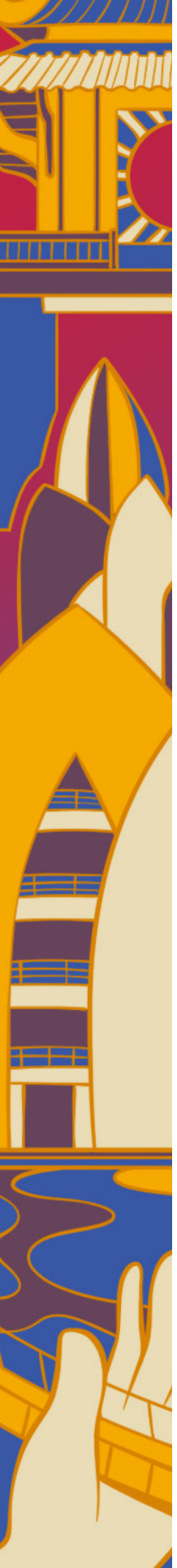

Chapter 14

New Aspects of Agricultural Development in Viet Nam

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1. Introduction

Viet Nam has achieved high economic growth, which has been driven by the labour-intensive industrial sector for exports since the onset of the Doi Moi economic reform. In 2008, when the per capita Gross National Income (GNI) exceeded $1,000, Viet Nam joined the 'middle-income countries,' as defined by the World Bank. While its rapid industrial growth tends to be highlighted, Viet Nam's agriculture, including the forestry and fishery subsectors, has a significant presence in world commodity markets.

This chapter analyses Viet Nam's achievements in the agricultural sector since the 1990s, and it reflects on the country's future and challenges in this domain. Over the past 3 decades, Viet Nam has made rapid progress in transforming its market-driven agriculture and food system. First, agricultural development during the early stages of Doi Moi reform contributed significantly to poverty reduction. In addition, agricultural productivity gains increased the food supply to laborers and the urban population during the early stages of industrialisation, thus facilitating a smooth transition. Since the early 2000s, Viet Nam's agricultural sector has seen increased productivity, with diversified commercial production. In 2008, the Communist Party of Viet Nam, hereafter the Party, issued Resolution No. 26, an epochal agricultural development policy, and Viet Nam's agriculture has pursued modernisation, achieving higher value-added production, in tandem with the development of efficient agri-food value chains.

This chapter, after tracing the progress made since the onset of the Doi Moi reform, discusses potential prospects and the areas in which Japanese official development assistance and private companies can cooperate with Viet Nam. Whether Viet Nam can achieve further agricultural modernisation depends largely on its technological advancement and socioeconomic factors, including rural infrastructure, labour distribution, the land market, and agri-food value chain development. However, agricultural development may have negative effects on rural societies, such as a widening income gap. Therefore, this chapter proposes comprehensive approaches to future agricultural development.

2. Current Status and Positions of Viet Nam's Agriculture in the World

2.1. Economic Development and Agriculture

As predicted by conventional development economics, the increased production of food crops is essential for industrialisation, especially in the early stages of economic development. Without an increase in food production, either due to land resource constraints (the Ricardian 'trap' argument) or an increase in labourers in the industrial sector (Ranis-Fei's model), food prices will rise relative to industrial product prices, resulting in increased land prices or wages and thus ultimately limiting economic development (Hayami, 1997). These arguments could explain Viet Nam's economic stagnation during the era of planned economies.

In some developed countries, the agricultural sector has played an even larger role in economic development than in increasing the domestic food supply, i.e. by improving trade balance. In many countries, it has been observed that, as economies develop, the major economic activities shift to primary industries, including agriculture; secondary industries; and tertiary industries, as suggested by the Petty Clerk's Theorem. However, this does not indicate that agricultural production takes place only in poor developing countries or that advanced industrial countries only import agricultural products. Figure 14.1 shows that most of the top 10 countries in terms of exporting agricultural products are developed countries. In these countries, although the share of agriculture in the economy should be declining, agriculture has continued to play an important role in the economy, even after it has developed. Although simple comparisons with these

countries cannot be made, due to differences in climate and land size, Viet Nam has the potential to develop as a major agricultural country in the region even as industrialisation progresses.[1]

2.2. Export of Global Commodities

While the agricultural sector's share of gross domestic product has decreased to below 20% since the beginning of the 2010s, Viet Nam remains one of the largest producers of rice (as of 2022, Viet Nam ranks as the world's fifth-largest producer and third-largest exporter of rice). Moreover, Viet Nam has become one of the major exporters of certain agricultural products, as shown in Table 14.1, due to its favourable natural environment and its continued shift in production from food to cash crops for export markets since the early 2000s. Except for rice, these exports are tropical products, for which Viet Nam has a comparative advantage over imports (non-tropical) countries. Currently, the most critical problem with agricultural exports is over-dependence on Chinese markets. In 2020, more than 35% of Viet Nam's fresh fruit and vegetable exports[2] and 20% of its seafood exports were destined for China.[3]

[1] Indonesia's and Malaysia's agricultural exports are heavily dependent on palm oil, accounting for 47.7% and 45.2% of agricultural exports, respectively, while Viet Nam is virtually unable to produce it due to climatic factors. Excluding palm oil, Malaysia's agricultural exports are $5 million less than Viet Nam's.
[2] 'Fresh fruits and vegetables' include those with the code HS 07 (Edible Vegetables and Certain Roots and Tubers), HS 08 (Edible Fruit and Nuts; Peel of Citrus Fruit or Melons) and HS 09 (Coffee, Tea, Mate and Spices).
[3] Global Trade Atlas database (https://connect.ihsmarkit.com/gta/home, accessed March 2023).

Table 14.1. Top Ten Exporting Countries by Commodity, 2020
(unit US$1,000; year 2020)

Rice		Coffee		Cashew nuts	
Country	Value	Country	Value	Country	Value
India	7,980,028	Brazil	4,973,728	Viet Nam	2,843,195
Thailand	3,710,031	Colombia	2,453,943	India	404,228
Viet Nam	2,790,951	Viet Nam	1,943,554	Netherlands	317,578
Pakistan	2,101,268	Honduras	980,247	Germany	200,914
USA	1,888,782	Germany	972,497	Côte d'Ivoire	102,108
China	916,644	Indonesia	809,679	Brazil	90,666
Myanmar	773,176	Ethiopia	742,823	UAE	80,766
Italy	712,946	Guatemala	651,964	Indonesia	43,912
Brazil	503,577	Peru	639,931	Belgium	30,062
Cambodia	479,186	Belgium	617,996	Mozambique	28,944

Natural rubber		Pepper	
Country	Value	Country	Value
Thailand	1,275,269	Viet Nam	626,122
Viet Nam	204,157	Brazil	185,322
Guatemala	65,340	Indonesia	160,388
Malaysia	43,247	India	66,661
Lao PDR	38,635	Germany	65,568
Netherlands	32,767	Sri Lanka	52,869
Belgium	24,805	USA	37,537
Cameroon	10,208	Netherlands	36,625
USA	10,044	UAE	34,979
Myanmar	9,935	France	31,859

USA = United States of America, UAE = United Arab Emirates, Lao PDR = Lao People's Democratic Republic.
Source: FAOSTAT database (https://www.fao.org/faostat/en/#data, accessed May 2023).

At the same time, Viet Nam imports substantial amounts of cereals, especially maize and wheat for livestock feeds. Viet Nam's cereal import value is about the same as its cereal exports ($3.45 billion of imports against $3.42 billion of exports in 2020). As such, Viet Nam is now integrated into the global food trade regime, and food security is amongst the most crucial issues for its socio-economic development.

3. Agricultural Policies and Achievements after the Onset of the Doi Moi Reform

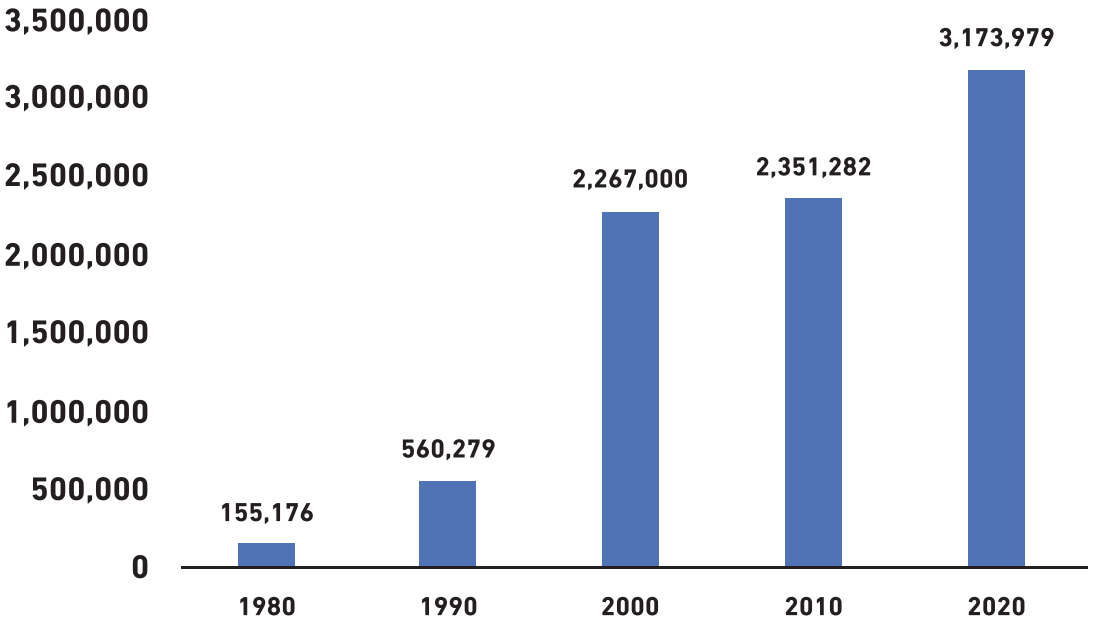
3.1. Liberalisation and Land Productivity Increases

In the early stage of the *Doi Moi* economic reform, various new policies to liberalise the production and sale of agricultural products were promulgated, which resulted in improved land productivity. These policies included the decollectivisation of agricultural production in 1988 (Party Politburo Resolution No. 10), the land reform of 1993 (Land Law), and the establishment of a nationwide public agricultural extension system in 1993 (Government Decree No. 13). Due to these new policies and technological developments, rice production increased 1.7 times within 10 years of the Doi Moi reform, elevating the average yield from 2.8 tonnes to 3.8 tonnes per hectare (Nguyen Sinh Cuc, 1995; 2003). Viet Nam's rice exports began in 1989, and the country became the world's second-largest exporter for some years after 1997. Following the *Doi Moi* reform, Viet Nam went from being a country suffering from chronic food scarcity to one of the largest exporters of agricultural products in the region.

One of the crucial factors that led to increased productivity was the intensive use of chemical inputs. In the 1990s, while price controls and import restrictions on fertilizers still existed, decollectivised individual farm households opted to use more chemical inputs to increase the productivity of their farmlands. The country's total chemical fertilizer ($N+P_2O_5+K_2O$) use increased more than fourfold in the 1990s (Figure 14.2).[5] As such, increased productivity was linked to the economic liberalisation of the industrial and commercial sectors.

[5] In the early 2000s, the private sector and joint ventures were allowed to join the chemical fertilizer market, and the import quota was removed (Tran Toan Thang, 2014). However, as Figure 14.2 shows, chemical fertilizer use did not increase significantly in the 2000s. Instead, the increased production of private enterprises replaced that of state-owned enterprises at that time.

Figure 14.2. Fertilizer Use (tonnes)



Source: FAOSTAT database (https://www.fao.org/faostat/en/#data, accessed March 2023).

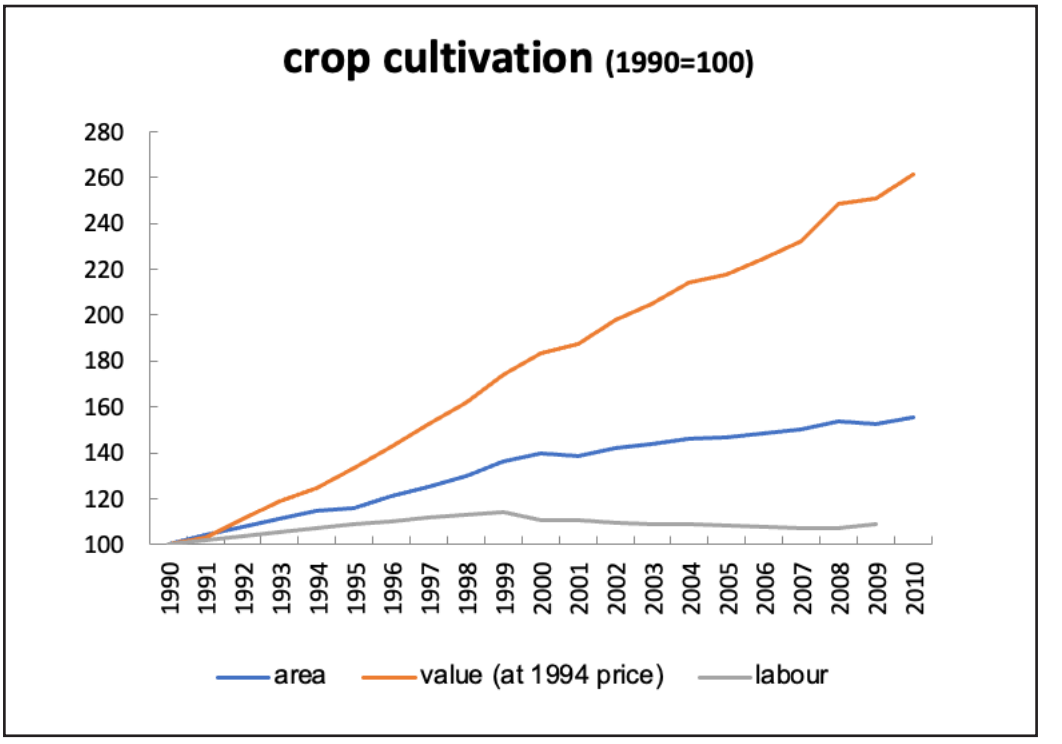
3.2. Shift from Input-led Higher Growth to Increased Production Efficiency

The decade of the 2000s was when Viet Nam's agricultural policies shifted from focusing on farmers' subsistence to encouraging non-rice production for the sake of increasing their profits. The 10-year development plan for agricultural development (Government Decree No. 9 [9/2000/NQ-CP]), issued in 2000, advocated for the conversion of rice fields into fields for commercial crops, maintaining 4 million hectares of the former with higher productivity. The government also issued policies intended to increase the number of *Farms (trang trại)*, creating a privately owned, large-scale mono-production agricultural production model. Government Resolution No. 3 (3/2000/NQ-CP), in 2000, recognised the legal status of Farms for the first time, and this was followed by Joint Circular No. 69 of the Ministry of Agriculture and Rural Development (MARD) and the General Statistics Office (69/2000/TTLT-BNN-TCTK), which defined and classified *Farms*.[6] At the same time, the government began to promote the development of non-agricultural economic activities in rural areas, particularly cottage industries, handicraft production, and construction, by issuing Prime Minister's Decision No. 132 (132/2000/QĐ-TTg) in 2000, followed by Government Decree No. 134 (134/2004/ND-CP) in 2004.

[6] Apart from state-owned farms, private Farms were, in fact, established and developed by the end of 1980s; however, these organisation forms had not been officially recognised by 2000 (Phan Si Man, 2006). The first definition set in 2000 included a minimum land size of three hectares for annual crop production; three hectares and five hectares for perennial crops in South and Central regions, respectively; and 10 hectares for forestry.

Figure 14.3 shows the shift in production value, number of workers, and production area of crop cultivation, placing the 1990 levels at 100. The figure indicates that the production increase in the 1990s was associated with a land and labour increase, whereas that in the 2000s was achieved even though the land increase slowed and labour decreased.

Figure 14.3. Labour and Land Productivity (1990–2010)



Source: Compiled from Nguyen Sinh Cuc (2003) and GSO (various years).

Thanks to policies to promote non-rice crop production, along with preferred global market conditions, the production of industrial crops increased rapidly during the 10 years of the 2000s, e.g. coffee by 40%; tea, rubber, and pepper by more than 150%; and cashew nuts by 360% in volume terms (Figure 14.4). By 2010, Viet Nam had become the world's largest exporter of cashew nuts and pepper and the second- or third-ranked exporter of coffee and rubber in their respective global markets.

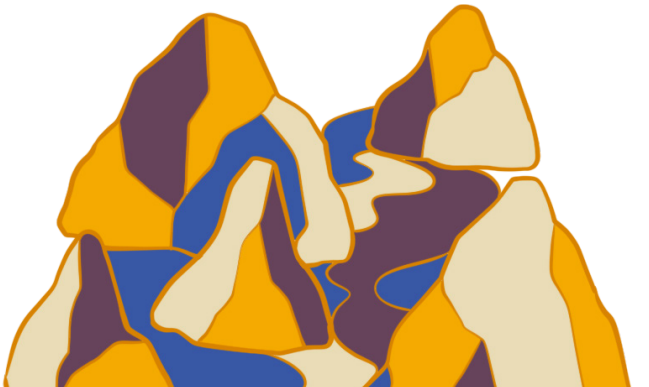
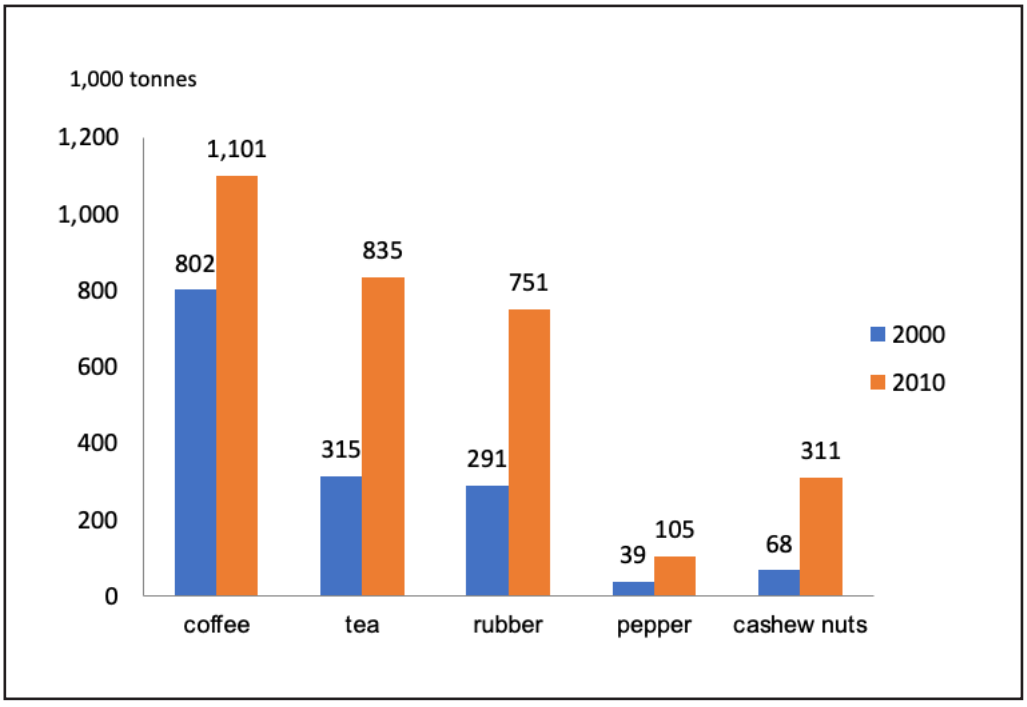


Figure 14.4. Production Volumes of Non-Rice Crops
(1,000 tonnes: 2000–2010)



Source: Compiled from GSO (various years).

4. New Directions towards More Market-Oriented Agriculture in the 2010s

4.1. Resolution No. 26: Turning Point for Modernisation of Agriculture

In the late 2000s, the Party changed the direction of the country's agricultural development from pursuing increased productivity and poverty reduction to achieving synchronised development with the industrial and service sectors. In 2008, the Party's Central Committee issued Resolution No. 26, which proposed an objective 'solution for three rural (*ba nông*) problems.' The phrase 'three rural problems' refers to those issues relating to agriculture (*nông nghiệp*), farmers (*nông dan*), and rural areas (*nông thôn*). In this resolution, solving these problems implied transforming Viet Nam's agriculture, human resources, and rural areas to support the nation's 'industrialisation and modernisation,' which was one of the key slogans for nation building used since 1994.

Resolution No. 26 aims 'to achieve the comprehensive development of agriculture by pursuing modernity, sustainability, large-scale production, high productivity, high quality, efficiency and (international) competitiveness' (Article I-2). To realise this, the Party and the government issued

four sets of interlinked major policies: 1) the mobilisation of capital from the private sector,[7] 2) the accumulation of agricultural land and the promotion of large-scale agricultural production,[8] 3) the development of a 'high-tech agriculture' model,[9] and 4) the promotion of contract farming and the creation of modern agri-food value chains.[10]

These directions for agricultural development in the resolution, which seemingly aimed to promote the increased commercialisation of the agricultural sector, reflected Viet Nam's changing positions in both the domestic and the global circumstances of the agri-food system at that time. First, the resolution was formulated under conditions of high economic growth (7.5% annual) and rapid industrialisation during the first half of the 2000s. Second, Viet Nam was being integrated more fully into the global economic system, as it entered the World Trade Organization in 2007. The further growth of the agricultural sector due to trade expansion and foreign direct investment inflow was expected. Third, food security became an important global agenda in the mid-2000s. Food commodity prices rapidly hiked, induced by oil price fluctuations and increased demand for biofuel, which hit a historic peak in 2008, after 20 years of low food prices (Troste, 2008). Viet Nam, with a population of more than 80 million at that time, faced increasing concerns regarding food security, whereas the global situation elevated Viet Nam's position as a large and growing food provider in world markets.

The resolution also proposed a new concept of rural development, namely the *new rural* (*nông thôn mới*). In the 'national target program' to establish the *new rural*, which was created in 2010 (Prime Minister's Decision No. 800 [800/QĐ-TTg]), the government set 19 criteria that were required to be designated as *new rural*, including the status of transportation, infrastructure, non-agricultural employment, labour structure, poverty reduction, education, and political institutions. This new rural concept aimed at upgrading multiple aspects of people's lives in rural areas and extensively curbing rapid rural-urban migration and population concentration in urban areas.

4.2. Some Indicators of Achievements

Some data indicate the achievements of Resolution No. 26 in 2008. As Table 14.2 shows, while households were still dominant players in the agricultural sector, the number of households as production units decreased by more than 1 million between 2011 and 2020. In contrast, the number of enterprises increased by nearly 5,000 units. These newly entering enterprises included the affiliates of large-scale non-agriculture enterprises, such as Vingroup, Hoa Phat, THACO, and FLC, which had invested in capital-intensive 'high-tech' agricultural production. Furthermore, several start-ups emerged in the so-called 'agri-tech' sector, engaging in the development and diffusion of information and communication technology (ICT) devices and services using these devices.

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[7] Some examples are Government Decree No. 61 (61/2010/ND-CP) in 2010, Government Decree No. 210 (210/2013/ND-CP) in 2013, and Government Resolution No. 63 (63/NQ-CP) in 2019.
[8] Examples include Resolution No. 19 (19-NQ-/TW) at the Seventh Conference of the Party Central Committee in 2012 and the Amended Land Law in 2013.
[9] The first ordinance was issued in 2010 as the 'Scheme for the development of high-tech agriculture through 2020' (Prime Minister's Decision No. 176). In 2012, the basic guidelines for high-tech agricultural development were presented by the MARD (Prime Minister's Decision No. 1895), followed by the 'Master Plan for high-tech agricultural development' (Prime Minister's Decision No. 575) in 2018.
[10] The government issued Prime Minister's Decision No. 62 in 2013, which was amended in 2018 as Government Decree No. 98 (98/2018/ND-CP).

Table 14.2. Number of Production Units

	2011	2020	# increase	% increase
Total	**10,376,981**	**9,123,018**	**-1,253,963**	**-0.12**
Enterprise	2,536	7,471	4,935	1.95
Cooperative	6,302	7,418	1,116	0.18
Household	10,368,143	9,108,129	-1,260,014	-0.12
Agriculture	**9,598,723**	**8,174,162**	**-1,424,561**	**-0.15**
Enterprise	955	4,426	3,471	3.63
Cooperative	6,072	6,885	813	0.13
Household	9,591,696	8,162,851	-1,428,845	-0.15
Forestry	**57,159**	**163,328**	**106,169**	**1.86**
Enterprise	434	1,112	678	1.56
Cooperative	33	86	53	1.61
Household	56,692	162,130	105,438	1.86
Fishery	**721,099**	**785,528**	**64,429**	**0.09**
Enterprise	1,147	1,933	786	0.69
Cooperative	197	447	250	1.27
Household	719,755	783,148	63,393	0.09

Source: compiled from GSO (2012) and GSO (2021).

However, the accumulation of agricultural land does not seem to have achieved significant progress during the past 10 years. In particular, the proportion of small-scale (under 0.2 hectares) agricultural (crop production) land owned by households even increased by eight points, while that of large-scale land was slightly reduced (Table 14.3). While the data do not include the land owned by enterprises and cooperatives, the trends may not change that much, even after these data are included, considering that the number of enterprises and cooperatives remains insignificant and many enterprises and cooperatives do not have their own land, because they usually contract out their production to individual households.[11] This implies that policies to invite private capital to the agricultural sector have not, at a macro level, expanded the large-scale production model.

[11] While data on the land size of enterprises and cooperatives are not available in the published results of the 2020 Mid-term Rural and Agricultural Survey, data from the 2016 Rural, Agricultural, and Fishery Census show that 61.6% of enterprises and 72.9% of cooperatives do not use their own land for production (GSO, 2018).

Table 14.3. Distribution of Households by Land Size (%)

Distribution of household by land size (%)

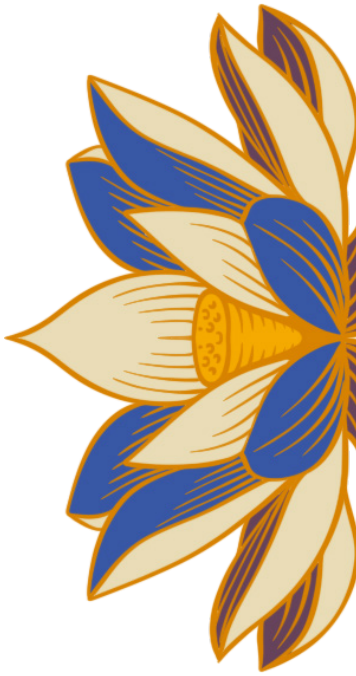
Agriculture	*Under 0.2 ha*	*0.2 under 0.5 ha*	*0.5 under 2 ha*	*2 ha and over*
2011	34.7	34.3	24.8	6.2
2020	42.7	28.1	23.3	6.0

Forestry	*Under 1 ha*	*From 1 to under 3 ha*	*From 3 to under 5 ha*	*Form 5 to under 10 ha*	*10 ha and over*
2011	53.5	30.8	7.8	5.3	2.6
2020	45.7	37.6	9.7	5.2	1.7

Fishery	*Under 0.2 ha*	*0.2 under 0.5 ha*	*0.5 under 2 ha*	*2 under 5 ha*	*5 ha and over*
2011	75.1	8.9	11.4	4.0	0.6
2020	59.6	12.1	20.4	7.0	0.9

Source: Compiled from GSO (2012) and GSO (2021).

With regard to the development of a 'high-tech agriculture' development model, the government provided guidelines and designated 'high-tech agricultural zones' and 'high-tech agricultural enterprises' (by issuing Prime Minister's Decision No. 1895 [1895/QD-TTg] in 2012). The government set the target of establishing, at most, seven 'high-tech agricultural zones' (3–5 by 2015 and another 1–2 during 2016–20) in the country and certifying 200 'high-tech agricultural enterprises' by 2020. In 2017, the government established a further target in the form of a larger number of 'high-tech agricultural zones,' i.e. 11 zones by 2030 (Prime Minister's Decision No. 694 [694/QD-TTg]). While the achievement of these targets has not been officially announced, there have been many investment projects in 'high-tech agricultural zones,' which are managed by either MARD or provincial authorities. However, according to the list of 'high-tech agricultural enterprises' obtained from MARD by the author, there were only 63 certified 'enterprises' as of mid-2021.



While it is difficult to quantitatively assess the progress of the modern agri-food value chain, one noticeable achievement is the diffusion of safety standards for agricultural production, which has served as the basis of modern value chains. VietGAP, the Vietnamese version of the safety standards that benchmark the standards of the GLOBAL G.A.P. (Good Agricultural Practices), was introduced in 2008[12] and diffused widely. By 2016, 1,495 production units (with the participation of 25,279 households) had acquired VietGAP certificates, in which the collective acquisition by farmers' groups, cooperatives, and enterprises exceeded that by individual farm households, accounting for 63.9% of the total (Table 14.4).

Table 14.4. VietGAP Acquisition as of 2016

By type of production unit

Total	Households	Farmers' group	cooperatives	enterprises	others
1,495	540	551	199	200	5

By type of production

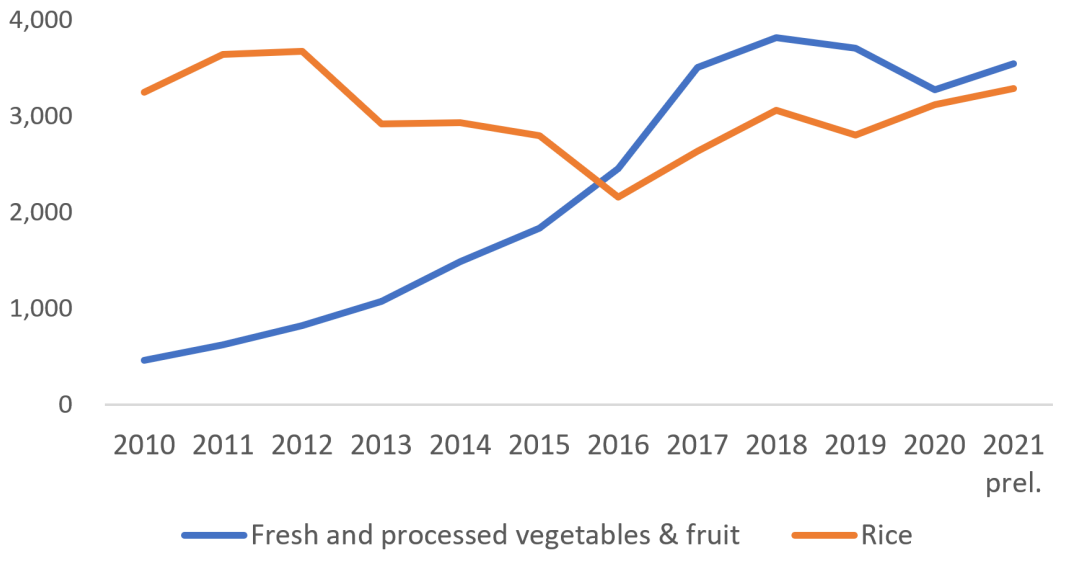
Total	Cultivation	Husbandry	Fishery
1,495	1200	101	194

Source: GSO (2018).

The improved quality and safety levels of agricultural products and the establishment of modern value chains also contributed to the rapid increase in exported products with higher added value. The export of fresh and processed vegetables and fruits rapidly increased (30% annually, on average, from 2010 to 2018), and the export value of such exceeded that of rice since 2016 (Figure 14.5). The main market for Vietnamese vegetables and fruits is China, which absorbed 39% of the total export value in 2020 (unchanged since 2011).[13]

[12] The initial VietGAP criteria for vegetable, fruit, and tea production were introduced by Prime Minister's Decision No. 99 (99/2008/QD-BNN) and issued by MARD.
[13] UN Comtrade Database (https://comtrade.un.org/data, accessed March 2023).

Figure 14.5. Export Values of Rice, as well as Fruits and Vegetables (million US$)



Source: GSO website (http://www.gso.gov.vn/Default_en.aspx?tabid=491).

5. Prospects and Challenges for Agricultural Development

5.1. New Policy Orientations for Future Development

In 2022, the government and the Party presented new long-term policy orientations for agricultural development. On the government side, Prime Minister's Decision No. 150 (150/QD-TTg) was issued in January 2022, which stipulates targets for 2030 and a vision towards 2050. On the Party side, the Central Committee issued Resolution No. 19 (19-NQ/TW) in June 2022, which also encompassed targets for 2030 and a vision towards 2045. Decision No. 150 emphasises the sustainable development of the agricultural sector, while Resolution No. 19 refers to broader issues in the form of the 'three rural problems' as a follow-up to Resolution No. 26 of 2008.

Both policy orientations appreciate Viet Nam's progress in agricultural and rural development in recent years and set an annual growth target of 3% for the agricultural sector until 2030 (Decision No. 150 sets it at 2.5%–3.0%), which was lower than that for 2020 set in Resolution No. 26 (3.5%–4.0%). Both policy orientations, for the first time in agricultural-development-policy history, set

targets for labour productivity (5.5%–6.0% until 2030), whereas Resolution No. 26 of 2008 referred to only the proportion of labour in the agricultural sector (30% of the total employed population by 2020, which was actually achieved in 2021). In addition, the new policy orientations also proposed the improvement of human resources, including various types of training not only for farmers but also for those in related areas, such as machineries and services, as well as government officials.

One of the new and important directions in these policy orientations is the incorporation of agricultural development with environmental protection. In all agriculture subsectors, i.e. cultivation, livestock, forestry, and aquaculture, the policy orientations emphasise the importance of protecting the ecological environment, reducing greenhouse gas emissions, and adapting to climate change.

The new policy orientations also recognise the potential for local-level advantages in rural areas. They proposed promoting the concept of 'One Commune One Product (OCOP)' to 'promote the identity and advantages of localities, associated with building new rural areas' (Decision No. 150), as well as 'the preservation and promotion of traditional cultural values' (Resolution No. 19). Unlike the 'One Village One Product' movement in Japan in the 1980s, the OCOP model is explicitly aimed at linking products with export markets (Decision No. 150).

5.2. Challenges for Further development until 2045

The vision towards 2050 in Decision No. 150 envisages Viet Nam becoming 'one of the world's leading agricultural countries with a modern, efficient, and environmentally friendly agricultural product processing industry.' At the same time, Resolution No. 19 proposes the holistic upgrading of the agricultural sector until 2045 to develop 'ecological agriculture, large-scale production of high value-added products, close linkage with domestic and foreign markets, modern agricultural product processing and preservation industries, and exports of various world-leading agricultural products.'

These visions provide appropriate directions that reflect Viet Nam's agricultural development potential. Furthermore, these visions are also consistent with the current global conceptualisation of food security, which goes beyond simply referring to the supply of food at a national level. Since the FAO's declaration of food security at the 2009 World Food Summit (FAO, 2009), the global notion of food security has incorporated considerations of the 'social acceptability' of food and environmental sustainability (Bilali, 2019; Clapp, 2015; Gibson, 2012).

To realise these ambitious visions, the Government of Viet Nam, in cooperation with Japanese official assistance and the private sector, can further address the following challenges.

5.2.1. Security and quality improvement for new export markets

Because Viet Nam has recently concluded 'higher-level' free trade agreements, such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, Regional Comprehensive Economic Partnership, and EU-Viet Nam Free Trade Agreement, which will potentially expand the export markets of Vietnamese agricultural products, Viet Nam's now-strong reliance on the Chinese market will likely weaken. Exports to these countries typically impose stringent hygiene, quality, and safety requirements, which will require greater producer compliance (far higher than the VietGAP standards) with the demands of these markets.

The Global Food Value Chain literature suggests that the governance mechanisms established by the 'lead firms' (multinational food companies and supermarket chains) in globally extended value chains tend to exclude small-scale producers. This is because suppliers in the global food value chain must invest in not only obtaining safety standards but also packaging and labelling facilities, as well as just-in-time delivery arrangements (Cramer and Sender, 2019; Dolan and Humphrey, 2004; Neilson and Pritchard, 2009). Since most producers in Viet Nam are smallholder farmers, establishing 'inclusive' food value chains is a challenge. To develop inclusive value chains leading to export markets, more holistic government actions, including improved access to export market information, support for producers in obtaining higher-level safety standards (e.g. GLOBAL G.A.P.), and the development of modern public infrastructure for exports, should be pursued.

5.2.2. Formulation of diversified domestic agri-food systems

The pursuit of modern and efficient agricultural production that enables the non-seasonal and year-round supply of agricultural products is a challenge for Viet Nam's agricultural sector. The application of modern technologies, particularly digital technologies, is amongst the most prominent trends in Viet Nam's agricultural sector. The government can invest more heavily in promoting digitalisation and infrastructure development for efficient agricultural production and value chain development. The government should, further, endeavour to foster locally developed technologies, including the establishment of a system for property rights protection regarding local innovations.

As a country's economy grows and urbanisation progresses, its food systems naturally diversify rather than simply transforming from traditional to modern (Moustier et al., 2021; Tefft et al., 2017). Therefore, agricultural production must meet various demands through diversified value chains, including the provision of economical products obtained through traditional short relational value chains, standardised food sold in supermarkets, trust- and reputation-based region- specific products (possibly an advanced OCOP model), and high value-added products targeted at middle-to-high-income consumers.

Even with the expansion of supermarket chains in Viet Nam since the early 2010s, the number of traditional wet markets and small-scale individual retailers has remained the same or even slightly increased to date (Sakata and Takanashi, 2022). The 'modernisation' of 'traditional' agri-food value chains—for example, the improvement of wholesale markets in terms of their information dissemination function, hygiene, and waste management—is one of the practical approaches to building a diversified food system in the future.

5.2.3. Agriculture in an ageing society

Viet Nam's agriculture will soon face labour shortage problems due to the rapid aging of its population. According to the latest projection of the United Nations' *World Population Prospects 2022*, in 2045, Viet Nam's aging ratio (population aged 65 or older) will exceed 17.9% (medium variant projection), which is higher than the world average (15.4%) and the Southeast Asian average (12.0%).[14] With increasing urbanisation, rural societies will be composed of a more elderly population. The *new rural* policy will mitigate the rate of out-migration from rural areas amongst the younger population if economic factors, living conditions, and employment opportunities are improved. However, labour shortages in the agricultural sector caused by the aging population will be unavoidable. There will be an urgent need to formulate an agricultural development model based on the premise of an aging rural society.

It is necessary to promote high-value-added agricultural products to attract younger or corporate farmers as new producers. The accumulation of agricultural land without transferring ownership, which has not made significant progress thus far, could be an effective measure, as it would enable the efficient outsourcing of agricultural work from elderly farmers to younger producers or corporate farmers. Furthermore, the improvement of labour productivity by promoting the mechanisation of agricultural production is another way to address the aging problem. In Japan, the government has promoted the mechanisation of agriculture, particularly in terms of crop cultivation, since the 1960s in three respects: support for agricultural machinery manufacturers in developing machines suited to Japan's field conditions (such as small tractors), support for seed manufacturers in developing varieties suited to machine use, and investment in the improvement of soil and field conditions. These experiences with Japan's agricultural mechanisation processes are valuable resources that can be shared for the sake of policy formulation in this area.

[14] World Population Prospects 2022 database (https://population.un.org/wpp/, accessed March 2023).

5.2.4. Environmental protection in line with international commitment

As is fully addressed in Decision No. 150 and Resolution No. 19, environmental protection in agriculture is one of the most important factors regarding future agricultural development. The use of resource-saving or less chemically dependent input technologies in production will be imperative not only to increase exports to countries with consumers who have greater environmental concerns but also to reduce carbon emissions and mitigate the adverse effects of global climate change.

In the forestry sector, the proper management of forest resources will contribute to earning carbon credits. Furthermore, crop cultivation and aquaculture could also contribute to reducing carbon emissions by utilising new technologies and production methods, such as a 'carbon farming' method to improve soil fertility. At the same time, there is an urgent need to involve the agricultural sector in the carbon credit exchange market. In these areas, Japan can play an important cooperative role with Viet Nam.

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