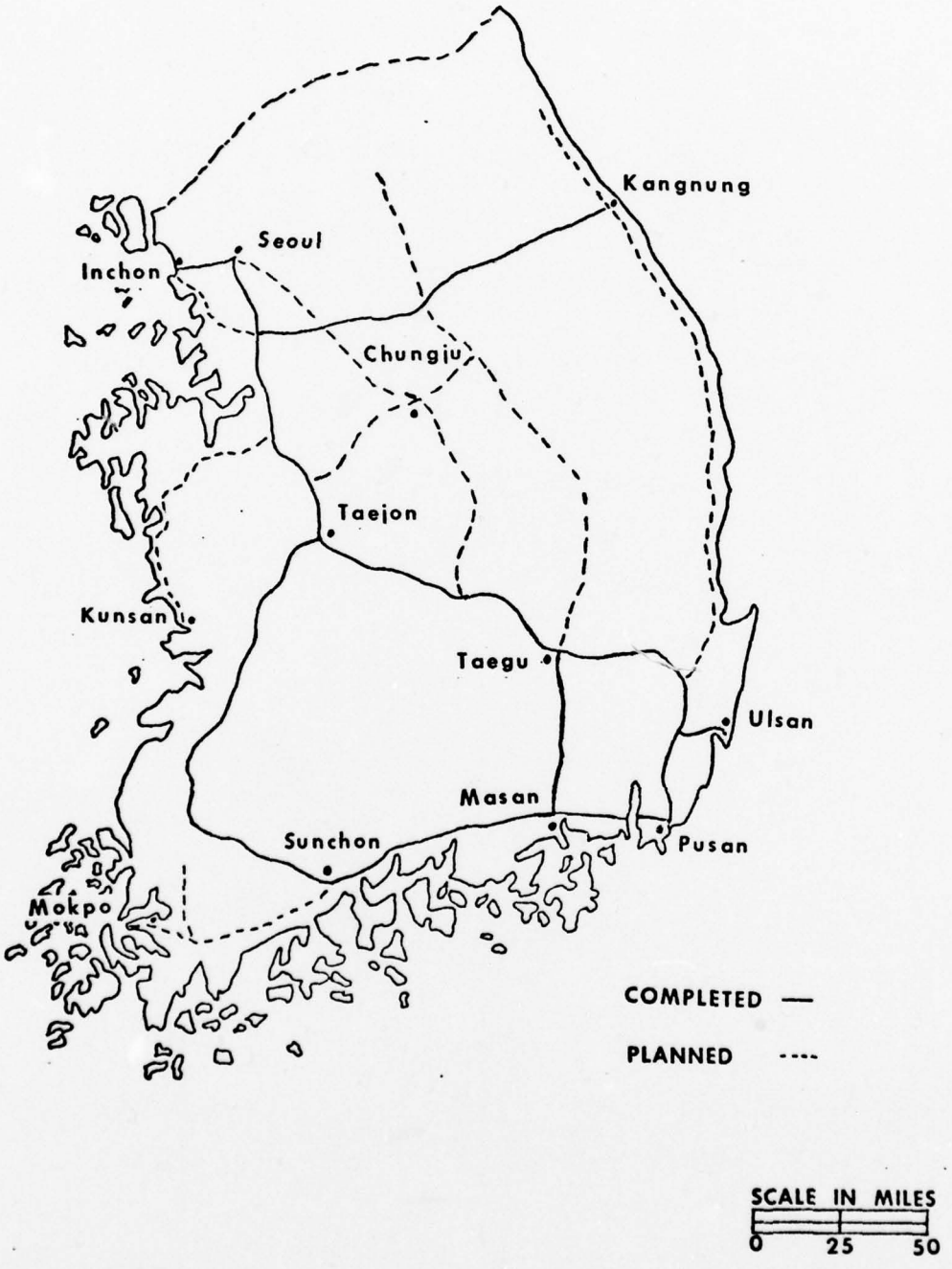


Figure 9

of general purpose roads and the establishment of a speedy effective transportation system for the interchange of goods and services between regions.

By 1970, railroad satisfaction of total passenger demand had slipped to 32 percent, while the highways accounted for 66 percent. However, in moving the vital lifeblood of economic development - freight - railroads satisfied almost 58 percent of the demand, while the highway system serviced only about 11 percent. By 1981, the railroad accomodation percentage is expected to fall to 43 percent as the road network assumes a greater portion of the load. On the basis of the expanding national economy and the gradually rising standards of living, it is estimated that by 1981, despite the impact of road travel, the absolute rail transport demand for both cargo and passenger traffic will be increased by more than two times over 1970 levels.[15] Steps are being taken to make the most of the railroad's special advantages relating to long-distance and large volume shipments. A future objective which influences present construction is to establish a transportation system that can satisfy demand on the basis of the type of good. This will involve a coordinated system of various modes of transportation much like the break-in-bulk point traffic systems utilized by developed nations. It will expedite the movement of bulky cargo and stimulate the construction of container facilities and transportation terminals at key intersections. There is a trend away from single-track to double-track construction and more electrification of industrial and passenger lines. Nevertheless, the emphasis of planning has been to shift increasingly more traffic to the roads.

The proposed construction of additional subway lines in Seoul would be a welcome relief to its massive population. The government plans to build at least five new subway systems by 1990 linking points within a radius of 15 kilometers from the heart of Seoul in an effort to alleviate the traffic congestion, pollution, and other related problems of servicing more than six million people. The original intent was to replace the present surface transit system of buses with subways, but that now appears beyond the realm of current capabilities. The only subway system presently in operation is in Seoul. It was built in 1974 covering some 9.5 kilometers, from Seoul Railroad Station to Chongyangni on the city's eastern outskirts, far short of the planning target of 26 kilometers. It is connected to electrified railroads leading to Inchon and Suwon. Its expansion is important but in South Korea's present stage of economic evolution, it remains low on the list of priorities for capital utilization. According to a recent survey by the Economic Planning Board, buses account for about 79 percent of the passenger traffic in Seoul, followed by sedans and taxis, which account for 15 percent. The existing subway system meets only about 3 percent of the traffic load.

South Korea is bordered on three sides by water and possesses favorable conditions for port development because of indented coastlines and generally deep water. However, up through the early 1970's, there was a longstanding depression in port development. South Korea has sixteen open ports, but most except for Pusan and Inchon have inadequate channels, berthing, and cargo handling facilities required to handle large-size vessels. The sharing ratio of sea transportation

is projected to increase 3.8 times, from 1970 levels, by 1981 due to the extraordinary coastal development in industry. The planning goal is to develop South Korean ports in coordination with the land transportation networks, which are connected to inland cities. Port facilities will be expanded to support key industries located along the coast which rely heavily on foreign raw materials, such as iron ore and petroleum. In conjunction with the establishment of free-export trade zones at Masan and Iri, free export trade ports will also be constructed by expanding existing facilities at Masan and Kunsan. These efforts have already begun to improve cargo handling capacity, particularly at Masan, where the needs of a diversified export trade are rapidly growing. Piers constructed solely to handle containerized cargo are a key facility in the modernization process.

The port development plan is based upon a projection that by 1981 almost 6 percent of seagoing cargoes will be containerized. In the same period, the gross volume of seagoing cargoes and the cargo storage and handling requirements will rise about four times. The ship type is expected to shift slightly in favor of coastal away from ocean-going vessels. This makes sense because as the heavy industry base on the coastal perimeter begins to satisfy more domestic needs, the volume of coastal shipping should rise. In 1970, the simultaneous berthing capacity for ships greater than 1,000 tons in South Korea was 83 vessels. If port expansion proceeds according to plan, by 1981, the capability will rise to 300 vessels at once. In the competition for overseas export markets, where time is money,

this expanded capability will enhance South Korea's competitive position. A final ingredient in the port development plan involves 52 small fishing ports scattered along the coast that are gradually being developed as local fishing centers. It is a small program but demonstrates the attempt through planning to promote constructive change at all geographical scales.

Air transportation has not been well developed due to high investment costs, but it is of growing importance because of increasing demands for high-speed transportation and diminishing geographical barriers. Presently, a domestic air transport service links major cities with primary industrial areas and tourist resorts. There is also a growing international service which provides both intermediate and long-distance hauls. The intention is to increase the number of air routes and foreign countries covered by the national Korean Air Lines to 10 and 13, respectively, by 1981.[16] Because of the international flavor of industrial activities within South Korea and higher incomes world-wide, the demand for international air transportation is expected to continue rising. Hence, three airports, Kimpo for Seoul, Kimhae for Pusan, and Cheju for Cheju Island, are being expanded to international levels. Kimpo has already reached that stage with the construction of a new terminal facility in 1974 and the extension of its runway in 1975 to accomodate large jet (747) traffic.

In 1971, South Korea had a total of 507 kilometers of pipelines. As technology improves, plans call for the construction of pipelines in the southeastern coastal industrial belt, vital oil supply points

of other coastal areas, and between the large cities and their adjacent industrial areas. Additional pipeline construction will increase the efficiency of the national transportation system and reduce the burden being presently placed on the land transportation system. Plans call for large-scale pipeline construction which will be able to accommodate not only oil and other liquid products but starch grains and other powdered cargoes as well.

Along with the modernization of the economy, new demands have been placed upon the communications industry to improve the national information flow, thereby reducing trade and technology barriers and encouraging the accumulation of a statistical data base which can be employed by planners and administrators. The bulk of the effort during the National Development Plan will be spent to meet the telephone demand of urban dwellers and to automate such service through the installation of direct-distance dialing. This will be a long-term project as the expanding economy is creating demands far above the communication industry's capability to provide the required volume of circuits. Automated telephone service requires a substantial construction effort through either the erection of poles and lines or the burial of underground cable. Both methods take a lot of time and capital, particularly when such a sophisticated system must fill the needs of a swelling urban center such as Seoul. The urban circuit demand was 668,000 in 1970, and a conservative estimate is for this figure to grow to 3,729,000 by 1981. The projected amount of supply is approximately 900,000 circuits short.[17] Hence, priority will go to meeting the needs of the business sector, and personal demand will

be satisfied as time and capital permit. A concerted effort is also being directed toward improving intercity telephone service, between large cities and local core cities, through automation. As in transportation, the established objective is to place the entire country within a one-hour information sphere by 1981. It is eye-opening to contrast this goal with pre-Korean War South Korea, which had no automated telephone systems, only a limited telegraph network linking key centers along the Seoul-Pusan axis, and virtually no rural communication capability. Climate and the rugged topography make the installation of new systems difficult.

Urban Development

The trend in South Korea since 1945 has been toward urbanization. The 1970 population was 31.5 million people, of whom the urban population accounted for almost exactly half. The urban level grew at a rate of 5.2 percent compared to the national growth of 2.5 percent in the decade of the 1960's. Proof of the rapid urbanization is the increase in the number of cities from 15 in 1949 to 35 in 1975. Cities above 100,000 in population increased from 18 to 31 and those with more than one million, from one to three. Seoul grew by more than four times its 1949 level. A 1975 census calculation revealed a total population in excess of 34 million in which most of the increase was in urban areas. The share of the population in urban places by 1981 is expected to reach 65 percent.

The increase in the population of urban areas may be partly attributable to the relative depression of the rural economy and partly

to industrial development in urban areas which attract people from the countryside. Rural to urban migration is continuing along with the reduced birth rate to cause urbanization. This is a historic characteristic of developed nations; in contrast urbanization in most underdeveloped countries is the product of an unprecedented urban birth rate coupled with a declining death rate. South Korea's policy of population growth control, which was initiated with the first five-year plan and has succeeded by virtue of such measures as tax reductions, a literacy program, higher marital ages for both men and women, medical treatment improvements, low-cost abortions, and social pressure, has been an integral factor in the urbanization process. By 1975, the population growth rate had been reduced to 1.6 percent.[18] South Korea's rapid urbanization corresponds to the periods of sustained growth achieved by developed nations, where urbanization ratios have tended to taper off between 80 and 90 percent when close to full utilization of land and resources have been reached and attention turned to the production of goods and services for the use of local inhabitants.

Under the growth pole concept, urban development in local areas promotes the reduction of regional socio-economic gaps, stabilization of employment levels, and cultural advancement. As of the early 1970's, the locational pattern of South Korean cities was not favorable for ensuring improved efficiency in the operation of the economic system, but improvements are under way through the planned coordination of transportation networks to enhance the flow of goods, people, and technology between cities and regions. The goal is to

create a unified hierarchic city structure by converting many of the small and medium cities from strictly consumption points into production centers.[19] The guideline of stressing regional strengths will be followed by encouraging specialization of functions wherever possible. One example is the growth of the national cement industry adjacent to the limestone resource.

In order to promote national defense and balanced national growth, the land use zoning system is being strengthened. It is slowly encouraging the dispersal of industries from Seoul, Pusan, and Taegu by restricting the establishment of special facilities, such as industrial plants, schools, and wholesale markets, which foster concentration. Such zoning has stimulated the growth of green belt areas in these three cities to prevent the disorderly horizontal expansion of cities. Housing permits and construction in general are being strictly monitored. There is a continuing attempt to disperse as many governmental agencies to local areas as possible to reduce population concentration in the Seoul area. The entrenched bureaucracy, however, has been dragging its feet in opposition to this dispersal policy. Future redevelopment projects are being planned to modify the built-up areas of the major metropolises - Seoul and Pusan - so that they can more readily provide the required urban services attendant to mass production, increased income, and greater mobility. The Seoul subway system is an example of such planning.

The two largest cities are the "Special Cities", Seoul and Pusan, both of which are marked by the concentration of population and industries. They are the terminals of the phenomenal bipolarized

urban development pattern in South Korea. In an effort to decentralize the population, the intermediate region central cities of Kangnung, Taejon, Chonju, Kwanju, and Cheju have been designated as growth poles.[20] Social overhead capital facilities are being expanded and improved in these areas to encourage industrial location and to provide additional employment opportunities. The average annual increase in the population of these cities through 1975 was considerably higher than the national rate, which indicates that some progress is being achieved. A long-run goal of national land use planning is the conversion of the major metropolises from single core cities to multi-core cities through dispersing population to satellite cities built in their outlying areas and by improving suburban centers. Achievement of this goal, if ever, is certainly well into the future.

Because the aim of planners during the last 15 years has been to stimulate swift economic growth and because investment capital has been in short supply, relatively little has been accomplished to improve the living environment. Urbanization has brought pollution of the air and water; a shortage of housing and classrooms; inadequate transportation facilities; insufficient municipal utility services - hospitals, waterworks, sewerage systems, and sanitation services; and the creation and expansion of slum areas. Densely inhabited slum areas are predominantly occuppied by low-wage earners and the unemployed, the product of South Korea's large rich-poor income gap. Negative frustrations are surfacing from the slum dweller who feels

that his labor is being exploited. Therefore, to cope with the growing uncleanliness of the city-scape, potential fire hazards, the possibility of the spread of disease, and civil disorders, public works projects are being undertaken, supply capabilities and disposal facilities are being expanded, and street patterns are being re-arranged to accomodate urban needs. In the construction of urban transit systems, central cities will be linked with suburban centers and outlying satellite cities to help relieve congestion. Several chemical treatment facilities have been built in Seoul and Pusan, and more are planned for all urban centers as part of the overall effort to expand and diffuse waterworks and sewerage systems. The establishment of public green belts for the purpose of purifying polluted air and providing a systematized city and regional frame-work of playgrounds and recreational outlets for urban dwellers is now important in urban planning.

Expanding population, property devastation during the war, and the erosion of the extended family pattern in favor of nuclear families are factors which have led to a substantial housing shortage that stood at 22 percent in 1970. Urban needs account for the bulk of this persistent shortage. As a solution, South Korean authorities have committed themselves to developing mass housing projects using low-cost prefabricated construction materials. The planned goal is to construct over two million housing units by 1981 in order to reduce the shortage ratio to 15 percent even though the average occupancy area per dwelling is being expanded from the 1970 average of 20 square meters to 50 square meters.[21]

The negative consequences of excessive conglomeration produced by the urbanization process have been: concentrations of people and industrial facilities and information distribution functions.

Water Resources

The primary emphasis in the development of water resources in the post-Korean War era has been to procure sufficient hygienic potable water for urban areas. However, new uses such as flush toilets, vehicle washing, industrial processes, and the composite requirements of advanced living standards have fueled an expanding water demand. Agricultural water accounted for 85 percent of total water use in 1971. The volume of agricultural water required in 1975 increased due to the creation of new arable lands through tideland reclamation procedures. However, the growth of urban-industrial needs has resulted in a percentage decline in total use to approximately 80 percent. In addition to the obvious urban and rural needs, water resources development is important because of wide-spread drought and flood damages associated with the cyclical nature of South Korea's climate, the goal of food-grain self-sufficiency, and needs posed by rapid industrial growth.

Plans for the development of water resources call for multi-purpose projects which have proved in other countries to allow for the most efficient use and management of water resources. South Korea is committed to the integrated development of its four major river basins through the construction of multi-purpose dams and rivermouth dams that will create adequate resevoirs and the means to control water

flows. The construction schedule for the dams and some of their features are given in table 5. These dams will store a portion of

Table 5. Multipurpose dam construction.

Name of Dam	Time	Ht m	Stor mil m^3	Use mil m^3	Fld cntrl	Pwr Gen 1,000 kw
Total			11,850	7,241	1,319	
Nakdong River Basin						
Andong*	71-75	72	1,240	730	110	80
Hapchon	74-77	111	1,070	450	80	80
Rimha	76-79	68	620	538	30	-
Yongsan	77-79	42	690	90	10	-
Taeshon	78-81	42	150	150	20	5
Kum River Basin						
Taechon	74-77	61	1,550	865	200	51
Youngsan River Basin						
Changsung*	72-74	29	60	68	6	-
Tamyang	76-77	32	30	25	4	-
Techo	76-78	28	60	44	6	-
Tongbok	77-80	50	130	98	15	3
Yongsan R. Mouth	76-81	28	353	300	188	-
Pyongtaek*	71-74	25	180	170	-	-
Han River Basin						
Soyang*	67-72	123	2,900	1,213	350	200
Chungju	77-81	91	3,000	2,500	300	255

*completed

the water flowing into the sea in the flood season as a reserve to be retained for release during the dry season. The dams will also reduce the hazard of seasonal flooding. In smaller areas not adjacent to major rivers where basin-diversion type projects cannot be undertaken, ground water development is being pursued.

The Han, Nakdong, Kum, and Youngsan are the four main rivers of South Korea. Together they comprise a total basin area of some 62,755 square kilometers, or about 64 percent of the total land area

(Fig. 10). In 1972, the basins included some 54 percent of the total area of cultivated land and a similar percentage of the national forest land, 61 percent of the total population, and almost 70 percent of the Gross National Product. Some 62 percent of South Korea's total annual rainfall is concentrated in these river basins, which historically have suffered flood damage amounting to 77.5 percent of the national average and 60 percent of the national drought damage.[22] Thus, the four river basins constitute an immense zone of influence and form a close association with other rivers from the standpoint of area-wide water utilization. The entire river basin plan calls for the construction of 12 dams (including the completed Andong and Changsung dams) resulting in an improvement of some 2,493 kilometers of land. The investment required for this program is immense and has been further inflated by the increase in import prices since the plan was proposed. As a consequence, it is unlikely that all the construction will be completed by the target year - 1981 - but substantial progress has been made.

The goal is to have the four major rivers devoid of perennial flood plains and areas suffering damages from inland waters by 1981. This would result in a 50 percent reduction in current flood damage costs, the protection of some 1,260 square kilometers of farmlands, 87 square kilometers of new farmlands brought into production, and a tremendous increase in food grain production. Through the improvement of irrigation facilities, some 6,000 square kilometers, or 88 percent of the total rice paddy area in the basins, will be fully irrigated.[23] Consequently, considerable savings in drought damage will be achieved

MAJOR RIVER BASINS

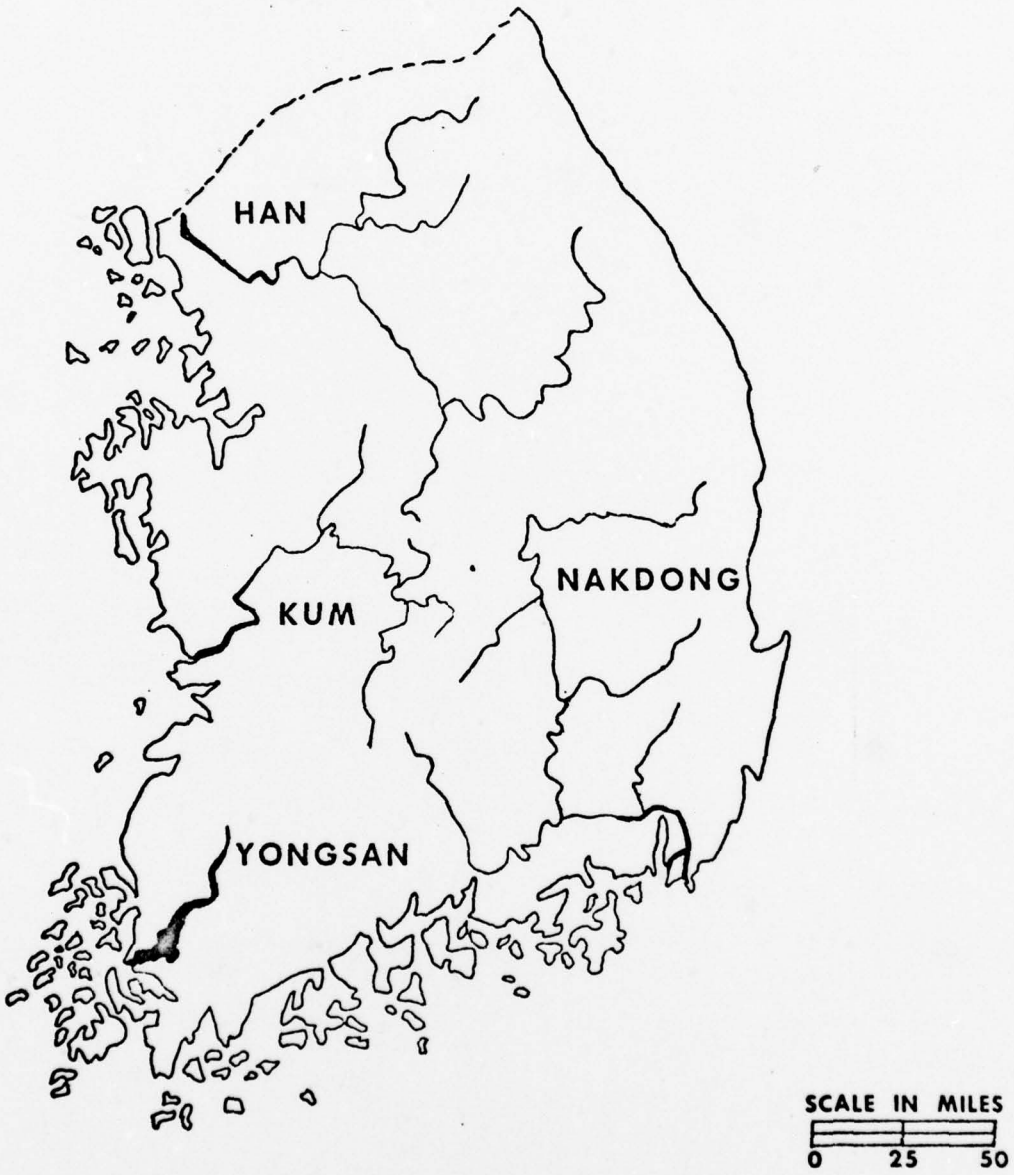


Figure 10

simultaneously with the promotion of all-weather farming year-round. Water pollution around urban areas will also be reduced. The planting of trees on devastated and unwooded forest lands will prevent a large volume of sedementary discharge, which in turn fosters a sizable addition to the annual fuel and timber forest production.

The Han River Basin Development Plan consists of projects on the North and South Han and several lesser rivers (Fig. 11). Upon completion, it is expected to protect some 171 square kilometers of farmland, increase food grain production by more than 16,000 metric tons, protect thousands of homes, and bring approximately 36 square kilometers of farmland into production. The primary projects of the plan are the completed Soyang Dam and the proposed Chungju Dam and the Paldang Hydroelectric Power Station. The Soyang Dam is located on a tributary of the North Han and was completed in 1972. It provides a substantial portion of the Seoul metropolitan area's water needs. The combined effect of these multi-purpose dams will be to increase the water supply by 37 billion cubic meters, increase power supplies by 535,000 KW and provide flood control for 6.5 billion cubic meters.[24] Irrigation is being accomplished more efficiently through the division of the basin into two large estates and ten other districts which are designed to promote food grain production. Forest conservation is being affected through the prevention of erosion, the reduction in flood damage, and extensive reforestation. Urban and industrial water needs are being satisfied at increasingly higher levels.

Development of the Nakdong River Basin (Fig. 12) is structured around the construction of five multi-purpose dams through which 340

HAN RIVER BASIN

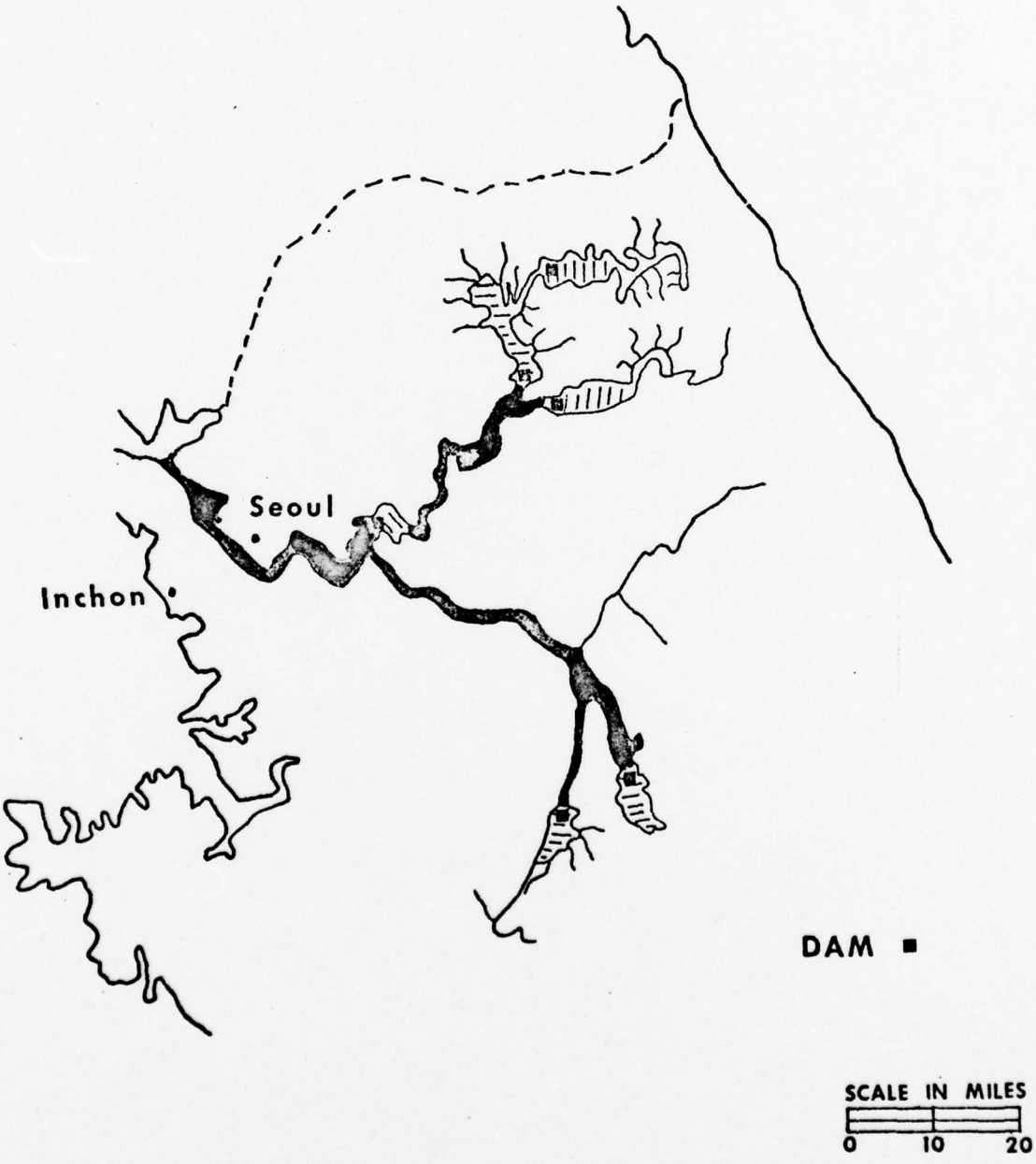


Figure 11

NAKDONG RIVER BASIN

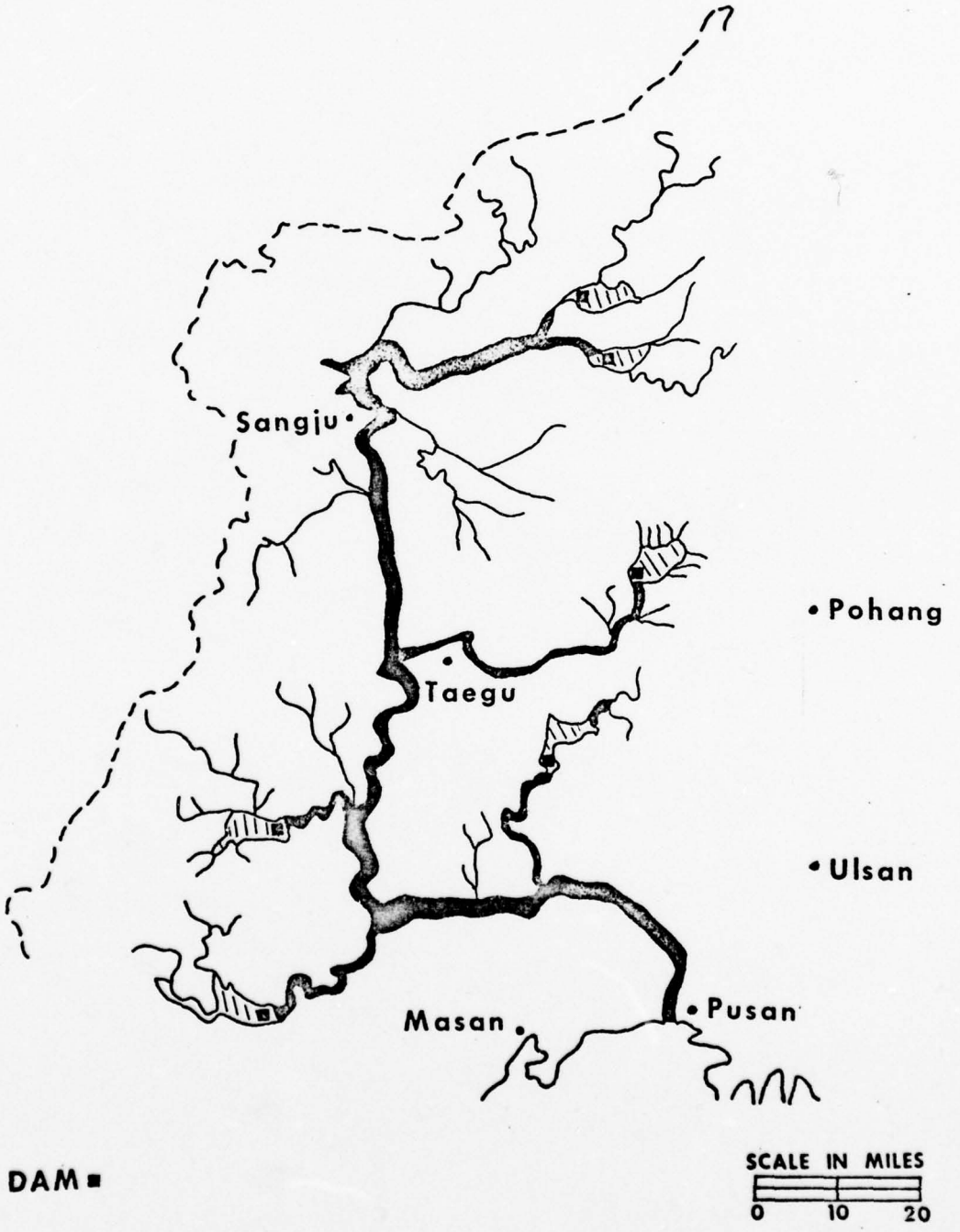


Figure 12

million cubic meters of flood discharges will be controlled and 2,058 million cubic meters of water will be made available for various uses.[25] The water from the already completed Andong Dam (1975) and the proposed Imha and Hapchon dams will be directed to the mainstream shorelines and the southern coastal areas. Water from the Taechon Dam will be supplied to the shorelines of the Miryang River to alleviate shortages there. Water will be supplied to areas beyond the boundaries of the basin, including Ulsan, Pohang, Masan, Chinhae, and Samchonpo. The water quality of the Pusan waterworks will be improved and water pollution of the Kunho River will be reduced. An added benefit is that agricultural water will be made available to the Kimhae plain, which is presently suffering from salt water intrusion due to high tides. Results similar to the ones to be achieved from the Han plan are planned in farmland protection, irrigation facilities, supplies of municipal and industrial waters, forest conservation, etc.

The Kum River Basin Development Plan (Fig. 13) follows the same format, but it is somewhat smaller and entails the construction of only one multi-purpose dam, the Taechong Dam. A rivermouth reservoir was completed in 1974 in the Pyontaek district on the Kum River to provide water for irrigation, domestic, and industrial uses. River improvements, power generation, flood control, irrigation activities administered by two large estates and 13 districts, forest conservation, and municipal and industrial water supplies are items in the plan.[26]

The Yongsan River Basin Plan projects the construction of five multi-purpose dams (Fig. 14). This basin is the most hard hit area of

KUM RIVER BASIN

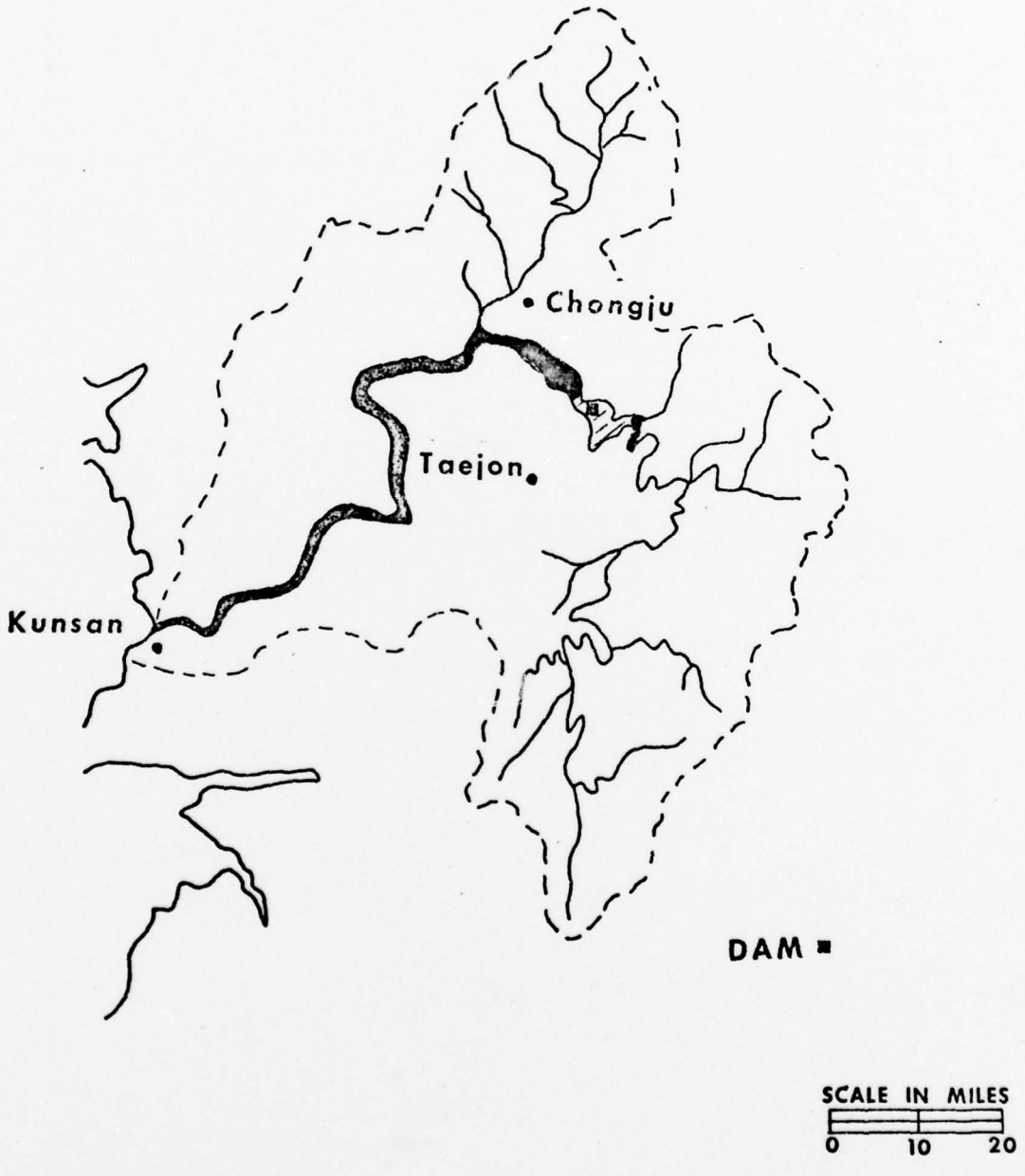


Figure 13

YONGSAN RIVER BASIN

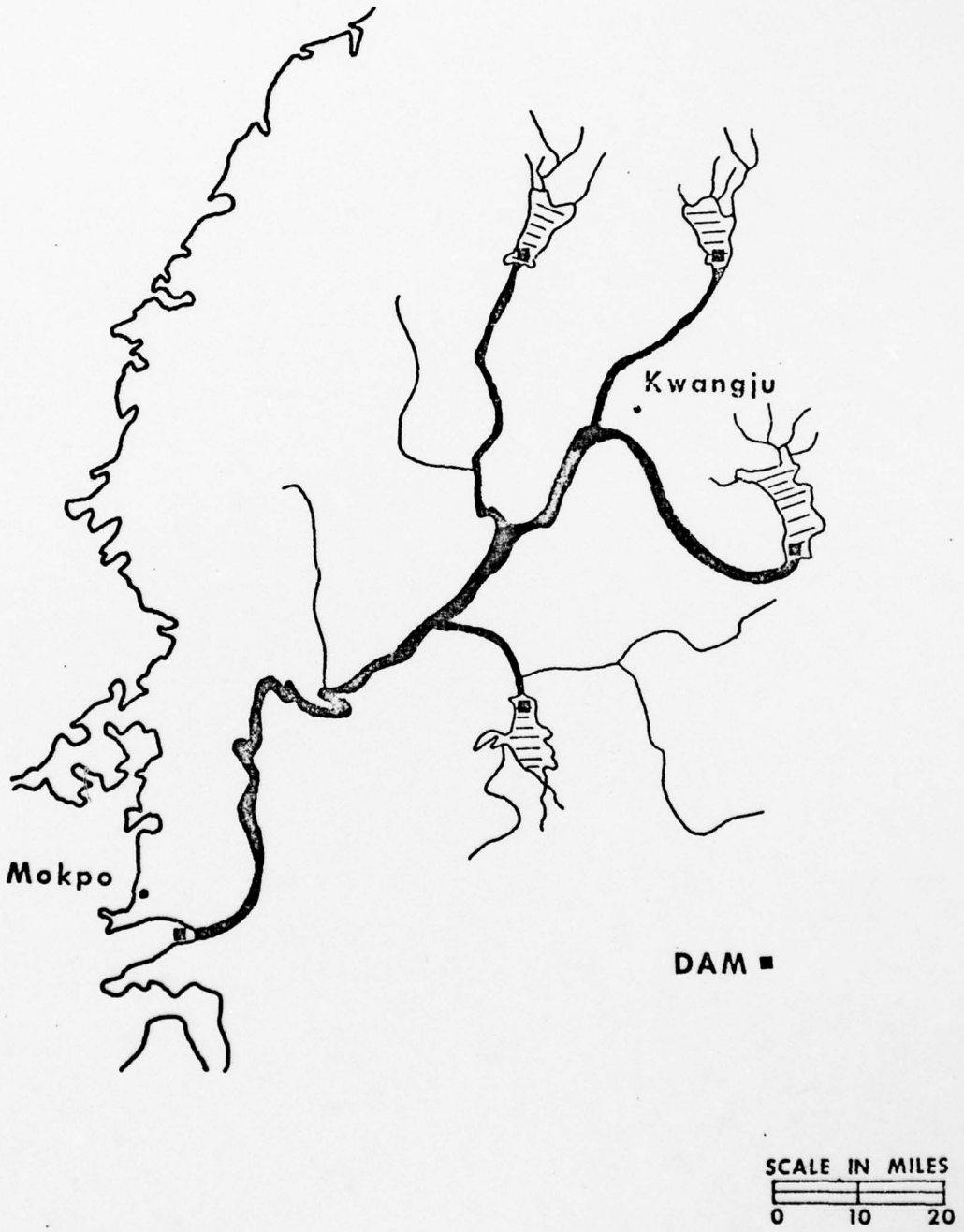


Figure 14

water shortage because of the high frequency of droughts. A ground and surface water development scheme is being carried out to provide approximately 500 million cubic meters of water for various uses commensurate with the goal of integrated basin development. The completed Changsung Dam provides agricultural water along the Hwangyong River, the Tanyang Dam will accommodate the needs of the upper reaches of the Yongsan, while midstream areas will be serviced by the Taecho Dam and the Tongbok Dam to be built on the Sumjin River. Water shortages at Mokpo will be solved and salt intrusion there brought under control by the construction of the Yongsan Rivermouth Dam.[27]

The National Land Use Plan details other projects to promote land conservation involving strengthened inland drainage systems and additional erosion control measures to protect portions of the forest areas in mountains which have a geologically fragile granite base. A program to protect and preserve natural and cultural assets calls for the establishment of eight national parks to contribute to public health, education, and recreational needs. Furthermore, the plan advocates the development of recreational open space, stipulating that certain inland and coastal areas of varying topography will not be tainted by industrial development. Historical shrines will be preserved and developed as tourist areas along with other favorable natural locations.

NOTES

[1]Haggett, p. 497.

[2]Republic of Korea Ministry of Construction, Guidelines for National Physical Plan (Seoul: Ministry of Construction, 1969), p. 3.

[3]Bartz, p. 49.

[4]Bartz, p. 54.

[5]Republic of Korea Economic Planning Board, National Land Development Plan 1972-1981 (Seoul: Economic Planning Board, 1971), pp. 10-11.

[6]Republic of Korea Economic Planning Board, National Land Development Plan, p. 18.

[7]Republic of Korea Economic Planning Board, National Land Development Plan, p. 26.

[8]Republic of Korea Economic Planning Board, National Land Development Plan, p. 29.

[9]Republic of Korea Economic Planning Board, National Land Development Plan, p. 34.

[10]Republic of Korea Economic Planning Board, National Land Development Plan, p. 37.

[11]Republic of Korea Economic Planning Board, National Land Development Plan, p. 38.

[12]Republic of Korea Economic Planning Board, National Land Development Plan, p. 39.

[13]Republic of Korea Economic Planning Board, National Land Development Plan, p. 40.

[14]Republic of Korea Economic Planning Board, National Land Development Plan, pp. 44 & 47.

[15]Republic of Korea Economic Planning Board, National Land Development Plan, p. 44.

[16]Republic of Korea Economic Planning Board, National Land Development Plan, p. 60.

[17]Republic of Korea Economic Planning Board, National Land Development Plan, p. 65.

[18]Economic Intelligence Unit, "Japan, South Korea Annual Supplement 1975," Quarterly Economic Review, Mar., 1976, p. 6.

[19]Republic of Korea Economic Planning Board, National Land Development Plan, p. 68.

[20]Republic of Korea Economic Planning Board, National Land Development Plan, p. 70.

[21]Republic of Korea Economic Planning Board, National Land Development Plan, p. 70.

[22]Republic of Korea Economic Planning Board, National Land Development Plan, p. 89.

[23]Republic of Korea Economic Planning Board, National Land Development Plan, p. 93.

[24]Republic of Korea Economic Planning Board, National Land Development Plan, p. 94.

[25]Republic of Korea Economic Planning Board, National Land Development Plan, p. 97.

[26]Republic of Korea Economic Planning Board, National Land Development Plan, p. 99.

[27]Republic of Korea Economic Planning Board, National Land Development Plan, p. 103.

CHAPTER IV

SUMMARY AND CONCLUSIONS

If he succeeds,
man praises himself;
If he fails,
he blames his ancestors.

(Korean proverb)

To paraphrase geographer J.R.V. Prescott, the plans and policies for directed change formulated by government may not be geographical themselves, but their effects are obviously so.[1] This fact is amply illustrated by the case of South Korea, where long-range planning is changing both the national economy and its geographical structure. Far-reaching changes in population redistribution, urban growth, industrial location, agricultural production, resource manipulation, and transportation networks - fundamental concerns of geographical investigation - can be understood and explained only by a solid grasp of the goals outlined and realized in national planning.

External factors jolted Korea from its inward-looking, feudal, and agrarian orientation into the reality of the late-19th century resource-hungry, industrializing world. The Japanese colonial experience did much to establish a framework for economic development within Korea, but it failed to provide a pool of managerial talent and technical skills with which the administration of a modernizing economy could be maintained. Therefore, in 1945, South Korea joined

the ranks of nations who emerged independent from World War II without the internal capability to manage their domestic affairs on the same level as developed nations. The confusion of the immediate postwar period was further compounded by the political and physical bisection of the Korean peninsula which led to the establishment of two opposing Korean nations and the ultimate tragedy of the Korean War.

South Korea had to rely on American aid to bolster its economy and to support the ineffective central government of Syngman Rhee. American assistance did foster reconstruction efforts and, more importantly, it transmitted the seeds of western modernization to both the expanding urban areas and the newly adopted universal education system. It was by virtue of education, the improvement of information flows through increased newspaper circulation, and the growing phenomenon of urbanization, that a situation was created where discontent for the political and economic policies of the central government could be voiced. South Korea was ripe for the establishment of a strong central authority which could muster sufficient power to administer domestic affairs and hopefully generate enough external power to overcome the negative aspects of South Korea's strategic location in East Asia.

When Park took control of the South Korean government in May, 1961, he realized that the cornerstone of his power and the viability of the South Korean nation depended upon the rapid development of the economy. Fortunately, he had an infant domestic planning model and the planning experiences of other recently independent countries to provide him with guidance. The choice of central planning shaped around the five-year plan as the primary tool for charting economic

progress marked the formal beginning of South Korea's rapid ascendancy towards developed-nation status. In no other country is there a better example that economic planning is a politico-economic process that combines the techniques of economic analysis with the forces of decision-making and action-taking that are the soul of politics.

Beginning with the First Five-Year Plan in 1962, South Korea has witnessed rapid and progressive change in the development of its national economy. Highlights of South Korea's economic condition indicate the success of the central planning process. With its relatively small landmass, extremely high population density, and meager natural resources, South Korea has achieved one of the world's highest economic growth rates during the 1960's and the 1970's. Ninety percent of its population is literate and educational facilities continue to be improved. The Gross National Product has increased from 2.3 billion dollars in 1962 to approximately 18 billion dollars in 1975. Industrially, in such areas as shipbuilding, fertilizer production, iron and steel production, cement production, chemical production, and oil refining, increased output has multiplied in spectacular fashion. In South Korea's dramatic expansion of trade, exports have increased by an average of more than 40 percent per year since 1962. There have been equally substantial successes in investment, the attraction of foreign capital, agricultural development, and the modernization and expansion of highways, railroads, shipping, power generation, and communication facilities.

Specific achievements of the first three five-year plans as well as the objectives of the fourth plan and the National Development Plan

have been outlined. Much of the development described by the National Land Development Plan has not taken place due to time and funding constraints. However, in every aspect of plan design a substantial beginning has been made. The commitment of South Korean leadership to the positive changes affected by the planning process is what has separated South Korea from most other developing countries and made her progress so dramatic. The process of planning has resulted in changing the patterns within the individual components of the South Korean economy. Agriculture has seen its relative share of the population and its contribution to GNP decline while at the same time modern techniques and diversified crop production have increased output. The size and number of cities have grown as the result of rural to urban migration. Mining and manufacturing have assumed the dominant role in economic performance. This sector is gradually shifting into the production of heavy industrial goods, the hallmark of an advanced economy. Barriers to effective transportation and communication have been virtually eliminated through balanced development of roads, railways, ports, and telephone facilities. A base for sufficient power has been laid that will be able to accommodate the needs of a highly industrialized state. The development of water resources has been planned so that there will be a constant supply of water to satisfy urban, rural, and industrial needs. Furthermore, the negative effects of flood and drought will be minimized to the extent that, wherever temperature allows, year-round farming will be permitted. The rising rate of urbanization and the establishment of heavy industries together with the continuing reduction in the national

birth rate provide clear-cut evidence, by existing criteria, that South Korea is on the path to full development.

The South Korean planning experience has been extraordinary in a number of ways. As an important example of the mutual reinforcement of economic and political development, it tends to confirm the contention that leadership's commitment to economic development is the most critical non-economic factor in governing the pace of development once social bottlenecks, such as education and management skills, have been overcome. Also, the gap, between planning theory, with its sophisticated econometric input/output models, and the actual economic results has been smaller than expected. This indicates how diligently planning guidelines have been followed. Furthermore, the requirements of the planning process have led to a vast improvement of the nation's statistical base, which has enhanced in turn the quality of domestic planning models. Finally, the flexibility of the South Korean planning process has provided the direction under which tremendous overall growth has been achieved. The vital perspective of balanced growth has likewise been incorporated.

The spatial implications of the planned changes have been dramatic for the nation as a whole. Planning is gradually affecting a slowing of population growth and changes in the distribution of the population by the placement of new economic opportunity. Internal migration flows are being directed away from the dominant cities of Seoul and Pusan by the establishment of regional industrial estates. The current barbell configuration of the Seoul-Pusan axis in the national economy has been perceptibly modified by the creation of the

southeastern coastal industrial belt. A more efficient and more specialized land use pattern which has the dual purpose of strategic deployment of vital population and industrial concentrations to regional growth poles as well as the amelioration of the social ills promoted by large urban industrial centers is emerging. As the major river basin projects are completed and the quality of the living and working conditions nationwide becomes more balanced, the balancing of economic activity in numerous coastal and inland cities should be realized. The improvement of the national highway network and the construction of the high-speed expressway system have been instrumental in removing barriers to the flows of people, goods, and ideas to all parts of the country.

Location and raw materials have been factors in this study because they are important variables in the South Korean planning process and policy formulation. Peace in South Korea appears to depend almost entirely upon the viability of political, economic, and security relationships among the United States, Japan, and South Korea.[2] Economic and military self-interest bind South Korea to the United States and Japan, at least until it can complete its heavy industrial transformation and become less dependent on foreign loans and imports. The economic futures of both South Korea and Japan depend upon access to reliable resources of raw materials and assured seaborne delivery. Energy resources, such as petroleum and coking coal, iron ore, and foodstuffs are vital commodities that must be imported. South Korea's relative dearth of key natural resource supplies has been pointed out as a negative influence on development. However, this study shows that

the planning process in South Korea has enabled it to achieve dynamic growth without domestic sources of such materials. What seems to be more important than the possession of raw materials is a nation's capacity to use raw materials regardless of their source. Japan and even the United States are examples of highly industrialized nations that use far more petroleum and other resources than they can produce internally. These countries have done what South Korea is trying to do - establish a level of technological development that allows them to import what is required. This entails the simultaneous development of an export-oriented foreign trade, an efficient balanced transportation network, effective communications, adequate power and water, a literate labor force willing to work, and a substantial number of domestic industrial consumers.

An irony of this 15 years of formal planning is that the objective of American policy regarding the divided Korean peninsula has been, above all else, to maintain stability. The United States has assumed the position that the maintenance of the integrity of South Korea is of global significance in that it removes the threat of Japanese rearmament and proves to the nations of Asia that the resolve of the United States to retain its current role in the Pacific has not been altered by the Vietnam debacle. Any major change involving the interests of the Soviet Union, China, Japan, and the United States raises the possibility of unleashing an irreversible negative chain of events that none of these nations wishes at the present time. Thus, it appears that South Korea has been undergoing tumultuous internal

change for the purpose of maintaining a relatively unchanged external posture. Yet internal stresses are growing, as the government of President Park is marked by repression, isolation, and further alienation from the people. A growing domestic political opposition calls for a peaceful change in government.

Although there is question concerning the degree of the public's dissatisfaction with the central government, government officials do admit that little of the nation's new prosperity has filtered down to the average South Korean. The hills rimming Seoul are thick with flimsy shacks, and the back alleys in many urban areas are filled with thousands who seek shelter in make-shift hovels. Unemployment and inflation continue to detract from the already low income level of the majority of the population, particularly those in rural areas. It was reported by the Office of Labor Affairs in Spring, 1976, that even in Seoul the average wage was 93 dollars a month, well below the 142 dollars a month required for an average family per planning guidelines.[3] Workers are at a distinct disadvantage in negotiating salary increases because strikes are forbidden and the government maintains strict controls on labor activities. Domestic and international critics contend that South Korea's economic attractiveness is peculiarly dependent upon very low wages, large-scale corruption, a large foreign debt, and concomitantly, progressively harsher governmental repression. These conditions do indicate substantial weaknesses that merit criticism. However, when one views the achievements in the overall economy - the relative improvement in the general well-being of the people, particularly when compared with

the immediate alternative in North Korea, the constant threat of military aggression, the resiliency of the economy when faced with crisis, the failure to default on any foreign loan, the projects underway or planned to improve future living conditions, the immense transition of the structure of the national economy from an agrarian base to an industrial base which has required a phenomenal amount of capital - one is forced to tip his hat, if ever so slightly, to President Park and South Korean planners. Their endeavors have affected tremendous changes in the economy and economic geography of South Korea.

The consensus is that there is no one model or body of theory which adequately explains the causal relationships in a nation's developmental cycle. Each model mentioned earlier in this study provided insight into a specific aspect of development. Samuelson identified the necessary ingredients for development; Rostow provided a developed-nation scenario; and Myrdal outlined priority areas to stimulate development. John Friedman, in his book, Urbanization, Planning, and National Development, has made an attempt to provide the newest paradigm of economic development.[4] His approach supports the philosophical contention of this study that a wider and deeper notion of development beyond the confines of economic growth in geographical space is required. This concept of development includes social, political, and cultural aspects as well as economic views. Friedman perceives economic growth in a developing country as concentrated in the primate city because the social structure, cultural mores, population, and centralized power make it the ideal location.

He contends that initially the planner should not ignore this fact since the foundation for development simply does not exist elsewhere. Friedman depicts the planner as gradually trying to affect the diffusion of development by encouraging independent centers of innovation and political autonomy - growth poles - beyond the major metropolises. This is portrayed as a lengthy period during which capital and migration flows are diverted or reversed from highly concentrated urban/industrial areas. Friedman's effort offers implied support to this study's contention that the most influential ingredients of development are difficult to quantify. He advocates no single set of models which can be tested with hard data. Who can adequately measure the intuitive skill of planners, the dedication of a work force, the rate of innovation or incorporation of technology and the degree of political devolution that are as important to the success of economic planning as input/output data or rate of return calculations?

The development of South Korea, in the post-Korean War period has followed closely Friedman's outline. Certainly, early growth was concentrated in and adjacent to the primate city, Seoul, and then to a lesser extent in the other metropolitan anchor, Pusan. More recently, national and regional planning, working in conjunction, have caused growth to gradually emanate from these two major poles toward a broader regional distribution. It is evident that the decision by the South Korean government to support purposeful, intelligent planning has been its key to achievement of positive broad-based national change. It is to this planning that the geographer intent upon studying the changing spatial structure of the economy must turn for explanation.

NOTES

[1]J.R.V. Prescott, The Geography of State Policies (Chicago: Aldine Publishing Co., 1968).

[2]Ralph N. Clough, Deterrence and Defense in Korea (Washington: The Brookings Institution, 1976), p. 53.

[3]Richard Halloran, "South Korean Labor Benefits Little in Boom," The New York Times, 20 Mar. 1976, Sec. A, p. 2.

[4]John Friedman, Urbanization, Planning, and National Development (Beverly Hills, Calif.: Sage Publications, 1973).

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