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Case study of Chungcheongbuk-do and Jeollanam-do

The final chapter focuses on a case study of two of Korea's regions, Chungcheongbuk-do and Jeollanam-do. This includes a review of the demographic and economic trends in each region, followed by an identification of the main drivers and bottlenecks influencing these trends. The policy approaches currently underway in each region will then be reviewed and a number of recommendations identified.

Introduction

On the whole, Korean rural economies are very competitive in an international context and are significant contributors to the national economy. As mentioned in Chapter 1, the predominantly rural regions of Korea, uniquely among OECD member countries, benefit from per capita gross domestic product (GDP) that is, on average, higher than that of the country's urban regions and higher than the national average. Averages, however, do not reveal intraregional disparities. On closer inspection, these regions include some growing communities, mostly those that are the subject of major national initiatives (e.g. Innovation Cities) and also some for which the data show more troubling signals.

This chapter reviews two provinces, Chungcheongbuk-do (Chungbuk) and Jeollanam-do (Jeonnam), which in recent years have performed well and less well respectively, to examine how Korea's balanced national development policy has impacted these areas. The chapter begins with a review of the data to understand the current situation in these provinces, followed by a discussion of the outlook and current policy initiatives and finally recommendations.

Demographic overview and trends

Situated at the southwestern tip of the Korean peninsula, Jeollanam-do is home to 1.87 million people (2019). The country's iconic agricultural province is blessed with relatively flat land and a warmer climate than other parts of the country, making it ideally suited for farming. The region produces a variety of livestock, fruits, vegetables and grains, including rice, barley, plums, turmeric and the widely exported Naju pear. The province also benefits from 6 743 km of coastline, including 2 165 islands. It is home to almost half the country's harbours (1 099 of them) and 40% of its fishing fleet (26 939 vessels). Chungcheongbuk-do province is located in the centre of Korea and is home to 1.60 million people (2019). It is South Korea's only landlocked province and occupies a largely mountainous area (70% of the territory) with the Sobaek range running along the province's southern border. Mining has been and remains a significant source of economic activity for the province. Currently, operating mines produce gold, silver, tungsten, zinc and other metals and minerals. Over the past 20 years, both provinces have been undergoing a period of transition as their economic drivers have increasingly shifted away from traditional land, sea and resource-based activities towards new sources of growth, primarily in manufacturing.

In terms of population, since 2001, Chungcheongbuk-do has seen its population climb by a total of 8.4%, putting it slightly ahead of the OECD average for TL3 regions (Figure 6.1). Jeollanam-do has seen an 11.9% decline over the period, though the rate of decline was significantly attenuated (and slightly reversed) in the 2010-19 period as compared with the first decade of the new century.

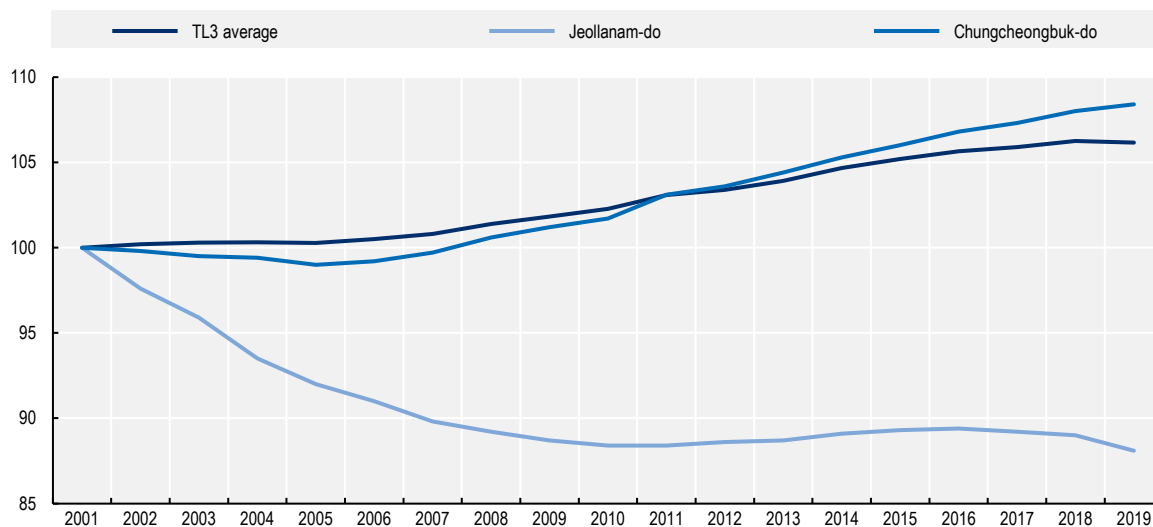
Migration patterns have contributed to the population trend, as Jeollanam-do saw significant outward migration to elsewhere in Korea during the period 2000-10, mirroring the overall the population trend. This outflow was significantly mitigated in the past 10 years though showed signs of deteriorating again in 2018. Chungcheongbuk-do in comparison has seen a slow but steady inflow of newcomers for the past decade (Figure 6.2).

Given the outward migration it has experienced, it is not surprising to find that Jeollanam-do's population is older than Chungcheongbuk-do's with a higher proportion of elderly people. In 2019, Jeollanam-do had an elderly dependency ratio over 40% higher than Chungcheongbuk-do and significantly higher than the OECD average. The inward migration that Chungcheongbuk-do has benefitted from over the past decade has slowed the growth of its elderly dependency, such that it is now very close to the OECD average (Figure 6.3). Examining the population within each province underscores that population ageing has a clear rural dimension. Approximately 15% of Chungcheongbuk-do's urban residents (*si*) are aged 65 or more, a proportion that is not significantly different to the 16% seen in Jeollanam-do's urban areas; however, in the counties (*gun*) of Chungcheongbuk-do, the portion of elderly people is approximately 23% while, in Jeollanam-do, it is 31%. Chungcheongbuk-do has had greater success in recent years in attracting

new residents to its largely rural counties, outside of its cities. Several of Jeollanam-do's counties are experiencing high levels of ageing: for example, in Goheung County, almost 40% of the residents are aged 65 or more while, in neighbouring Boseong County, the rate is 37% (all figures from 2019).

Figure 6.1. Population density growth index (2001=100)

Percentage change in the population density of Chungcheongbuk-do, Jeollanam-do and the OECD average for TL3 regions

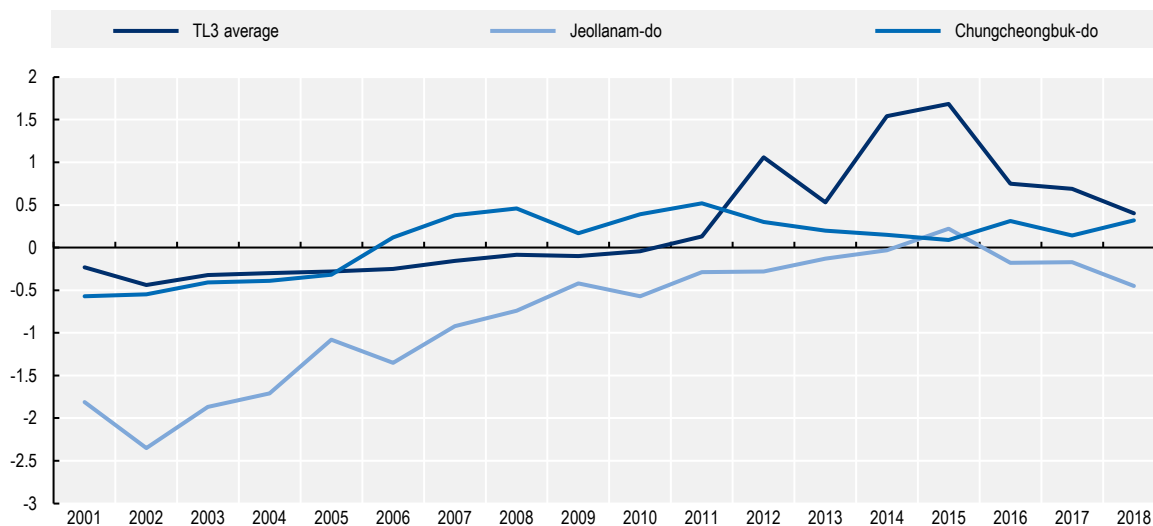


Source: (OECD, n.d.^[1]), *Regional Demography (database)*, OECD, Paris, https://stats.oecd.org/Index.aspx?DataSetCode=REGION_DEMOGR.

StatLink  <https://doi.org/10.1787/888934222662>

Figure 6.2. Inter-regional net migration

Net flow of migrants, as a percentage of the population, for Chungcheongbuk-do, Jeollanam-do and OECD TL3 average

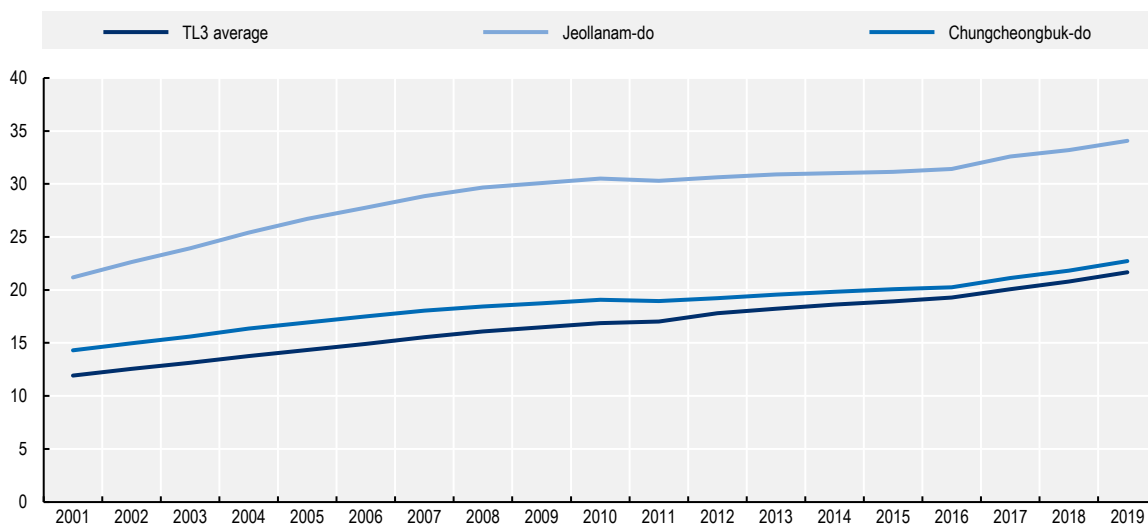


Source: (OECD, n.d.^[1]), *Regional Demography (database)*, OECD, Paris, https://stats.oecd.org/Index.aspx?DataSetCode=REGION_DEMOGR.

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Figure 6.3. Elderly dependency

Elderly dependency for Chungcheongbuk-do, Jeollanam-do and OECD TL3 average.



Note: Elderly dependency is defined as the number of people aged 65 or older for every 100 people of working age (20-64).

Source: (OECD, n.d.^[1]), *Regional Demography (database)*, OECD, Paris, https://stats.oecd.org/Index.aspx?DataSetCode=REGION_DEMOGR.

StatLink  <https://doi.org/10.1787/888934222700>

Examining population trends at a more detailed level, important intraregional patterns emerge. Jeollanam-do is composed of 17 counties (*gun*) and 5 cities (*si*). In the period 2011-19, 16 of the 17 counties saw their population decline by an average 8.1% over the period. These counties lost an average of 4 115 people during the period. Two of the 5 cities also saw declines, though by a smaller 4.7% on average. Of the four areas that experience growth within the province, the cities of Gwangyang, Naju, Suncheon and the county of Muan, all of these areas are notable because they have all been the beneficiaries of specific government interventions in recent years, specifically:

- Naju – Innovation City (Bitgaram).
- Suncheon and Gwangyan – Gwangyang Bay Free Economic Zone.
- Muan – Enterprise City and new seat of the provincial government.

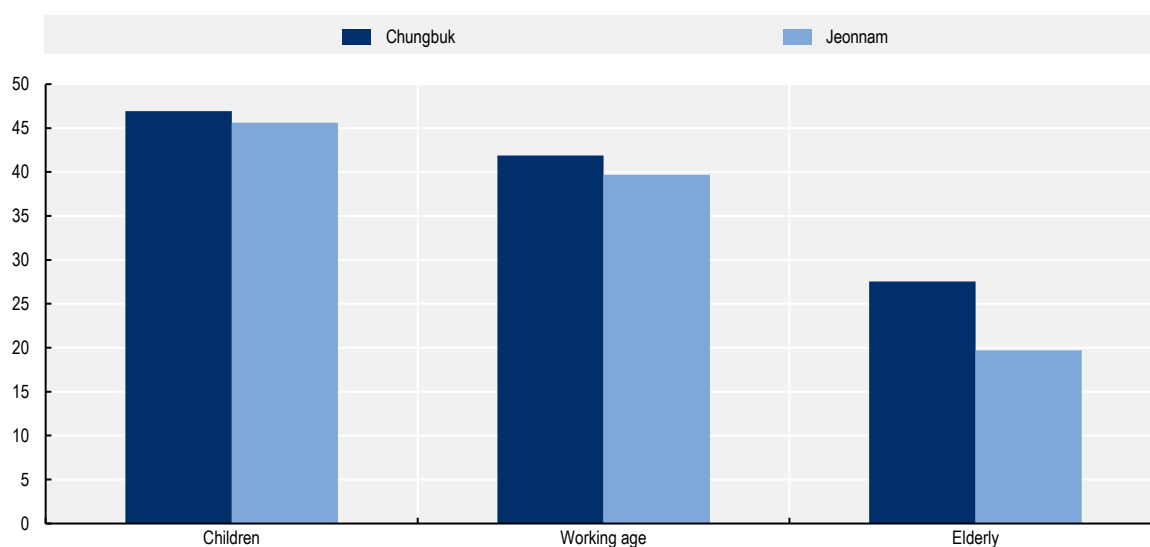
A similar analysis of Chungcheongbuk-do finds that, of its eight counties and three cities (including one specific city, Cheongju, the provincial capital), growth was much more widespread, with four of the eight counties and two of the three cities showing growth. Of those counties where population declined over 2011-19, the decline was less severe, at -4.8% on average or 1 990 people. Of those counties that experienced growth, a similar pattern emerges – those counties and cities that experienced growth were beneficiaries of the Chungcheongbuk-do Free Economic Zone, while the strongest growth was seen in Jincheon County, the location for an Innovation City. The areas of Chungcheongbuk-do that showed growth were also clustered in the northwest corner of the province, near the provincial capital and in proximity to the national capital and Sejong, suggesting proximity to these centres may have been a factor. The areas of the province that experienced population decline were on the periphery, to the northeast and southern end of the province.

Regarding the strong growth seen in Jincheon, which grew around 29% from 2011-19, a similar experience was had in Naju, Jeollanam-do, where the Bitgaram Innovation City is located. Naju also showed the strongest population growth in its province over the period and also grew around 29% from 2011-19, with

a sharp uptick in the population after KEPCO (an anchor tenant of the Innovation City) opened its new headquarters there at the end of 2014. Given that the initial residents of these developments are expected to be incoming migrant employees and their families (relocated from the capital), it is unclear what impact these projects are having on the population patterns of local people. In Jeollanam-do, the three neighbouring counties of Naju, namely Hampyeong, Hwasun and Yeongam, each saw their population fall by approximately 9.1% over the period, slightly higher than the average population loss for counties in the province that are experiencing a decline (8.1%), suggesting that one of the effects of the new city might be to accelerate the already declining vitality of these neighbouring counties.

A concentration index calculated at the provincial level, by age group (children: 0-19 years of age; working-age adults: 20-69; the elderly: 70 or older) finds that, in both Chungcheongbuk-do and Jeollanam-do, the youth population is more concentrated than the elderly (Figure 6.4), though the gap is wider in Jeollanam-do. The index for the retirement-age population in Jeollanam-do is less than half that of the working population, which may present special challenges for service delivery and municipal finances in the province. The relatively high concentration of children in both provinces may indicate that parents are making choices on where to live based on perceived access to services related to children (e.g. childcare, education), and that perceived weaknesses in the delivery of these services in rural areas may therefore be contributing to the population decline of these areas.

Figure 6.4. Concentration index by age group



Note: Children: 0-19, Working age: 20-69, Elderly: 70 and older.

Source: KOSIS (2020^[21]), Resident Population in Five-Year Age Groups (2019 data), https://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1B04005N&language=en.

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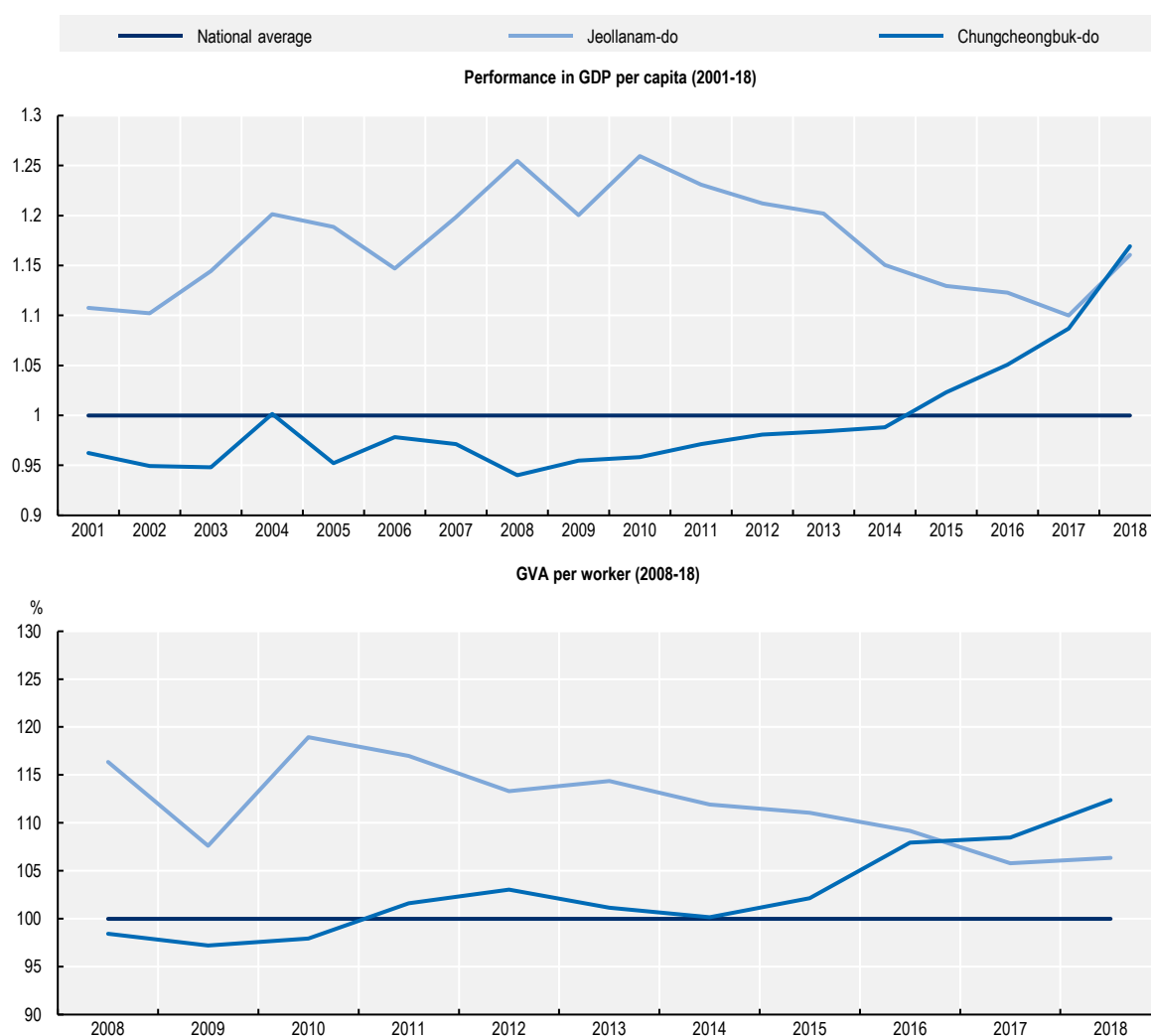
The observed changes in population suggest that the major initiatives of Korea's balanced national development policy are having a meaningful impact on population patterns in Chungcheongbuk-do and Jeollanam-do. However, their impact appears limited to the specific areas where they are being implemented and, particularly in Jeollanam-do, they do not appear to have fundamentally changed the broader trends taking place in the province.

Economic overview and trends

Both Chungcheongbuk-do and Jeollanam-do experienced per capita GDP that was above the national average in 2018. Jeollanam-do generated USD 47 617 (PPP, 2015 base) and Chungcheongbuk-do USD 47 969, compared with USD 41 022 nationally, at 116% and 117% respectively (Figure 6.5). Both provinces also deliver gross value added (GVA) that is above the national average, at 106% in Jeollanam-do and 112% in Chungcheongbuk-do (2018). In the decade since 2008, Chungcheongbuk-do has trended upwards: after beginning the decade slightly below the national average, it is now quite substantially beyond it while, in Jeollanam-do, the trend is headed in the opposite direction, having reached 126% of the national average per capita GDP in 2010, it has declined since then, though partly recovered in 2018.

Figure 6.5. Per capita GDP and GVA

In Chungcheongbuk-do and Jeollanam-do in relation to the national average



Source: (OECD, n.d.^[3]), *OECD Regional Statistics (database)*, OECD, Paris, <https://doi.org/10.1787/region-data-en>

StatLink  <https://doi.org/10.1787/888934222738> (GDP) | <https://doi.org/10.1787/888934222757> (GVA)

The performance of the two provinces is underpinned by economies focused on tradeable goods, whether in traditional sectors like resource extraction, agriculture and fisheries or, increasingly, in the manufacturing sector. Chungcheongbuk-do and Jeollanam-do are both home to sizeable manufacturing capacity. In Jeollanam-do, the sector is highly specialised in chemicals and metals (approximately 85% of all manufacturing in the province is in these sub-sectors) and is centred on the Gwangyang Bay Free Economic Zone where steel manufacturing facilities of POSCO (Gwangyang) and Hyundai (Suncheon) are located. There are also several chemical production facilities in nearby Yeosu, including GS Caltrex, BASF and LG Chem.

In Chungcheongbuk-do, the sector is focused on electrical and electronics manufacturing though this sub-sector only represents around 47% of its total manufacturing activity. Major firms include SK Hynix (semiconductors), Hanwha Solutions Corporation (photovoltaic cells) and Hyundai Mobis (hydrogen fuel cells). Geographically these facilities are clustered in the northwest corner of the province, in Jincheon and Eumseong Counties, and in and around the provincial capital, Cheongju, putting them in relatively close proximity to Seoul. Chungcheongbuk-do's more diversified manufacturing sector also has a presence in food/beverage/tobacco, machinery/equipment and metals and chemicals. Jeollanam-do experienced a rapid expansion of its manufacturing base from 1985 to 2005 but it has since stabilised. Chungcheongbuk-do has been experiencing a rapid expansion of the sector in recent years (Table 6.1).

Table 6.1. Growth of manufacturing

Percentage of gross regional domestic product (GRDP) from manufacturing

	1985	1995	2005	2015	2018P
Jeollanam-do	16.9	22.1	31	31.7	31.8
Chungcheongbuk-do	30.1	36.1	34.9	41.9	44.8

Note : 2018P = Projected

Source: OECD (2020₍₄₎), "Questionnaire", Unpublished, OECD, Paris.

Table 6.2. Economic structure

Economic structure by sector nationally and for Jeollanam-do and Chungcheongbuk-do.

	National	Jeollanam-do	Chungcheongbuk-do
Agriculture, forestry, and fishery (T)	1.8	7.0	3.0
Mining (T)	0.1	0.2	0.4
Manufacturing (T)	26.6	31.8	44.8
Electricity, gas, steam, and air conditioning supply (T)	1.3	2.9	0.5
Construction (NT)	5.4	6.3	6.5
Wholesale and retail (NT)	7.3	3.0	3.3
Shipping and storage (NT)	2.9	3.3	2.1
Accommodation and restaurants (NT)	2.3	1.6	1.7
Information and communication technology (ICT) (T)	4.3	1.5	1.0
Financials and insurance (T)	5.5	2.9	2.9
Real estate (NT)	7.2	3.3	3.8
Business sector services (NT)	8.7	3.1	4.5
Public administration, defence, and social security (NT)	6.1	9.6	7.3
Education (NT)	4.8	4.6	4.8
Public health and social welfare (NT)	4.3	3.9	3.2
Leisure and other services (NT)	2.8	2.3	2.6

Note: (T) denotes tradeable sectors, (NT) denotes non-tradeable.

Source: OECD (2020₍₄₎), "Questionnaire", Unpublished, OECD, Paris.

The economies of both provinces include a large mix of tradeable sectors (Table 6.2), with approximately 46% of Jeollanam-do's total economic activity in tradeable sectors and 53% in Chungcheongbuk-do, both higher than the national average of 40%. Though the role of traditional sectors has declined in both Chungcheongbuk-do and Jeollanam-do, both provinces continue to play a significant role in these sectors within the national context. Jeollanam-do's fisheries are responsible for 56% of Korea's total catch by volume and 38% by value. The sector employs 42 584 people in the province, 37% of the country's total fishery workers. The fishery, agriculture and forestry sector in Jeollanam-do is responsible for 15.5% of Korea's national output in this sector (and 14.6% of its jobs), far outweighing the 4% contribution of Jeollanam-do to national output overall.

In Chungcheongbuk-do, the agriculture, fishery and forestry sector is smaller and has declined moderately from 7.4% of national production in 1985 to 6.0% in 2018 (Table 6.3); however, this is still an outsized contribution to output given that Chungcheongbuk-do's overall contribution to GRDP is 3.7%. Notably, the sector is also responsible for 6.72% of national employment in the sector, indicating that sectoral productivity in Chungcheongbuk-do is lower than in Jeollanam-do. The largely mountainous province has a scarcity of land suitable for agriculture and development and has elected to develop that land for higher-value industrial uses rather than preserve it for agriculture. The province remains active in the mining sector and its share of national activity in this sector has been increasing, to 10.6% of national mining output in 2018, from 7.0% in 2015 and 6.2% in 1995. The mining sector in the province is responsible for 15.8% of all mining sector jobs in Korea.

Table 6.3. Contribution of mining, agriculture, forestry and fisheries

The contribution of Chungcheongbuk-do and Jeollanam-do to national output and employment in total and by selected sectors

Sector	Province	Contribution to national output and employment	2018
GRDP	Jeollanam-do	% KRW	4.0
		% employment	3.58
	Chungcheongbuk-do	% KRW	3.7
		% employment	3.27
Agriculture, forestry and fisheries	Jeollanam-do	% KRW	15.5
		% employment	14.63
	Chungcheongbuk-do	% KRW	6.0
		% employment	6.72
Mining	Jeollanam-do	% KRW	5.3
		% employment	..
	Chungcheongbuk-do	% KRW	10.6
		% employment	15.79

Note : Mining employment in Jeollanam-do unavailable.

Source: OECD (2020^[4]), "Questionnaire", Unpublished, OECD, Paris.

Nationally, farm household incomes have risen steadily over the past decade, by an average 4.67% per year, however, farm incomes grew only 2.03% per year, with the rest of the growth coming from non-farm income (6.93% per year) and a rapid expansion of transfers from the government (8.76% annual growth). Non-farm incomes now account for 40.3% and are the largest share of income. Consequently, the proportion of farm household income derived from transfers has risen from 21% to 31% over the past decade and agricultural production is today responsible for only 22.5% of the income of farm households. In May 2020, the government introduced a new subsidy system for farmers that is expected to further increase these transfers. The new system shifts emphasis from rice-growers and large farm operators towards smaller farms and a wider variety of produce. A portion of the subsidy is accorded regardless of

farm size, thus the total subsidy received per square kilometre will be higher for those who operate smaller farms. The farming industry has struggled to attract young people and the existing farmers are ageing rapidly. In Jeollanam-do, the number of farming households has declined by an average of 2.1% per annum in 2010-18.

Outlook and policy

Looking ahead, Chungcheongbuk-do and Jeollanam-do face a variety of challenges and opportunities, some of which they share. Key among these is the future of rural communities in the face of rapid ageing and depopulation. Several initiatives are underway in an effort to address that issue, to raise farmer incomes and attract young farmers, to diversify the rural economy and improve rural service delivery. The provinces have also developed longer-term plans for economic expansion that aim to leverage their respective assets and opportunities.

Raising rural incomes

Income support and price stabilisation

In addition to the national farm subsidies mentioned above, beginning in 2020, Jeollanam-do will introduce an additional public-value allowance for its farmers and fishermen. The allowance, of up to KRW 600 000 per year, is intended to compensate farmers and fishermen for the positive externalities they provide a society that is not reflected in the income they receive from selling their produce. These include food security for the country, environmental conservation, landscape conservation, flood prevention, community maintenance and the preservation of traditional culture and heritage.

The importance of rural life and communities to the landscape and culture of Korea, and the need to develop ways to preserve it, is increasingly recognised. Though Jeollanam-do's allowance will be the first, it is not alone in this new initiative. Similar allowances are being introduced this year in Chungcheongnam-do and Jeollabuk-do and at the county level in Cheongsong, Gyeongbuk, though at the moment there is no plan for one in Chungcheongbuk-do. In addition to the allowance, Jeollanam-do also placed a number of the region's speciality products under price stabilisation this year in an effort to support farmers.

Eco-friendly and advanced agriculture

Approximately 57% of all Korean agricultural land certified for eco-friendly agriculture is in Jeollanam-do (46 460 ha, 2019) and the province is seeking to expand the organic certification for produce and livestock grown on these lands. The province is also encouraging the use of circular farming practices. These efforts have several potential benefits:

- Organic certification can increase the value of the food produced, helping local farmers to compete with cheaper imports.
- These practices help preserve the natural environment and lower the carbon footprint.
- Focusing on eco-friendly agriculture may help attract youth to the sector, with 40% of young farmers (less than 40 years old) in the province already engaged in eco-friendly production.

The province has recently established a new facility named Changnong Town for young farmers and others interested in agriculture-related businesses including food processing and marketing firms. Changnong Town will be a business incubator/accelerator for those aged 20-40 and will be linked with agricultural research infrastructure to help foster start-ups in agricultural science and technology-based agricultural industries. It will provide training and mentoring to help young people start and grow businesses in the sector. The new facility is located in Naju County, where the county government is also working to develop

a pilot facility for the use of unmanned and automated farming machinery, technologies that may alleviate pressures associated with a shrinking and ageing workforce. Naju County is also home to the Bitgaram Innovation City.

In addition to these province- and county-led activities, MAFRA is leading the creation of a Smart Farm Innovation Valley in Goheung County on Jeollanam-do's southern coast (approximately 120 km from Naju). The innovation valley project also aims to support young farmers with business incubation efforts and it will conduct research on the application of ICT to food production, aiming to enhance food safety and productivity through precise data-based environmental control and growth management. The Jeollanam-do innovation valley is one of four currently under development by MAFRA across the country.

Beyond agriculture

The concept of the sixth industrialisation of agriculture has been promoted in Korea as a means to transform agricultural communities towards higher-value and more diverse economic activities. The sixth concept is derived from combining farming (primary industrialisation) with food and bioprocessing (secondary industrialisation) and with high-value services like agro-tourism (tertiary industrialisation). As discussed earlier, for many farm households, agricultural production already plays a minor role in their household income. These households now derive almost twice as much from non-farm sources (40.3%) on average as they do from farming (22.5%). In Jeollanam-do, as of June 2020, 256 cases had been certified, 15.2% of the national total, in alignment with Jeollanam-do's share of the agricultural/forestry/fisheries sector nationally (15.5%). Chungcheongbuk-do is similarly applying this sixth industrialisation concept with efforts to nurture community-based enterprises, food- and bioprocessing and higher-value service-oriented industries.

In addition to its work on the sixth industrialisation, Jeollanam-do is promoting the concept of recreation villages, with 164 of these villages designated across the province. A recreation village offers visitors the chance to experience nature and traditional culture through hands-on experience in agriculture. They facilitate urban-rural exchange and provide farmers with an additional income source. Approximately 1 million visitors to recreation villages have generated KRW 13.3 billion for the province to date (2019).

Rural service delivery and well-being

Delivery of public services in rural areas may be logistically and financially challenging, particularly in areas where the population is ageing and declining. In Jeollanam-do, service delivery is further complicated by the region's many islands, for example, of the 296 inhabited islands in Jeollanam-do, 45% (134) do not have any resident healthcare professional. The Korean government has identified a set of public service standards it aims to achieve for all rural residents, with 17 criteria across 7 sectors. These standards, established by presidential decree, are intended to be guaranteed by the national government, with monitoring in place since 2011 (available data covers 14 of the 17 criteria). In most cases, the services being delivered do not meet the targets (Table 6.4), with average scores for rural areas nationwide below the target level in all but one criterion, the provision of emergency care. In Chungcheongbuk-do, service delivery is below target in 11 of the 14 measured criteria and below the national average in 6, while Jeollanam-do is currently failing to achieve service targets in 13 of the 14 and is below the national average in 11 of them.

Table 6.4. Rural service delivery

Delivery of rural services in Chungcheongbuk-do and Jeollanam-do in relation to national service standards, 2018

Sector	Service area	Target provision	National average provision	Chungcheongbuk-do	Jeollanam-do
Healthcare	Medical treatment	80	78.4	90.9	57.1
	Emergency care	97	99.4	99.6	99
	Seniors	80	73.8	73.2	73.5
	Infants	80	78.2	68.6	64.6
Education	Elementary/Middle schools	100	74.3	60.8	74.7
	Lifelong learning	40	25.0	24.5	15.3
Living infrastructure	Housing	95	0.0	-	-
	Tap water	82	73.4	64.9	70.6
	Heating	65	60.7	63.7	43.2
	Public transport	100	86.7	92.5	88.9
	Broadband	90	0.0	-	-
Economic development	Consulting and training for start-ups and employment	100	76.2	72.7	81
Leisure/Culture	Cultural facilities and programmes	100	92.5	100	90.5
Environment	Water waste treatment	85	81.5	81.7	73.4
Safety and security	Crime prevention	60	54.7	68.4	41.1
	Police patrol	100	0.0	-	-
	Firefighting	55	18.7	25	17.4

Note : All figures are percentages, representing the level of service provision as measured under the national service standards.

Source: OECD (2020^[4]), "Questionnaire", Unpublished, OECD, Paris.

Jeollanam-do is particularly challenged in several areas of its public service delivery. In terms of healthcare delivery, primary care in major medical areas is available in 12 of the province's 22 local authorities, maternity services are available in an additional 9 and 4 local authorities offer on-demand access to obstetrics and gynaecological care. In education, the availability of elementary and middle schools is lacking in all local authorities except for Jindo, Wando and Yeosu, while only Muan, the provincial capital county, met the standards for lifelong learning. With regard to essential utilities, standards were met in 7 of the 22 local authorities for potable water while only 3 met the standard for wastewater treatment. Jeollanam-do also has the country's lowest level of Internet uptake, with 84.3% of residents reporting they had used the Internet in the last month as of July 2019, as compared with 91.8% for Korea as a whole.

With regard to public transport, all cities and counties in Jeollanam-do operate semi-public transport programmes but the service quality is lacking in those areas with island jurisdiction (e.g. Jindo, Shinan, Wando, Yeosu). There are no public bus services available in 472 out of the province's 8 963 villages (5.3%) while, in others, the provision may be sparse with few stops. A high proportion of residents in these villages are seniors, many with limited mobility, so a lack of transport provision can have a significantly detrimental impact on their quality of life. In an effort to resolve this situation in a cost-effective way, Jeollanam-do introduced subsidised taxi services that enable residents in areas that lack a proper bus service to use taxis for a bus-fare-like price. This initiative has since been expanded nationwide by the national government.

In terms of leisure and recreational activities, all local authorities in Jeollanam-do operate local cultural and art centres. These centres are intended to organise cultural programmes for their communities; however,

the level of activity between centres varies and several of them are failing to offer these initiatives as regularly as intended. Finally, in the safety and security sector, only 7 of the 22 local authorities (Damyang, Gokseong, Haenam, Jangheung, Jangseong, Wando and Yeosu) have met the standard for CCTV installation and all 22 are currently failing to achieve the 5-minute response time target for fire services.

Chungcheongbuk-do shares several of these problems but to a lesser degree of severity, with challenges in providing quality services to the ageing and in some cases shrinking populations, including for water provision. The province has initiated the subsidised taxi service for rural residents that began in Jeollanam-do and reports higher than average Internet use (95.6%). Efforts are underway to improve the efficiency of service delivery through horizontal co-operation. Local authorities in Chungcheongbuk-do are working together through bilateral and multilateral agreements to deal with issues like waste disposal (landfill/incinerator), crematoriums and integrated public transport networks. Despite these efforts, the challenges remain and fiscal constraints are limiting their ability to deliver services effectively.

Both Chungcheongbuk-do and Jeollanam-do expect service delivery costs to continue to increase, particularly in their low-density rural areas. Jeollanam-do's population has relatively low fiscal self-reliance with a large portion of the population reliant on state transfers and welfare (e.g. farmers and fishermen). Given that Chungcheongbuk-do is a largely mountainous region and Jeollanam-do has almost 300 inhabited islands, both provinces are subject to geographical constraints that impede efforts to increase the efficiency of service delivery. In many cases, the spatial complexity necessitates highly dispersed service locations while at the same time, the populations of the remote areas are those rising fastest, where the need for services is most acute. While fiscal constraints remain a major bottleneck, the provinces are receiving co-operation and administrative support from the central government in their efforts to improve service delivery.

In an effort to address some of the challenges of service delivery, Jeollanam-do recently launched a pilot community care initiative in Suncheon to provide elderly residents with care in their community rather than moving them to nursing homes or hospitals. The province is also seeking to rejuvenate farming and fishery villages to tackle depopulation issues and is looking to create a new public agency for social services to deal with welfare research and service delivery needs.

Long-term economic development

The blue economy in Jeollanam-do

Jeollanam-do is pursuing a longer-term vision for its balanced and sustainable economic development. The province is concerned that the chemical and steel industries that are major economic contributors today are in decline and recognises the need to transition to new sectors. In July 2019, the province announced its new blue economy vision which was developed in close consultation with the central government. The vision includes six themes: energy, tourism, biotechnology, transport, agriculture and fishery products, and cities. The strategy seeks to leverage the specific advantages of the province's geography, supporting the growth of enterprises and the development and commercialisation of new products that make use of ingredients and materials found locally and which leverage environmentally friendly and circular production techniques. A component of this effort will be the development of a "maritime healing blue zone", a project that is part-funded by the central government through its new Regional Development Investment Agreement. This project will develop a research centre that will combine biotechnology and ICT with oceanic research to develop new products/services for personal well-being and healthcare. In the tourism sector, the "blue tourism" strategy will seek to develop sustainable tourism focused on Jeollanam-do's abundant nature and unspoilt coastal environment.

The provincial government also plans to position the region as a hub for research and development (R&D) in the field of new materials and parts, targeting the shipping, automotive and other transportation sectors. To that end, it is supporting small- and medium-sized enterprises (SMEs) in collaborating with universities,

public agencies, think tanks and research institutes to support commercialisation and it is strengthening its support for validation testing in the region, using local infrastructure such as the testbed in Goheung, the Korea Automotive Technology Institute in Yeongam, and the e-mobility centre in Yeonggwang.

In the energy sector, an “energy valley” is being developed, centred around the Bitgaram Innovation City, where KEPCO and energy-related research institutes were relocated. This effort will leverage Jeollanam-do’s leading position in renewable energy – it is currently Korea’s largest producer of renewable energy, generating 21.4% of the national total. It is also seeking to establish what has been tentatively named the KEPCO University of Science and Technology (KEPCO Tech) to increase the supply of skilled labour in this sector, which may help better integrate KEPCO and other recently relocated institutions into the local economy and labour market. The region is also seeking to accelerate private investment in these and other sectors by designating regulation-free zones to facilitate innovation in areas such as e-mobility and drones.

An ICT and bio-health cluster in Chungcheongbuk-do

In Chungcheongbuk-do, the provincial government is seeking to leverage its proximity to Korea’s major urban centres, including the capital region and, more recently, Sejong. Over the last 15 years, the province has seen a substantial expansion of its manufacturing sector with new plants in semiconductors, photovoltaic cells and batteries (e.g. for electric vehicles). The growth of the sector has helped push net migration into positive territory for the province, though the growth of the working-age population has been concentrated among older workers. In Jincheon County, one of the fastest-growing areas of the province, the growth of the population from 2011-19 among those aged 45-69 has been twice as fast (47%) as that of young working adults aged 20-39 (23%). The province is concerned that a relative lack of high-value service sector jobs of the type preferred by young professionals may see them lose these key workers.

Another driver of the provincial economy has been the development of a biotechnology cluster around the town of Osong. The Osong BioValley, part of the Chungcheongbuk-do Free Economic Zone, has benefitted from the relocation of 6 of the state’s medical agencies, including the Ministry of Food and Drug Safety and its Centre for Disease Control, and is today home to over 100 companies operating in the biotechnology field. A key advantage of the town is its transportation infrastructure. With a position that is roughly equidistant between the Chungcheongbuk-do capital, Cheongju, and the national administrative capital, Sejong, Osong currently serves as a key access point for both these cities. Osong sits at the intersection of both the Honam and Gyeonbu high-speed KTX rail lines, which connect Seoul with Mokpo (Jeollanam-do) and Busan respectively, meaning Seoul is only 45 minutes away. Cheongju international airport is also nearby (around 30 minutes’ drive) with connections to Cambodia, Viet Nam, Hong Kong and several other cities in China and Southeast Asia. In 2022, construction of a synchrotron radiation accelerator will begin in Cheongju, due for completion in 2028. The accelerator has numerous applications in biotechnology and life sciences research that is expected to further cement Chungcheongbuk-do’s competitive position in these areas.

Chungcheongbuk-do’s proximity to Sejong and Seoul provides advantages as it seeks investment in its growing biotechnology and manufacturing sectors and its current role as a gateway for those heading to Sejong provides additional opportunities for it to benefit from this aspect of the balanced national development policy, specifically for its service sector SMEs. High-speed rail connectivity coupled with commuter rail passes may create an opportunity for people to live in Chungcheongbuk-do and work in Seoul over 100 km away. The lack of a station in Sejong itself, however, is a significant inconvenience for travellers, since the bus ride from Sejong to Osong almost doubles the journey time between political and administrative capitals. The mayor of Sejong has called on his city to have its own station to speed connections, but this could risk reducing service to Osong and the loss of Sejong-bound travellers spending any time in Chungcheongbuk-do. Given the importance of connectivity like KTX services to the development of the high-value service sector and therefore of Chungcheongbuk-do’s ability to attract and

retain young professionals going forward, it will be important to continue to develop these connections alongside the further development of Sejong.

As a mountainous region with lakes, rivers and a relatively unspoilt environment, coupled with a United Nations Educational, Scientific and Cultural Organization (UNESCO) world heritage site and a rich history that includes one of the world's earliest moveable-type printing presses (developed around 60 years before Gutenberg), Chungcheongbuk-do has the potential to develop its tourism sector though this potential remains underdeveloped. Economic policy has hitherto been focused on industrial development rather than tertiary services and the province notes that its capital city lacks parklands and green spaces, attributes that could make it both a more attractive place for tourists to visit and a more pleasant place to live. Investments in improving the physical infrastructure that supports quality of life may benefit both the growth of the tourism sector and make the province more attractive for the young professionals in tertiary service sectors that it seeks to attract and retain.

Research and development

In support of their economic development agendas, both Chungcheongbuk-do and Jeollanam-do invest in public research and development activities. These investments are complemented by private sector R&D activity in their provinces. While Chungcheongbuk-do saw over 4 times the total investment in Jeollanam-do in 2017, this resulted in only 15% more patents. Jeollanam-do achieved more patent registrations per researcher than any other Korean jurisdiction. The provincial government in that province has emphasised its research agenda, with the highest proportion of science faculty per student in its middle/high schools and a top rank in achieving academia-business collaboration.

Table 6.5. Research and development

R&D resources and patent outputs for Chungcheongbuk-do and Jeollanam-do, 2017

	Public R&D (KRW 100M)	Private R&D (KRW 100M)	Total R&D (KRW 100M)	R&D workforce	Patent applications	Patent registration
Chungcheongbuk -do	904	21 225	22 129	19 367	3 166	1 861
Jeollanam-do	831	4 660	5 491	7 186	2 902	1 616

Source: OECD (2020^[4]), "Questionnaire", Unpublished, OECD, Paris.

Fiscal constraints

Both Chungcheongbuk-do and Jeollanam-do have noted that they feel constrained in their economic development activities by the central government. Though they acknowledge that they have a leading role in regional development, in setting the vision and in policymaking and implementation, they both note a tendency to prioritise the central government's directions as a means to avert any difficulties in funding projects. New fiscal capacity being delivered as part of the ongoing decentralisation may help but these resources will likely be needed to deliver the tasks being simultaneously devolved so further steps may be necessary to provide provinces and municipalities the flexibility they are looking for to direct their own development.

Recommendations

Service delivery

Delivering quality public services to rural areas is a challenge for both Chungcheongbuk-do and Jeollanam-do. The ageing and shrinking populations in these areas have rising needs yet efficient service delivery is complicated by topographical issues (mountains and islands) and fiscal constraints. As the population shrinks, the additional per capita investment will be needed just to stand still yet that will not be enough to revitalise these areas. Population density analysis in the two provinces by age group shows families are choosing to raise their children in cities, possibly explained by the poor grade received for elementary and middle school provision in rural areas under the national service standards. Yet these issues are not unique to these provinces, as shown in Chapter 2, Korea as a whole encounters rising age dependency and population loss is an issue facing large tracts of the country.

The attractiveness of rural areas can be improved through the availability of high-quality public services. Integrated service delivery is one approach frequently implemented to deliver these in a cost-effective way. Four forms of integration that may be deployed include:

- *Colocation*: Putting multiple services together in one building to reduce cost. For example, a health clinic, school, post office and other basic public services could be combined into a single community hub in rural areas.
- *Collaboration*: Brings together different departments/agencies to share their information and training. It can help reduce gaps in service provision by providing opportunities for horizontal and vertical service integration. By sharing knowledge, institutions and agencies can ensure rural dwellers have knowledge of and access to services.
- *Co-operation*: Entails different levels of government communicating and working together on multi-agency teams. This form of integration strives to lower the costs of delivering services and reduce duplication. One area identified where deeper co-operation may be possible is between the national government's Smart Farm Innovation Valley and the provincial government's Changnong Town in Jeollanam-do.
- *Coproduction*: A form of integration that involves community and non-profit groups, also known as the third sector, in providing services. By partnering with citizens and local organisations, public service providers can ensure products and programmes reflect the needs of the community as identified by the people receiving the services. Engaging citizens and citizen organisations in the design, production and delivery of services leads to higher satisfaction and cost reductions.

Given that service delivery often involves a physical location – a school for example – the development and replacement of which happens only intermittently, avenues towards service integration require long-term holistic planning that cuts across traditional ministerial silos and levels of government. By planning now and involving the public in the planning process and the realities of an ageing and shrinking population, the community can be reconciled with the need to, over time, consolidate, integrate and centralise service delivery.

Another avenue through which to improve service delivery is to take advantage of new technology, for example, to provide distance education in rural areas or some medical consultations. Emerging technologies, such as drones for delivering medical supplies or wearable technology for monitoring health may also have useful applications in rural settings. Given that medical technology is a focus area for Korean industry, the government may spur innovation in the private sector by setting challenges for the industry to solve in this area.

In the case of Chungcheongbuk-do and particularly Jeollanam-do, integrated service delivery and the application of new technology may help but may not be sufficient. With recent statistics showing the

national population may have peaked in 2019, the prospect of eventually revitalising and growing all existing communities may not be realistic. The current situation whereby the elderly are much more broadly distributed across the countryside than the working-age population adds additional cost and complexity in service delivery (such as the absence of any medical professional from 134 of the inhabited islands). Looking ahead to a period of ongoing national population contraction, consideration may be given to consolidating some communities and withdrawing from some areas, such as the most sparsely populated islands, or most remote mountain villages, as a means to ensure quality services will continue to be available to all. This may be in alignment with the fifth Comprehensive National Territorial Plan's (CNTP) focus on compressed development through spatial rearrangement.

Vertical and horizontal co-ordination

In questionnaire responses, the provincial governments expressed appreciation for the administrative support and expertise provided by the central government in support of their economic development efforts and, at the same time, some frustration that their fiscal dependency on central government resources means their initiatives are occasionally overtaken by the central government's own policy direction. The nature of the relationship will likely change somewhat following the decentralisation and transfer of some fiscal authority. However, even after these changes, it is still expected that the provincial and municipal governments will remain dependent on the centre for a great deal of their capacity. It is therefore important that the central government be aware of the local policy and project priorities in each jurisdiction and reflect these in its decisions where possible.

One area where there may be an opportunity for the central government is to improve co-ordination across provincial and municipal governments. While each should be encouraged to specialise in regional strengths, priorities identified in different areas of the country must be complementary to avoid any potential race to the bottom. For example, several jurisdictions in Korea are currently seeking to develop industrial clusters in the biotechnology sector, including Chungcheongbuk-do and Jeollanam-do. Gyeongnam's provincial government is seeking to develop an anti-ageing bio-industry, while Gangwon is seeking to develop a nano-biotechnology industry cluster. While this is a rapidly growing sector with many opportunities, there is a risk that if several different jurisdictions target investments from the same pool of companies in this sector at the same time then the result will be less than optimal for Korea. The central government might therefore seek to co-ordinate approaches to help the subnational governments identify regional specialities and complementarities. Another area where an opportunity may exist for greater horizontal co-ordination is between Jeollanam-do's blue economy initiative in maritime industries, including the maritime healing blue zone project and the maritime industrial Innovation City in Busan.

In Jeollanam-do, MAFRA is developing a Smart Farm Innovation Valley in Goheung county while regional efforts are underway in Naju county to develop Changong Town. Both these initiatives aim to support entrepreneurship in the agri-food sector, alongside research activities on the application of advanced technology in food production. To avoid duplication of efforts and maximise the impact of these initiatives it may make sense for them to collaborate, for example on their curriculum and programme eligibility. To support them in achieving their objectives, it may also be necessary to consider axillary service provision: for example, Goeheung is a rapidly ageing county and the Smart Farm hopes to attract young farmers, so consideration for housing provision, childcare, educational services and recreational facilities in this area may be warranted alongside MAFRA's project to increase its attractiveness for young adults, necessitating horizontal co-ordination across multiple ministries not directly associated with agriculture.

Spreading the benefits of policy initiatives

The demographic analysis revealed that the government's major initiatives are impacting the specific counties and cities where they are taking place but that these benefits appear geographically limited to these areas while surrounding counties are largely unmoved. As seen in Chapter 2, Korea's population is

highly concentrated, particularly among the young, and in the context of an ageing and declining population, this implicates significant challenges for the maintenance of rural communities in the future if a more balanced development pattern cannot be achieved. The government's major investment initiatives should aim to benefit the whole region and to avoid potentially draining vitality from the surrounding areas. To address this, closer linkages are needed between initiatives like the free economic zones and innovation cities with the other parts of their regions, with particular sensitivity to developing opportunities in these areas for younger people. This could, for example, include involving Hampyeong, Hwasun and Yeongam Countries as a testbed for energy sector innovations developed in Bitgaram, or developing recreational attractions and amenities for workers from the free economic zone and Innovation City in northwest Chungcheongbuk-do. Jobs alone are likely insufficient, however, with consideration also needed for public service quality and availability, and resident well-being in these areas.

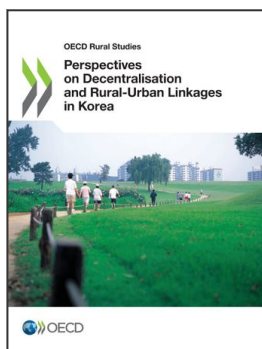
Driving tourism and retaining young adults

Chungcheongbuk-do and Jeollanam-do have both identified the tourism sector as a focus for future growth and both provinces benefit from the unspoilt natural beauty that could potentially support this sector. With its KTX connection to Seoul and several ferry links to Jeju (a major tourism hotspot), Jeollanam-do may be able to leverage its status as a transit point to retain more tourism at its own islands and coastline.

In Chungcheongbuk-do, the desire to grow the tourism sector is aligned with its desire to attract and retain more young professionals – both groups seek attractive places with amenities that deliver a high quality of life. Investments that address the current lack of green space and parks in the provincial capital, and which help connect urban residents (including those in nearby Sejong) with Chungcheongbuk-do's rural/natural attractions, may therefore help attract both groups. Targeted initiatives aimed at attracting high-value service employers, in the same way as has historically been done to develop the manufacturing sector, may also be beneficial, particularly if these efforts are combined with the amenities that please staff, and with the accessibility (such as proximity to Osong station) that lowers the costs and perceived risks for employers considering relocation.

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