

TERRITORIAL TRANSFORMATION AND SPATIAL PLANNING

The Transformation of the Land

Historically, the Korean Peninsula has been called Geumsugansan, which can best be translated into this poetic phrase: nature appearing as if it were embroidered on silk. Unfortunately, years of Japanese occupation and the subsequent Korean War divided the country into North Korea and South Korea and devastated the nation's infrastructure, industrial capability, and housing. This devastation led to a shortage of natural resources such as minerals, lumber, oil, and gas, triggering a collapse of the national economy, especially in South Korea. Until the early 1960s, Korea was forced to focus on recovering from the devastation of war by utilizing international aid to restore public facilities and rebuild the national economy. For the last 60 years, there have been many changes in the Korean landscape, most of which have stemmed from government-led land development projects, urbanization, and industrialization.

In the early 1960s, the government's master plan for land development was put into action. The government based its plan on the growth pole theory in order to quickly develop the nation. Though well-intentioned, the growth pole approach only allowed for investment in the few central development areas that were most likely to succeed before development could be considered in other areas. Unfortunately, this approach resulted in both people and capital flowing to those few development centers. The resulting imbalance between those centers and the rest of the country was later corrected with the implementation of a more balanced set of development policies.

Under the Special Area Development Project, Seoul, Incheon, and Ulsan were selected as Special Areas to be developed first on the premise that the effects of such development would gradually envelope the surroundings areas. The Industrial Park Development Project began in Ulsan and Seoul in the early 1960s. Also, during the 1960s and 1970s, the Industrial City Construction Project was launched at targeted sites near such industrial parks. It led to the

emergence of major chemical industries concentrated in cities such as Ulsan-si, Yecheon-si, Pohang-si, and Gumi-si, with a concordant rise in population in each of these cities.

Since the 1960s, the South Korean government has fostered economic growth through export by building industrial complexes and new cities. Beginning with the Ulsan Industrial Complex, which was completed in 1962, and the Korea Export Industrial Complex (Guro Industrial Complex) in 1964, many industrial complexes and their adjacent cities emerged in and around Yecheon, Pohang, Gumi, Incheon, Changwon, Banwol (Ansan), and elsewhere from the late 1960s through the 1970s.

Other major development projects from the 1970s to the present include a number of natural resource and energy-related projects such as reforestation, land reclamation, multipurpose dam construction, and nuclear power plant construction. In 1965, multi-purpose Seomjingang Dam was built across the Seomjin River. More multi-purpose dams were built straight through the 1970s to the 1980s; the Soyanggang Dam, Daecheong Dam, and Chungju Dam are notable examples. All possess hydroelectric power generation capabilities. In 1978, Korea's first nuclear power plant, the Gori Nuclear Power Plant No. 1, was built and began operating near Busan. Subsequently, more nuclear plants were built in Wolsong, Uljin, and Yeonggwang.

Urbanization has had significant impact on the country's demographics, its physical landscape, its social-behavioral institutions, and its economy. As the number of cities increased, the population of rural areas declined, which also led to a decrease in the percentage of the population that was engaged in agriculture and fishery activities.

The emergence of metropolitan centers is a major feature of development in Korea and resulted primarily from the rural-to-urban migrations, especially in the capital. After the 1960s, rapid urbanization and industrialization attracted secondary and tertiary

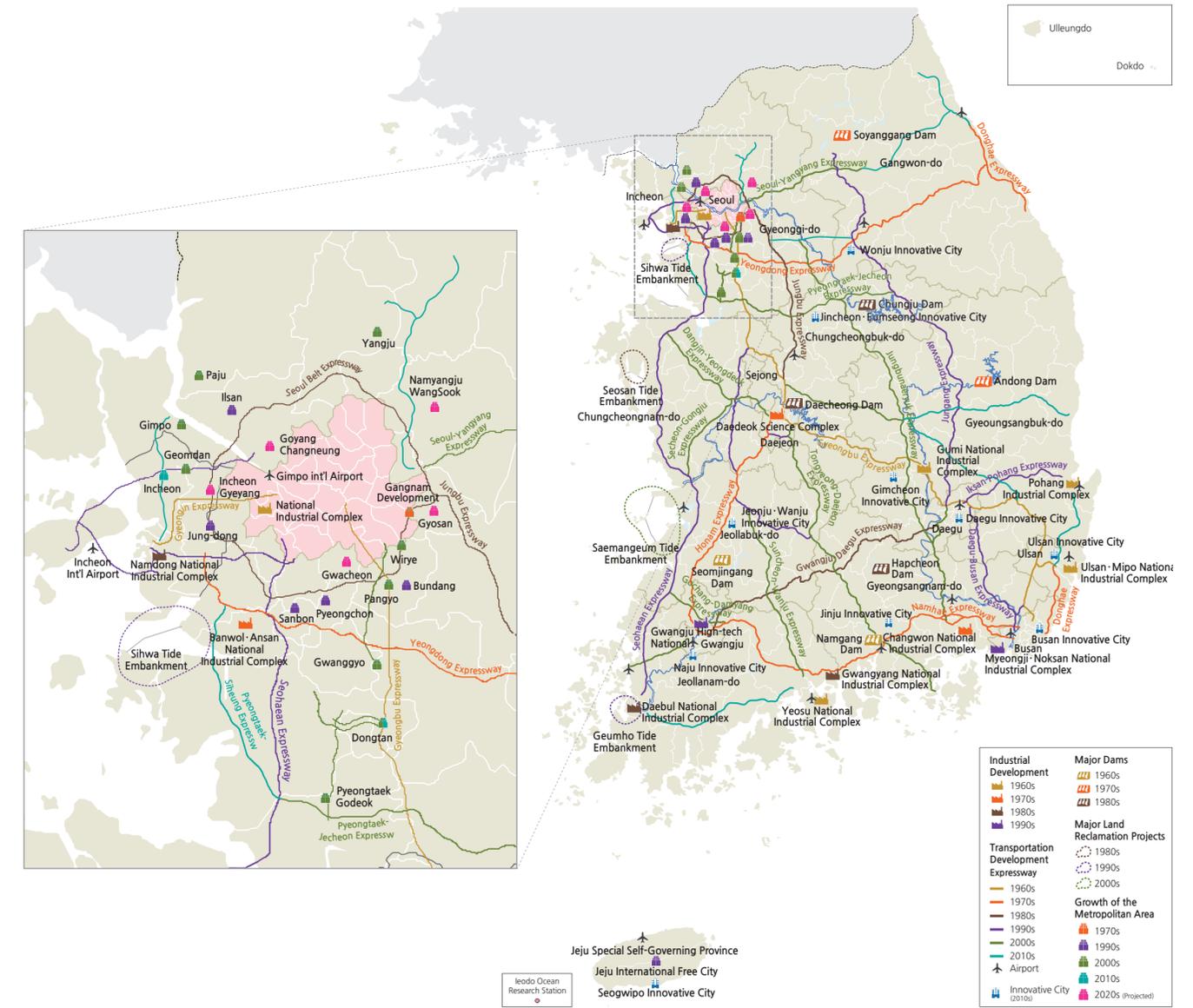
industries to cities as well. More jobs were created, prompting further mass migrations from rural to urban areas. The urbanization rate, which indicates the ratio of urban population as a percentage of the total population, increased rapidly in Korea until the 1980s, but the pace has slowed since then. Between the 1970s and 1980s, urbanization occurred at a much faster rate than in many other countries. As a result, rural areas suffered from the lack of a labor force, a decrease in the coefficient of land utilization, and the rapid aging of its population; these factors ultimately contributed to the failure to meet the minimum requirements for sustaining a rural community in many instances. At the same time, urban areas were confronted with the need to mitigate the challenges of overcrowding. The heavy concentration of industrial activity within the metropolitan areas resulted in serious social and environmental issues such as housing shortages, traffic congestion, poor air quality, and overall environmental degradation.

There was a clear trend toward excessive expansion in both the capital area and the port cities surrounding the Southeastern Maritime Industrial Region. The expansion between these two regions is mainly related to the industrialization that took place along the Gyeongbu Axis. Seoul experienced excessive increases in population, but this trend has stalled and decreased since the 1990s. The population of nearby satellite cities, however, keeps growing, which results in a population concentration in the greater metropolitan area with Seoul at its center.

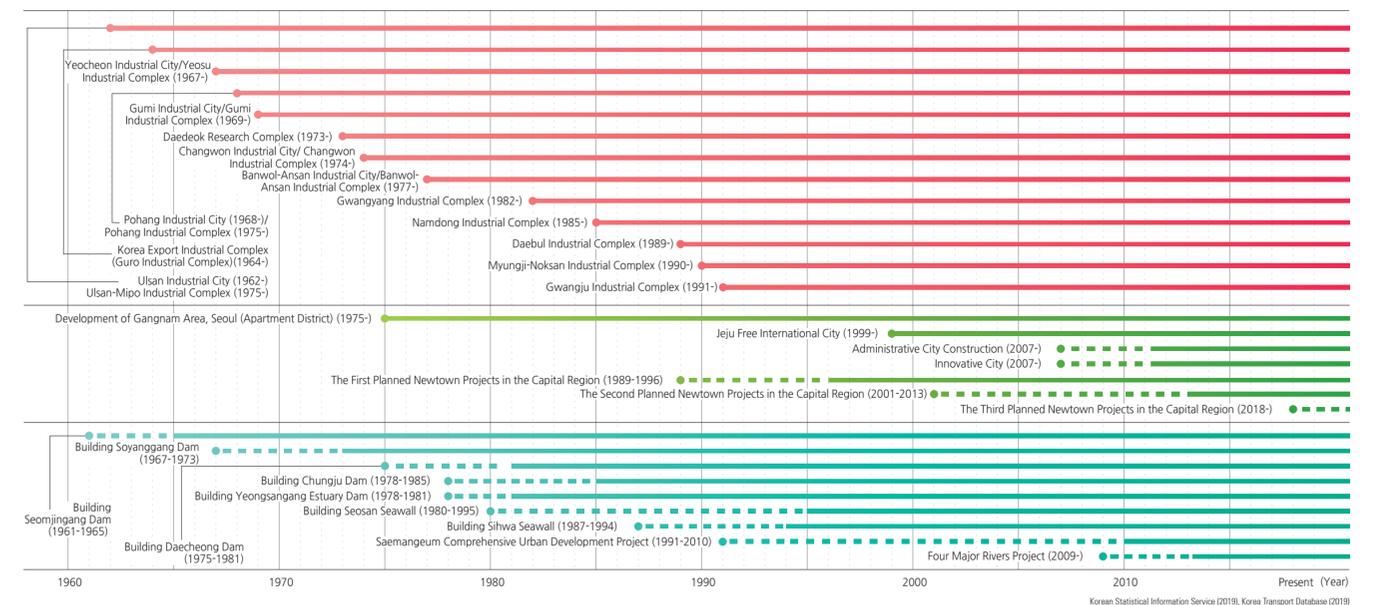
Since 2000, various projects for balanced national development have been carried out. As a result, in 2012, Sejong Special Self-Governing City was launched and a new administrative town was constructed. In addition, Innovation Cities were created in non-capital areas along with the relocation of public agencies to provincial areas.

The Transformation of the Land

Major Land Development Projects



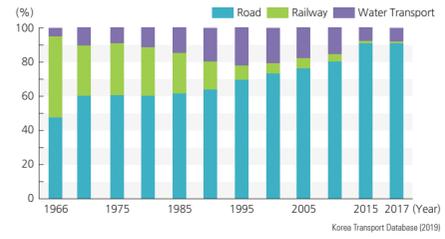
Major Land Development Projects Timetable



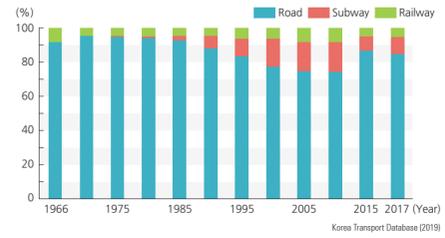
The Development of Transportation

Since the 1960s, construction of transportation infrastructure has taken place rapidly, and major national networks such as expressways, railways, airports, and seaports were built and served as the backbone for continued transportation expansion. Numerous important industries were developed along the Gyeongbu Axis, and in order to service those industries, the main transportation network was established to connect Seoul with Busan. The most notable project was the 428 km Gyeongbu Expressway, which connects Seoul with Busan. Construction began in 1968, and the expressway opened in 1970. It serves as the main corridor through the country. With the opening of Gyeongbu Expressway in 1970, the entire nation became more accessible to commuters, making it possible for travelers to move from point-to-point in the country within one day ("One-Day Life Zone"). With the opening of the Gyeongbu High-Speed Railway in 2004, it became even more so. Literally, a "Half-Day Life Zone" became available.

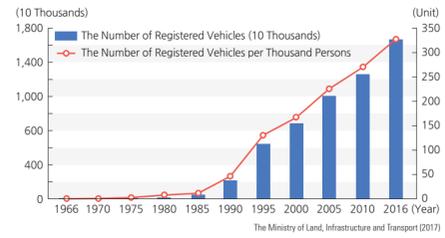
Share of Freight by Transportation System



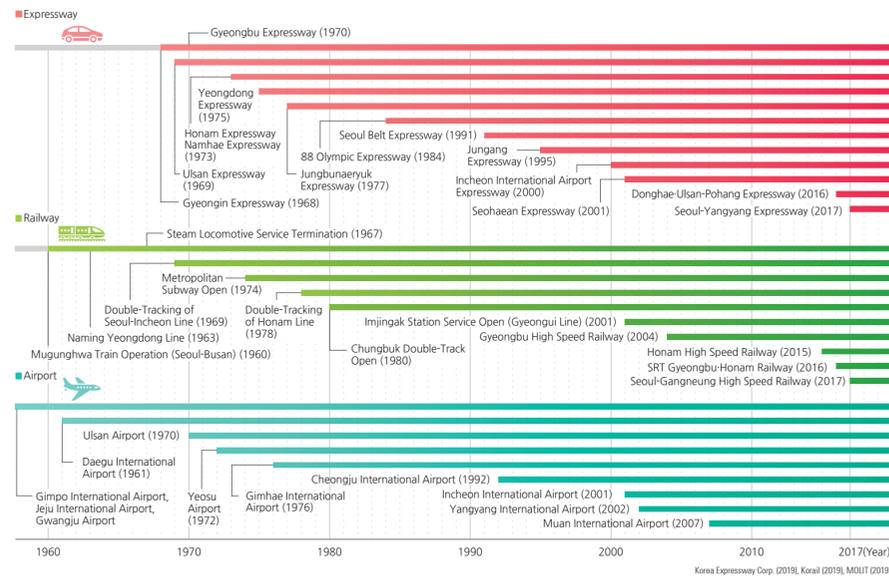
Share of Passengers by Transportation System



Number of Registered Vehicles per Thousand Persons



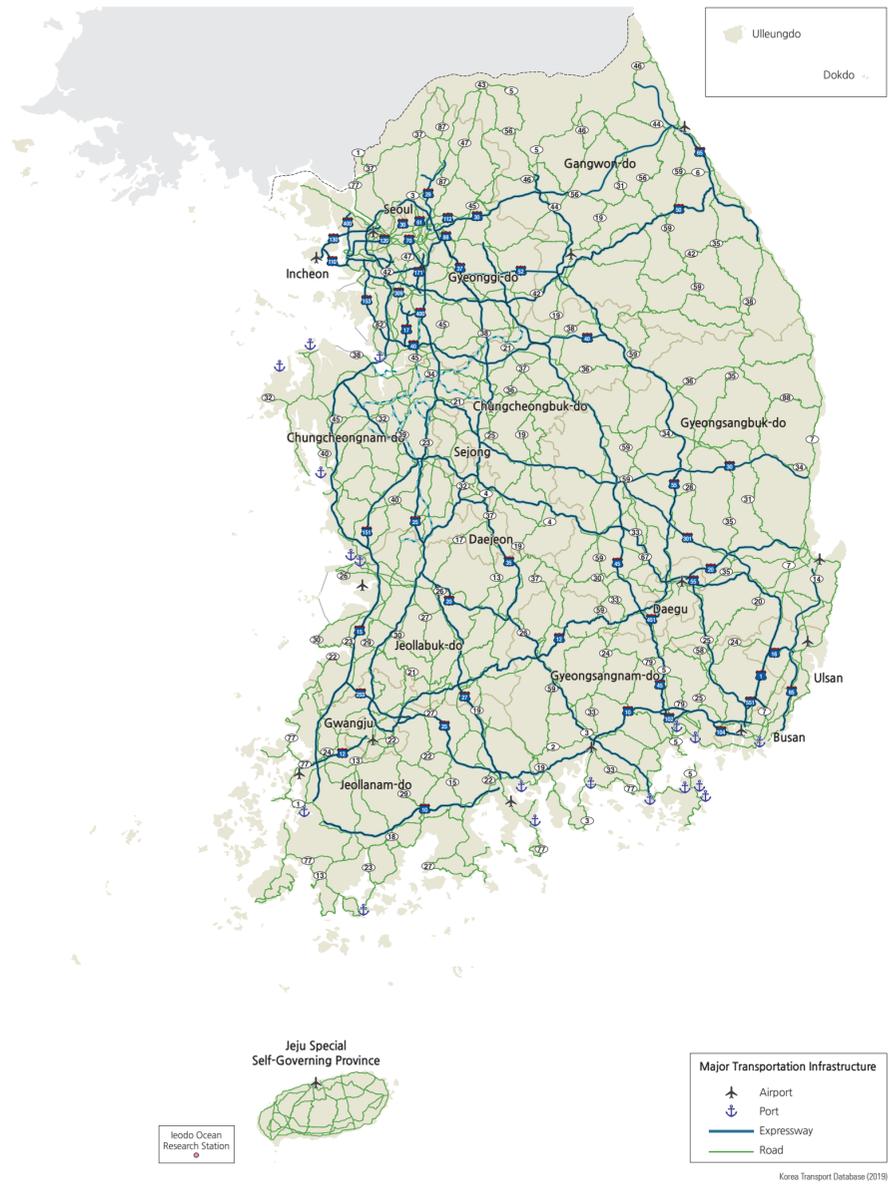
Major Transport System Development



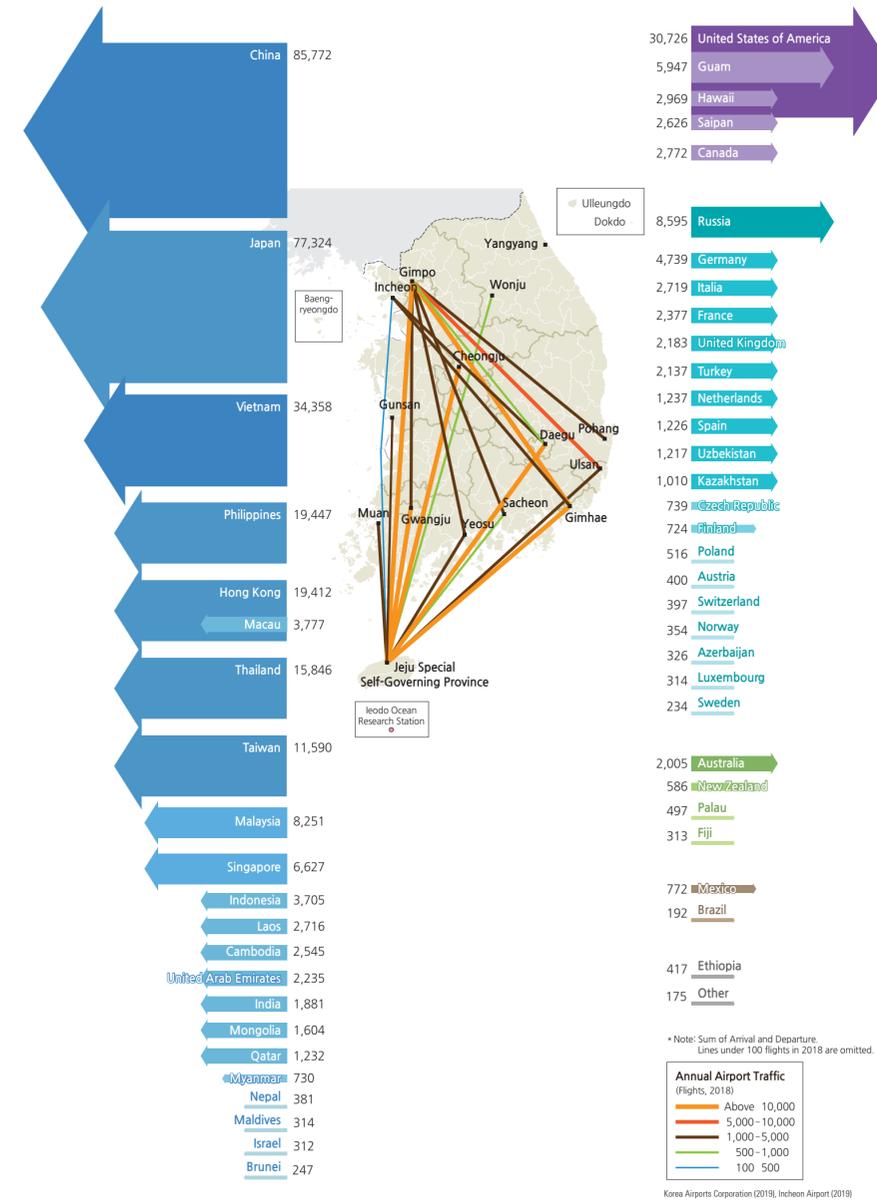
Major Railway



Major Transportation Infrastructure

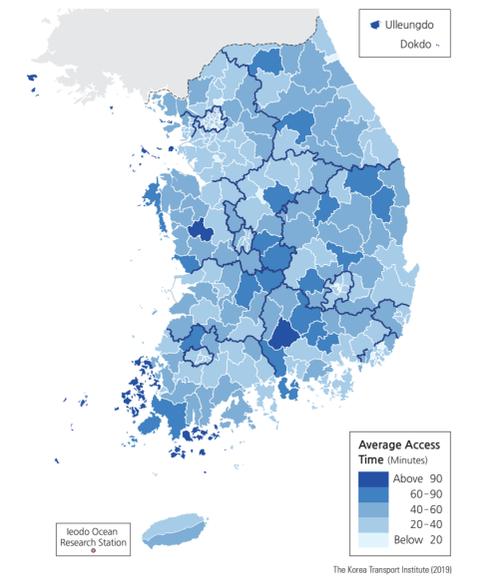


Airport Traffic

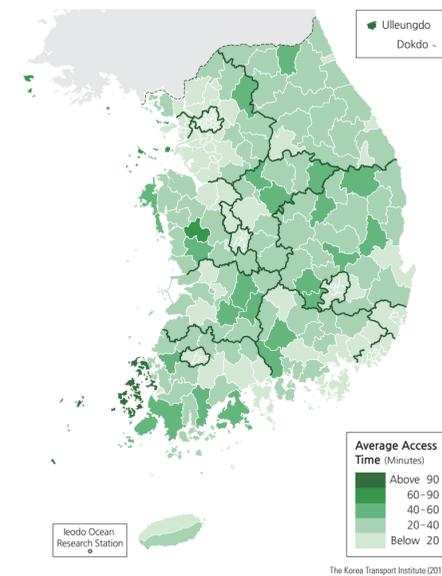


The transportation sector of the Korean economy rapidly developed as a result of the Export Industry Policy. It was reflected in the land spatial structure and regional growth structure that centered on metropolitan areas and the Gyeongbu Axis (Seoul-Busan). Korea's entry into modern transportation began with railways that the Japanese built to invade Korea and seize its resources during the colonial period. In 1955, diesel engine locomotives and a subway system were introduced, and double-track railway projects were promoted. The modernization of rail traffic has been ongoing, and in 2004 the Seoul-Busan High-Speed Railway began operation. The development of highways began with the construction of the Gyeongbu Expressway in the 1970s, and since the late 1980s, more and more roads have been built and improved as road traffic has increased. Major Korean ports are primarily located along the southeastern coast, which allows for the ready import and export of materials and products needed for chemical and industrial plants located in that region. In 1958, Gimpo Airport opened. In 1968, Jeju Airport began operations. In 2001, Korea's air transportation started a new chapter with the opening of the ultra-modern Incheon International Airport on Yeongjoo Island. The traffic accessibility index measures the average time spent by public transportation users from the centroid of each area to various facilities such as bus terminals, high schools, general hospitals, and shopping centers. Traffic accessibility to these key facilities is relatively low in rural areas compared to in large metropolitan cities.

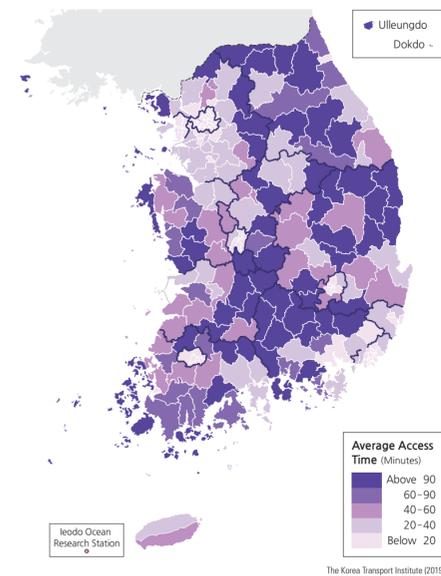
Traffic Accessibility to Bus Terminals



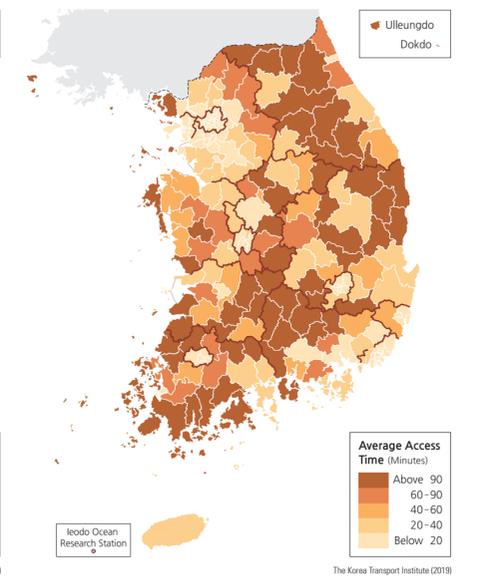
Traffic Accessibility to High Schools



Traffic Accessibility to General Hospitals

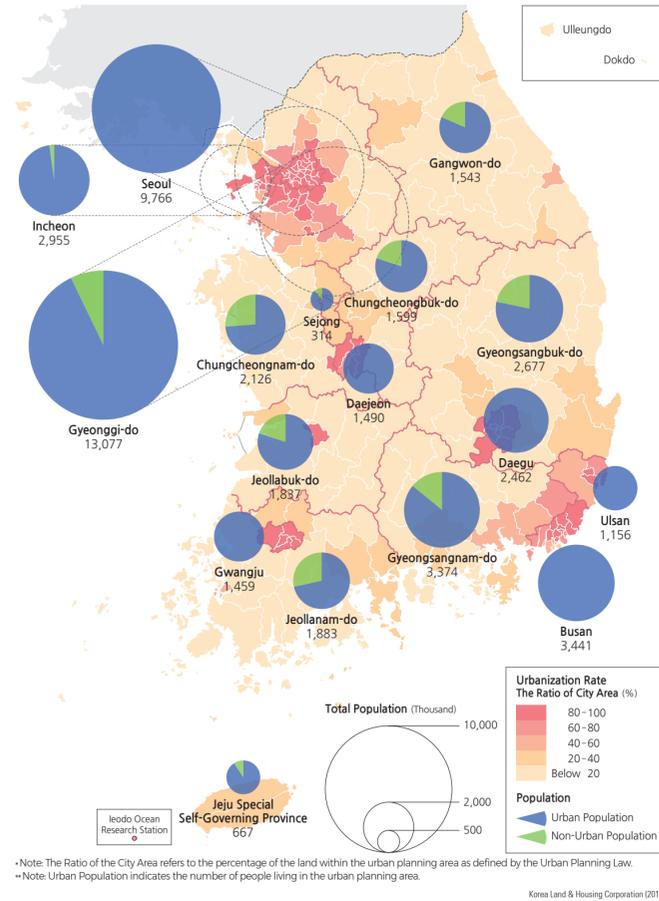


Traffic Accessibility to Shopping Centers

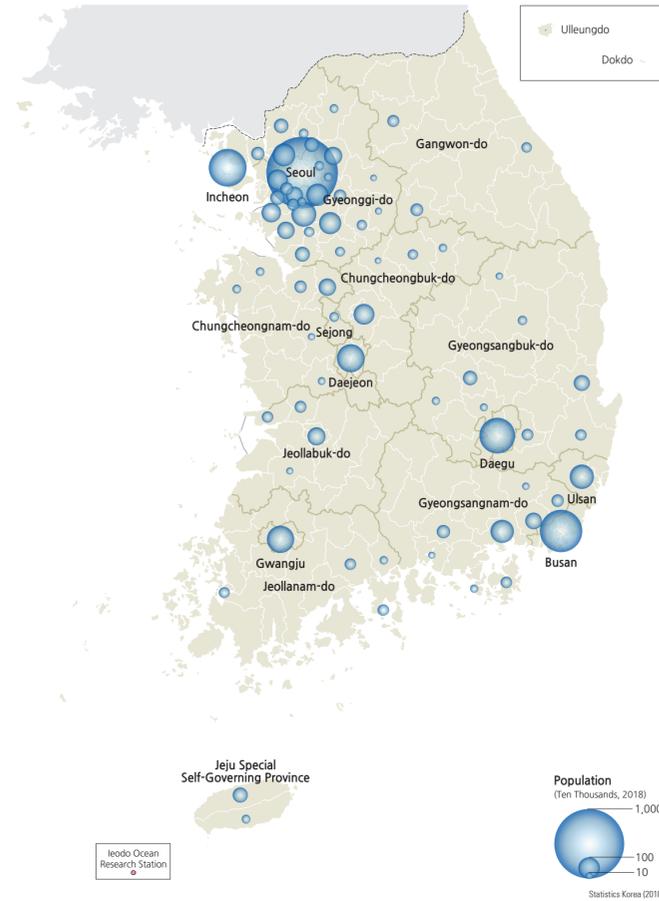


Urbanization and Living Space

Urbanization in Korea



The Spatial Pattern of Cities by Population Size

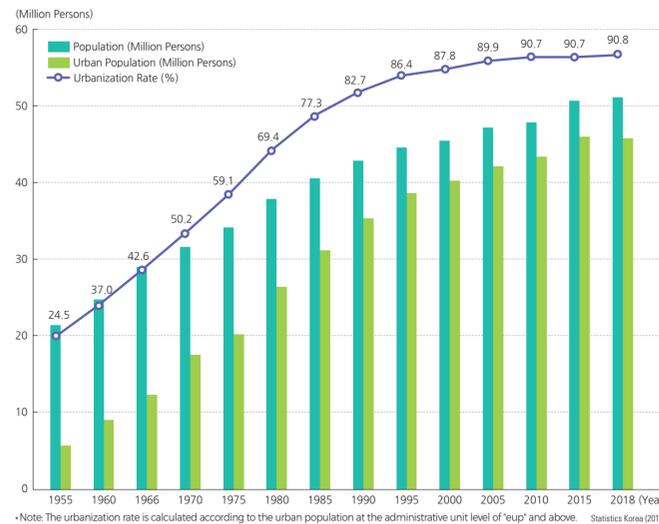


The most notable change in Korea's landscape over the past 60 years is increasing urbanization. The representative indicator of this process is the urbanization rate that shows the share of people living in urban areas out of the total national population. This statistical number can differ depending on which administrative unit is used to designate an area as urban or rural. In the case that the administrative unit level of the Dong and Eup above are considered as urban areas, Korea's urbanization rate has exceeded 90%. The rate of increase was rapid until the 1980s, but it has since slowed

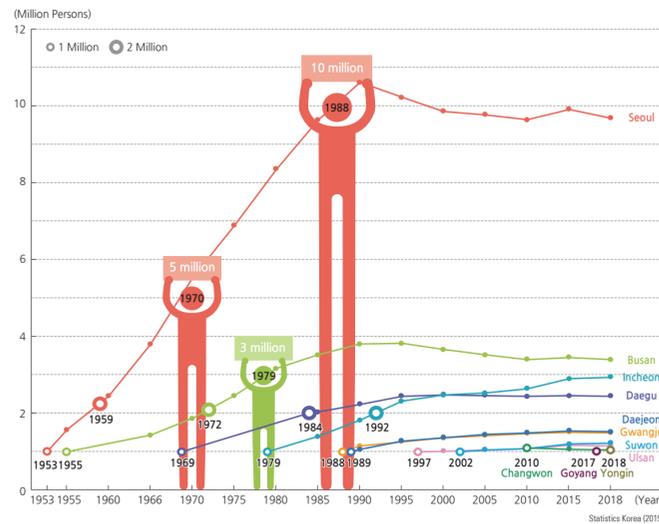
down. This slowing trend indicates that Korea's urbanization has entered its final phase. The capital area surrounding Seoul, Busan and its surrounding area, and other metropolitan cities all show high urbanization rates. The list indicating urban growth in Korea when each city reached 1 million residents is as follows: Seoul (1953), Busan (1955), Daegu (1969), Incheon (1979), Gwangju (1988), Daejeon (1989), and Ulsan (1997). As for cities that did not meet the metropolitan definition, Suwon-si exceeded 1 million in 2002, Changwon-si in

2010, Goyang-si in 2017, and Yongin-si in 2018. Seoul exceeded 10 million in 1988 and became a megacity even by international standards. Busan, the second-largest city, exceeded 3 million in 1979; however, its population stagnated and has decreased recently. The distribution of cities by population size shows a clear trend toward port city development along the southeastern coastal industrial zone as well as the expansion of the greater capital area. These two urban centers, in particular, gave rise to the Gyeongbu Axis.

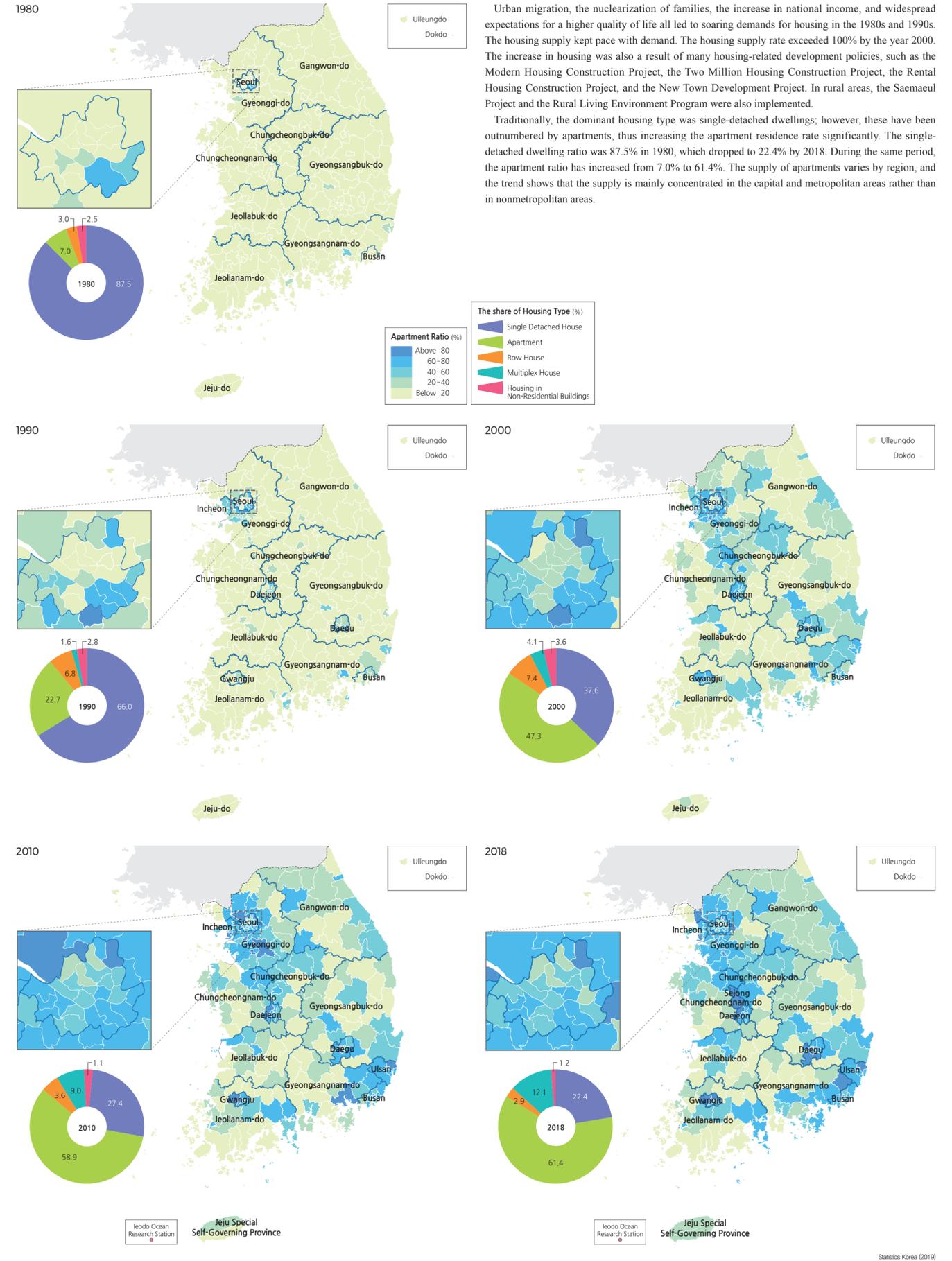
Urban Population and Urbanization Rate (1955-2018)



Population Growth of Major Cities (1953-2018)



Change in the Percentage of Apartment Housing



Urban migration, the nuclearization of families, the increase in national income, and widespread expectations for a higher quality of life all led to soaring demands for housing in the 1980s and 1990s. The housing supply kept pace with demand. The housing supply rate exceeded 100% by the year 2000. The increase in housing was also a result of many housing-related development policies, such as the Modern Housing Construction Project, the Two Million Housing Construction Project, the Rental Housing Construction Project, and the New Town Development Project. In rural areas, the Saemaeul Project and the Rural Living Environment Program were also implemented.

Traditionally, the dominant housing type was single-detached dwellings; however, these have been outnumbered by apartments, thus increasing the apartment residence rate significantly. The single-detached dwelling ratio was 87.5% in 1980, which dropped to 22.4% by 2018. During the same period, the apartment ratio has increased from 7.0% to 61.4%. The supply of apartments varies by region, and the trend shows that the supply is mainly concentrated in the capital and metropolitan areas rather than in nonmetropolitan areas.