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Structural Change of Korean Agriculture and Recent Major Policy Reform

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INTRODUCTION

In the process of economic development in Korea, the agricultural sector contributed to the development of the Korean economy by providing land, labor and capital to secondary and tertiary industries in addition to contributing to the preservation of land resources and the environment. However, uneven development focusing on industrialization with differences in the growth rate of the agricultural sector and other industrial sectors led to huge development gaps between agriculture and other industries, and between rural and urban regions. Therefore, a key challenge for policy makers in Korea has been to reduce the gap in income between farm and urban households and alleviate the development divide between rural and urban areas.

Over the last several decades, the policy instruments used to influence agriculture in Korea also changed. In the early stage of economic development, the focus was on reducing the cost of production and enhancing agricultural productivity through the development and dissemination of high-yield varieties and new agricultural technologies, improving the agricultural production base and mechanizing agriculture. Also the government pursued market price support policies for major crops such as rice, barley, garlic, onion, red pepper through border measures and a government procurement program in most cases to maintain farm household income at equivalent level of urban household income. Such policies automatically caused widening disparities between prices of imported and domestically produced major agricultural products until the end of 1980s.

However, agricultural policy environments changed after the launch of World Trade Organization (WTO) which is established with the agreement of Uruguay Round (UR) negotiations. The deep reduction of tariffs and subsidies embedded in the results of UR agricultural negotiations threatened the existence of Korean agriculture itself, and created a sense of crisis among Korean farmers. The Korean government had to reform its agricultural policies to be consistent with WTO rules, which required a reduction in domestic price support. Rapid structural changes in Korean agriculture have occurred since the launch of WTO with binding constraints on available policy options to be consistent with Agreement on Agriculture (AoA) commitments. Market price support was replaced with direct income support as an alternative policy option to support the farm household income under the WTO system. Moreover, the Korea government has expanded the Free Trade Agreements (FTAs) with major trading countries because it is considered to be inevitable for the continuous growth of Korean economy, which is heavily dependent on foreign trade. As of 2018, the number of countries with which Korea has signed a free trade agreement that went into effect stands at 52. The era of globalization through WTO and FTA has greatly changed the structure of Korean agriculture.

The purpose of this paper is to overview the situation of the Korean agriculture and recent policy tasks to solve the challenges facing Korean Agriculture.

STRUCTURAL CHANGE IN KOREAN AGRICULTURE

Agriculture in the national economy

The rapid development of the Korean economy is reflected strongly in the changing role of agriculture. Until the 1970s, agriculture constituted almost quarter of Korea's GDP and a half of total employment. In 1970, agricultural production contributed to 27.4% of GDP and the labor force employed in the agricultural sector accounted for 50.4% of the country's total employment. Also exports of agricultural products accounted for 30.8% of Korea's total exports in 1970,

However, the share of agriculture in the national economy declined sharply as industrialization progressed. In 2017, the share of agricultural production in GDP was 2.0% and agriculture accounted for 4.8% of total employment, and the share of agricultural exports in national total exports decreased to 1.2% as shown in Table 1. The fast decrease in the share of the agricultural sector in the national economy is a result of the unprecedented rate of industrialization. National GDP has increased at an average growth rate of 11.8% per year from 1970~2017, whereas agricultural GDP increased at the relatively low rate of 5.7% per year during the same period.

Nevertheless, the agricultural sector still plays an important role in the Korean national economy, accounting for a relatively large share of GDP with a large rural population and employment compared to other OECD countries. In particular, it is believed that Korean agriculture contributes significantly to the land use and employment, social and economic stability and livelihood in rural areas.

Table 1 Status of agriculture in the Korean economy

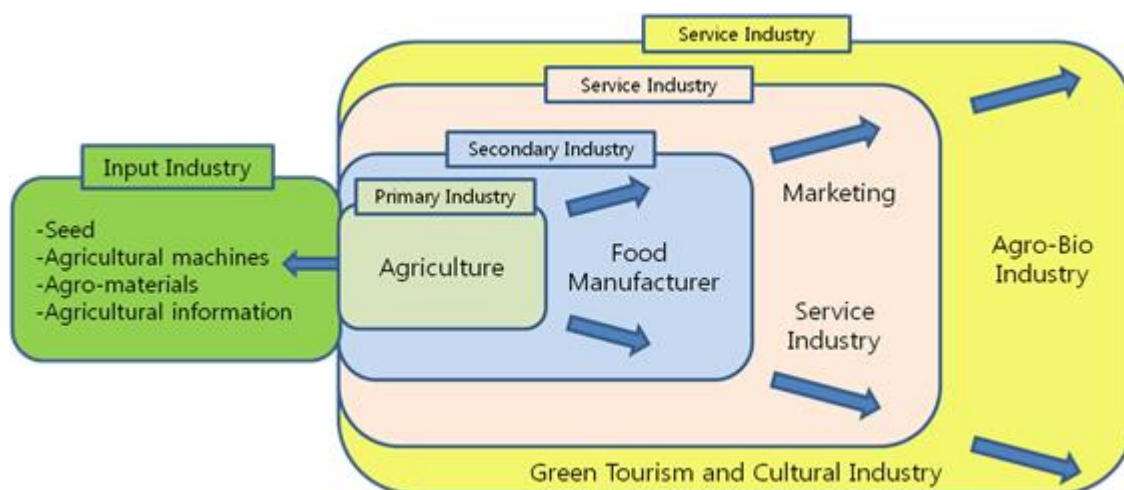
	1970	1980	1990	2000	2017	AAGR (1970-2017)
National GDP (US \$ billion: A)	8	65	279	562	1,530	11.8%
Agricultural GDP (US\$ billion: B)	2.2	9.5	21.3	23.6	30.0	5.7%
%(B/A)	27.4%	14.8%	7.9%	4.2%	2.0%	-
Total employment (Million: C)	9.6	13.7	18.1	21.2	26.7	2.2%
Agricultural employment (Million: D)	4.8	4.6	3.2	2.2	1.3	-2.7%
%(D/C)	50.4%	34.0%	17.9%	10.6%	4.8%	-
Total exports (US\$ billion: E)	0.84	17.51	65.02	172.27	573.70	14.9%
Agricultural exports (US\$ billion: F)	0.26	1.93	2.92	3.07	6.83	7.2%
%(F/E)	30.8%	11.0%	4.5%	1.3%	1.2%	-
Per capita GDP (US\$)	251	1,688	6,306	11,951	29,745	10.7%

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA), Major Statistical Yearbook, 2018

However, the growth rate gap between non-agricultural and agricultural sectors is expected to widen in Korea. To overcome this growth gap, the Korean government has recognized that it is important to find new sources of growth in the agricultural sector. In this regard, the Korean government has been pursuing

the close linkage between agriculture and the food industry as a major policy task for sustainable development in the agro-food industry. This is primarily because the connection between the agricultural sector and the food industry is essential to expand the demand for domestic agricultural products and promote their consumption. The food industry is expected to act as the new driving force for the growth of traditional agriculture. The Korean government is pursuing various policies that aim to strengthen the relationship between agricultural products, food processing, food marketing and the food service industry. Actually, the main goal of this type of policy is to improve farmers' welfare by increasing agricultural prices with the expansion of agricultural consumption through the ties with agro-food related industries. In addition, the government is pursuing the integration of the tradition agriculture, tourism, leisure, health and cultural industries, with the intention of creating high value-added agriculture and enhancing farmers' income as shown in Figure 1.

Figure 1 Expansion to value-added agribusiness from traditional agriculture



Agricultural land

Agricultural land in Korea occupied about 1.6 million hectares and 16% of the total area in 2017 as shown in Table 2. Despite intensive efforts to increase the agricultural area through drainage, irrigation and reclamation, the agricultural area has declined with industrialization and urbanization. Total farmland size decreased from 2.29 million ha in 1970 to 1.62 million ha in 2017 because about 20,000 ha to 30,000 ha of farmlands are converted into industrial or housing land annually.

Subsequently, the amount of agricultural land in the total land area decreased from 23% in 1970 to 16% in 2017. Of the 1.6 million hectares of agricultural land, 53% is paddy field and 47% is upland. Meanwhile, the agricultural population declined faster than the reduction in farmlands. As a result, the average land size per farm increased gradually from 0.93 ha in 1970 to 1.56 ha in 2017.

Korean agriculture is characterized by small-sized family farming. Most farms are small farms with less than one hectare of agricultural land. These small farms accounted for 71% of all Korean farms in 2017. However, the number of farms with farmland larger than three hectares has gradually increased from 37,000 in 1970 to 81,000 in 2017 due to the policy to ease farmland possession in order to enhance international competitiveness through economies of scale. According to the trend of the composition of farm households by the size of the farmland, the ratio of 0.5 ~ 2.0ha class has decreased since the 1990s, while the ratio of the farmland of less than 0.5ha and more than 3ha has been increased as indicated in Table 3. In other words, the tendency of polarization of the farmland distribution appears with the decline of medium-sized farms.

Table 2 Change in farmland structure

	1970	1980	1990	2000	2017
Total land (million ha)	9.84	9.89	9.92	9.94	10.04
Agricultural land (million ha)	2.29	2.20	2.11	1.89	1.62
-Paddy field (mil. ha)	1.27	1.31	1.35	1.15	0.86
-upland (mil. ha)	1.02	0.89	0.76	0.64	0.76
Average farm size per farmhouse (ha)	0.93	1.02	1.19	1.37	1.56
Number of farms over 3ha (thousand)	37	31	44	85	81

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA), Major Statistical Yearbook 2018

Table 3 Composition of farm household by farm size

Year	Average Farm Size(ha)	Unit: ha, number, %					Farm household
		<0.5ha	0.5 ~ 1.0ha	1.0 ~ 2.0ha	2.0 ~ 3.0ha	>3ha	
1995	1.32	456,900 (30.4)	432,107 (28.8)	417,960 (27.9)	123,333 (8.2)	70,445 (4.7)	1,500,745 (100.0)
2000	1.37	454,775 (32.9)	378,655 (27.4)	351,534 (25.4)	113,790 (8.2)	84,714 (6.1)	1,383,468 (100.)
2005	1.43	474,832 (37.3)	330,651 (26.0)	280,685 (22.1)	93,295 (7.3)	93,445 (7.3)	1,272,908 (100.0)
2010	1.46	486,213 (41.3)	287,695 (24.4)	228,540 (19.4)	78,240 (6.7)	96,630 (8.2)	1,177,318 (100.0)
2017	1.56	496,000 (47.6)	241,000 (23.1)	167,000 (16.0)	57,000 (5.5)	81,000 (7.8)	1,042,000 (100.0)

Sources: MAFRA(2018), Major Statistics of Agricultural and Forestry

As agricultural trade liberalization is further expanded through Free Trade Agreements with major trading partners, the business conditions for agriculture have worsened in Korea. As a result, the amount of idle farmlands has been increasing and this trend is expected to continue in the near future. About 40,000 ha to 50,000 ha of farmlands are recently idled. The idle farmlands which are being converted to other uses will eventually lead to a greater reduction in actual farmlands. In this regard, recent main policy task for agricultural land is to secure an appropriate amount of farmlands while reducing both abandoned idle farmlands and converted area of farmlands. Above all, the formation of a social consensus to preserve farmlands and to seek the effective ways of managing idle farmlands is required.

Agricultural production and food consumption

Korean agricultural production has increased about 7.6 times between 1980 and 2017. As of 2017, agricultural production was valued at KRW 48.17 trillion (US\$ 43 billion) as shown in Table 4. From 1980 to 2017, the share of livestock and fruits in agricultural production grew sharply. The share of livestock products in agricultural production increased significantly from 20.0% in 1980 to 41.8% in 2017. The share of fruits also increased from 3.9% to 9.8% during the same period. On the other hand, the share of rice in total agricultural production decreased sharply from 34.4% in 1980 to 13.7% in 2017. Such a decrease in the share of rice is a combined result of a diversion of paddy land for rice production into non-agricultural uses including public infrastructure and housing, an increase in cultivated area for more profitable crops other than rice in paddy land, and an increase in idle farmlands. The main reason of

change in this production trends is that more and more farms are turning to capital-intensive and consumer-oriented agriculture for seeking the opportunity of higher incomes.

However, rice is still the most important agricultural product and the dominant grain in Korea as shown by its contribution to land use and agricultural production. In 2017, 53% of total arable land was allocated to rice farming and approximately 56% of total farm households were cultivating rice. Consequently, rice, as a single commodity, accounts for 13.7% of total agricultural production in Korea.

Table 4 Production values and share by farming type

	(Unit: KRW trillion, %)			
	1980	1990	2000	2017
Agricultural Production	6.34 (100%)	17.73 (100%)	31.97 (100%)	48.17 (100%)
Rice	2.18 (34.4)	6.54 (36.8)	10.50 (32.8)	6.62 (13.7)
Livestock	1.27 (20.0)	3.95 (22.3)	8.08 (25.3)	20.12 (41.8)
Fruits	0.25 (3.9)	1.31 (7.4)	2.58 (8.1)	4.74 (9.8)
Vegetables	1.44 (22.7)	3.32 (18.7)	6.74 (21.1)	11.03 (22.9)
Others	1.2 (18.9)	2.61 (14.7)	4.07 (12.7)	5.66 (11.8)

Note: Value in parenthesis is the share of each category in total agricultural production

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA), Major Statistical Yearbook 2018

The pattern of food consumption has changed in accordance with the economic development and income growth. The highest consumption growth was recorded in livestock products, which increased more than nine times from 1970 to 2017. Particularly, annual milk consumption per person has greatly increased from 1.6 kilograms in 1970 to 79.5 kilograms in 2017 as shown in Table 5. The consumption of meats such as beef and pork per person has sharply increased from 5.2 kilograms to 49.1 kilograms during the same period. Vegetable consumption has also increased dramatically from 60 kilograms per person in 1970 to 158 kilograms in 2017. The increase in fruit consumption is also remarkable. However, grain consumption per capita has declined continuously from 219 kilograms per person in 1970 to 113 kilograms in 2017. The consumption changes from grains towards livestock products, fruits and vegetables mainly reflects income growth and changes in dietary patterns in Korea.

Table 5 Changes in per capita food consumption

	1970	1980	1990	2000	2017
Grain Total	219.4	195.2	167.0	153.3	113.1
Rice	136.4	132.4	119.6	93.6	61.8
Barley	37.3	13.9	1.6	1.6	1.3
Wheat	26.1	29.4	29.8	35.9	32.4
Corn	1.1	3.1	2.7	5.9	3.3
Soybeans	5.3	8.0	8.3	8.5	6.5
Vegetables Total	59.9	120.3	132.6	165.9	157.7
Fruits Total	13.1	22.3	41.8	58.4	61.2
Meats Total	5.2	11.3	19.9	32.0	49.1
Beef	1.2	2.6	4.1	8.5	11.3
Pork	2.6	6.3	11.8	16.5	24.5
Chicken	1.4	2.4	4.0	7.0	13.3
Milk	1.6	10.8	42.8	59.7	79.5
Egg (number/year)	77	119	167	184	248

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA), Major Statistical Yearbook 2018

Agricultural trade and food self-sufficiency

Korean agricultural trade (exports plus imports) has steadily increased from US\$ 0.8 billion in 1970 to US\$ 39.1 billion in 2017. However, the share of agricultural trade in national trade decreased from 30.7 % in 1970 to 3.7% in 2017. This is because the annual growth rate of non-agricultural trade was faster than that of agricultural trade. It is also attributable to the development strategy of industrialization and non-agricultural exports adopted by the Korean government since 1970s.

With a population of about 51 million and a rapidly growing standard of living, Korea is a very important market for agricultural exporters of cereals, including feed grains and livestock products, fruits and processed foods. The share of agricultural imports in national imports is about 6.7%, while agricultural exports constitute about 1.2% of total national exports. Imports of agricultural products grew 65 times from US\$ 0.5 billion in 1970 to US\$ 32.3 billion in 2017. During the same period, export of agricultural products also increased from US\$ 0.3 billion to US\$ 6.8 billion. As import is much greater than exports, the Korean agricultural trade deficit has sharply increased from US\$ 0.3 billion to US\$ 25.5 billion during the same period. It is mainly because Korea becomes a large net agro-food importing country according to the expansion of agricultural trade liberalization.

So the food self-sufficiency, excluding feed-grains, fell from 86.2% in 1970 to 48.9 % in 2017. Grain self-sufficiency including feed-grains was only 23.4% in 2017 as shown in Table 6. However, rice, as the main staple food grain in Korea, is almost at a self-sufficient level. In other words, most food grains are imported from overseas markets, with the exception of rice.

Table 6 Agricultural trade and food self-sufficiency

(Unit: US\$ billion, %)

		1970	1980	1990	2000	2017
Import	Nationwide (A)	1.8	21.6	69.8	160.4	478.5
Import	Agriculture (B)	0.5	3.1	5.4	6.8	32.3
Import	B/A (%)	27.8	14.4	7.7	4.2	6.7
Export	Nationwide (A)	0.8	17.5	65.0	172.3	573.7
Export	Agriculture (B)	0.3	1.9	2.9	3.1	6.8
Export	B/A (%)	30.8	11.0	4.5	1.3	1.2
Balance of payment	Nationwide(A)	-0.9	-4.4	-4.4	11.9	95.2
Balance of payment	Agriculture (B)	-0.3	-2	-4.3	-5.5	-25.5
Quantity-based Grain self-sufficiency (%)		80.5	56.0	43.1	29.6	23.4
Food self-sufficiency excluding feed-grains (%)		86.2	69.6	70.3	55.6	48.9

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA), Major Statistical Yearbook 2018

The Korean agricultural trade is expected to expand significantly, driven by imports rather than exports. In addition, the demand for a wide range of high-quality agricultural products is expected to increase according to economic growth and changes in social demographics. As a result, agricultural imports are also expected to increase. In particular, the increase in feed grains and meat imports is expected to continue as the demand for meat products rises, while the imports of tropical fruits and vegetables are also likely to grow. Furthermore, trade partners and items for agricultural trade are expected to expand. As trading partners for both imports and exports have diversified, such trends are likely to accelerate further in line with the global expansion of market liberalization. Diversifying trading partners and increasing trade flows are expected to increase the possibility of harmful pests and foods coming into Korea. Therefore, more effective system establishment for protecting both the national health and natural environment from harmful pests, diseases and foods has emerged as the most important task in agricultural trade. In addition, preparing measures to alleviate the downward trend of food self-sufficiency due to the expansion of agricultural market liberalization and subsequent increase in agricultural imports is another important policy agenda. Particularly social needs for multi-functionality of agriculture (environment preservation, balanced national development, succession and development of traditional culture, food security, etc.) are increasing as agriculture shrinks due to the opening of agricultural markets. Therefore, important challenge facing the Korean agricultural trade policy is figuring out how to achieve a balance between changes in the agricultural trade environment and the social need for agriculture.

Farm income

Average income per farm household has increased from KRW 256,000 in 1970 KRW 38,239 (US\$ 34,000) in 2017 as shown in Table 7. Farm household incomes are usually classified into agricultural income and non-agricultural income. Major sources of non-agricultural income are divided into income from off-farming activities and transfer income from government subsidies or family donations.

Over the last 50 years, the non-agricultural income of farm households grew much faster than the agricultural income. The high increase in non-agricultural income was promoted since the 1970s by initiatives to improve rural industrialization and to create off-farm job opportunities in rural areas. Also, the percentage of transfer income has increased recently, accounting for 31% of total farm household income in 2017. Much of the transfer income comes from government direct payments to farmers, such as

increased public subsidies such as the rice income compensation program that began in 2005. According to governmental statistics, the proportion of public subsidies was around 15% of total farm household income. Generally, farmers with large sized farms receive more public subsidies related to farming activities while farmers with small sized farms receive more benefits from public subsidies unrelated to farming activities such as pensions, health insurance, and other social transfer payments.

Agricultural income accounted for over 75% of total farm household income in the 1970s, but decreased steadily to 26% in 2017. On the contrary, the share of non-agricultural income has increased from 24% to 74% during the same period. In other words, the share of non-agricultural income has increased continuously, contributing significantly to the stabilization of farm household income. Actually, non-agricultural income has played a vital role in stabilizing the farm household income because agricultural income is inherently unstable and low in the process of agricultural trade liberalization. Recently, the growth of agricultural income has stagnated in Korea due to the deterioration of farming conditions in terms of sales price. This is mainly because agricultural import has increased sharply since the agricultural trade liberalization through implementation of WTO and FTAs since 1995.

Table 7 Farm household income and composition of income sources

(Unit: KRW thousand won)

Year	Farm household income (A)	Agricultural income (B)	Income from off-farming (C)	Transferred income (D)	Ratio (%)		
					B/A	C/A	D/A
1970	256	194	62	0	76%	24%	0%
1980	2,693	1,755	938	0	65%	35%	0%
1990	11,026	6,264	2,841	1,921	57%	26%	17%
2000	23,072	10,897	7,432	4,743	47%	32%	21%
2017	38,239	10,047	16,269	11,924	26%	43%	31%

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA), Major Statistical Yearbook 2018

Until the mid-1990's, the proportion of farm household income to urban household income was over 95%. However, the income gap between urban and rural households has widened since 1995. In 2017, the average income of farm households was only 64% of income of labor workers in the city as shown in Table 8, which is almost the lowest in all OECD countries. Actually, the income gap between rural and urban households in Korea is increasing because of the agricultural market liberalization following the implementation of the WTO agreement and various FTAs with major trading countries.

Therefore, reducing the income disparity between rural and urban households is a critical policy mission in Korea. Various policy efforts have been initiated over the last 10 years to increase farm household income. For instance, the Korean government attempted to create new income sources for farm households with significant policy efforts to provide alternative income sources for farmers. These policies included the establishment of rural industrialization, promotion of the agro-food industry, and strengthening the connections between traditional agriculture and the food industry as well as the leisure and green tourism industries. In particular, new government launched in 2017 is now discussing the improvement and expansion of current direct payment system to enhance farmers' income. In order to narrow the income gap between urban and rural areas, the Korean government is trying to strengthen the direct payment systems along with shifting high-value farming through the reinforcement of linkages with secondary and service industries related to agriculture.

Table 8 Farm household income relative to urban household income
(Unit: KRW thousand won)

	Farm household (A)	Urban household (B)	Ratio (A/B %)
1990	11,026	11,319	97%
1995	21,803	22,933	95%
2000	23,072	28,643	81%
2017	38,239	60,030	64%

Source: Ministry of Agriculture, Food and Rural Affairs (MAFRA), Major Statistical Yearbook 2018

RECENT AGRICULTURAL POLICY REFORM AND MAJOR TASKS

In the process of rapid economic development, the status of agricultural sector in Korean economy has been reduced rapidly. Also, the structure of agriculture and the policy environment has changed with the changes in food demand and the international environment. Particularly, agricultural market liberalization through WTO system and FTAs are the biggest challenges that Korean agriculture is facing. Korea's agricultural structure has shown a big change after the launch of the WTO system in 1995. In particular, the Korean agriculture and farmers, which have low international competitiveness, have been negatively affected in terms of price, production and income. To cope with these threats, the Korean government increased public investments for sustainable agricultural development and gradual restructuring of agriculture through enhancing the competitiveness of agriculture and improving the income of farm-household.

A series of agricultural policy reform has implemented to transition Korean agriculture toward a more market-oriented system. The basic direction of agricultural policy is to enhance international competitiveness in terms of price, quality and safety in the agro-food industry. In addition, policies reflecting the concerns of agro-food consumers and those of the public such as promoting environmentally friendly farming for sustainable agriculture, maintaining rural vitality, and establishing a social safety net in rural areas have been emphasized. Recent agricultural policy has focused on the shift from producer-oriented into consumer-oriented policy by building up the production and distribution base for safe and high-quality agricultural products and by greatly improving the safety examination, labeling of product origins, and the quality assurance system of agricultural products.

The Korean government has also introduced various direct payment systems emphasizing the multifunctional roles of agriculture instead of reducing price support and input support in agricultural sector. In particular, the government has recently placed emphasis on not only the production of primary agricultural products but also on the processing of primary products and the service industry in rural areas. This is for creating value-added agriculture through the linkages between traditional farming with secondary and service industries related to agriculture.

In this regard, the target of agricultural policy has expanded not only for farmers but also for consumers and food processing enterprises which are the main customers for agricultural products. Under these circumstances, the subject of government support also changed from focusing on average farms to selected and concentrated farms and entities with higher competitiveness and chance of success. Such a change in policy direction is ultimately for increasing farm income and expanding the farm household income sources because income gap between farm and urban households is being widened due to import surge and reduction of price support in the process of agricultural market liberalization since mid-1990s.

Currently, the Korean government is implementing policies under the five-year (2018~2022) agricultural development plan made in 2017. Major policy tasks presented by this plan could be summarized in four pillars: (1) Expansion of income safety net for farmers. (2) Strengthening the foundation for sustainable development in the agro-food industry, (3) Establishment of a safe food supply system for the people. (4) Creation of vigorous welfare rural village that everyone wants to live in. The basic framework of this plan is to overcome the growth and income gaps between agricultural and non-agricultural sectors with enhancing the living standard in rural areas.

Recently the Korean government wants to build an effective system in which farmers are compensated in the market for their supply of safe, high-quality agricultural products, while being compensated by the government for other multiple functions that are not valued by the market through direct payment and farm risk management programs such as agricultural insurance. Also, the Korean

government seeks to increase agricultural competitiveness and find the new growth engine through strengthening the innovation capabilities in the agricultural and agricultural related industry. At the same time, the Korean government recognizes the importance of a stable supply of reliable and safe food to the public in the era of agricultural market-opening through many Free Trade Agreements (FTAs) with major trading partners.

Major policy tasks to solve the problems faced by Korean agriculture are summarized as i) providing a stable supply of reliable food to the public, ii) maximizing the value creation capacities of agriculture and agricultural related industry based on sustainable environment-friendly agriculture system, and iii) allowing for agriculture and rural communities to fully perform their multiple roles with creating more income opportunities by strengthening innovation capabilities and developing rural communities into places for national environment conservation and sustainable social development.

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