



Sector Assessment, Strategy and Road Map

January 2022

Agriculture, Natural Resources and Rural Development Sector Assessment, Strategy and Road Map - Viet Nam 2021–2025

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Asian Development Bank

ABBREVIATIONS

ADB	-	Asian Development Bank
ANR	-	agriculture and natural resources
ASEAN	-	Association of Southeast Asian Nations
CPS	-	Country Partnership Strategy
EU	-	European Union
FAO	-	Food and Agriculture Organization of the United Nations
FTA	-	free trade agreement
GDP	-	gross domestic product
ha	-	hectare
km ³	-	cubic kilometer
m ³	-	cubic meter
MARD	-	Ministry of Agriculture and Rural Development
MONRE	-	Ministry of Natural Resources and Environment
mm	-	millimeter
MW	-	megawatt
NGO	-	nongovernment organization
NRD	-	New Rural Development
NTP	-	National Targeted Program
ODA	-	official development assistance
PRC	-	People's Republic of China
SOE	-	state-owned enterprises
US	-	United States

CONTENTS

EXECUTIVE SUMMARY	i
I. SECTOR PERFORMANCE	1
A. Sector Growth and Contribution to Gross Domestic Product	1
B. Export Performance	2
C. Employment in the Sector	4
D. Poverty and the ANR Sector	5
II. SUBSECTOR PERFORMANCE	6
A. Annual and Perennial Crop Subsector	6
B. Livestock Subsectors	7
C. Marine Capture and Aquaculture	8
D. Forestry Subsector	8
E. Water Resources	9
F. Climate Change	14
G. Food Safety	14
III. CONSTRAINTS TO SECTOR GROWTH	16
A. Low Productivity	17
B. Underdeveloped Rural Infrastructure	18
C. Weak Market Linkages	18
D. Perpetuation of State-Owned Enterprises	19
E. Access to and Availability of Appropriate Credit	19
F. Increased Competition for Water but Farmers Do Not Recognize its Value	20
G. Vulnerability to Impacts of Climate Change	21
H. Gender Issues	22
IV. GOVERNMENT POLICY ENVIRONMENT	22
A. Economic Restructuring Master-plan	23
B. MARD's Agricultural Restructuring Strategy	24
C. MARD's Development Plan 2021–2025	28
D. Environmental Development Programs	28
V. SECTOR EXPERIENCE	29
VI. SECTOR STRATEGY AND ROAD MAP	31
A. Factors Guiding Future ANR Sector Support	31
B. ADB's Forward Sector Strategy	34
C. Project Pipeline	36
VII. APPENDICES	37
Appendix 1: Agriculture And Natural Resources Sector Problem Tree	38
Appendix 2: Matrix of Planned Projects for Viet Nam Country Partnership Strategy (2021–2025)	39

TABLES

Table 1: Quantities and Value of Selected Agricultural Exports 2012–2019	4
Table 2: Poverty Rates by Area and Region (2010–2019)	6
Table 3: Area Planted by Crop Group (2010–2018)	7
Table 4: Livestock Numbers by Species 2010–2018.....	7
Table 5: Production of Marine Species - Aquaculture and Caught	8
Table 6: Forest Type and Coverage (2010–2018).....	8
Table 7: Average Annual Yield Achievements 2010–2018	18
Table 8: Utilization of Government Bond Funding under the NTP on NRD.....	26
Table 9: Achieved Targets Against Individual Criteria	27
Table 10: List of On-going ANR Sector Projects.....	30

FIGURES

Figure 1: Sector Growth Rates 2010–2019 Viet Nam.....	1
Figure 2: Agriculture, Forestry and Fishing Sector Contribution to GDP 2010–2019	2
Figure 3: Water Withdrawals by Sector in Viet Nam	11
Figure 4: Capital Expenditure from State Budget (2004–2020)	12

EXECUTIVE SUMMARY

Objectives. This sector assessment, strategy and road map (i) reviews the development status of Viet Nam's agriculture and natural resources (ANR) sector; (ii) records the government's priority development strategies for the sector; (iii) summarizes Asian Development Bank (ADB) recent experience in developing ANR sector; and (iv) proposes an investment program in support of green agriculture restructuring, inclusive economic growth, poverty reduction, and coronavirus disease (COVID-19) recovery.

Agriculture, natural resources, and rural development. Viet Nam's ANR sector, an important pillar in the poverty reduction effort of the country, represents 16.3% of gross domestic product. Its share of total labor force has decreased from 50% in 2010 to 38% in 2018. Its export has increased in dollar terms as quality assurances improve and the country becomes more integrated in global trade. The value of agriculture, forestry, and fishery exports has increased in recent years from \$22.8 billion in 2012 to \$33.8 billion in 2019. Rice dominates Viet Nam's agricultural exports with over 6,300 million tons being exported in 2019. Viet Nam is among the largest exporters of rice in the world, in addition to coffee, pepper, cashew nuts, and green tea. Marine captured species together with fish and shrimp produced in manufactured ponds are an important domestic food source as well as generator of foreign exchange on export markets.

Viet Nam has a diverse array of agro-ecosystems ranging from upland plateaus and mountainous areas to a relatively narrow coastal strip where the majority of rice is grown. The country is considered one of the most vulnerable to climate change. Considerable environmental damage has resulted from the removal of protective coastal mangrove forests to make way for shrimp farming ponds and salt production. In the upland areas, the poorer soils, uphill land, and widespread erosion resulting from extensive deforestation add additional development challenges. Excessive use of groundwater, particularly for coffee and fruit tree crops, has resulted in unsustainable extraction rates and a lowering of the water table. Competition for water resources from downstream users (urban areas and industry) has compounded the challenge in the ANR sector.

The constraints to the ANR sector growth are: climate change impacts, low productivity, underdeveloped rural infrastructure, low rates of agriculture land consolidation, weak market linkages, low access to credit, and increased competition for water resource. Poverty and low living standards are still prevalent in remote and mountainous areas and ethnic minority communities. Due to their higher representation as agriculture workers, women are particularly disadvantaged by their limited earnings and fewer worker protections in agriculture sector employment.

Government policy environment. The Socio-Economic Development Strategy (2021–2030), the country's foremost guiding policy statement, envisioned Viet Nam becoming a green, sustainable, and modern industrialized nation. In the context of the Master Plan on Economic Restructuring (2013), Viet Nam sought to expand scale, modernize, and improve quality and added value of agricultural production. The master plan also called for a review and amendment of land use.

ADB sector strategy. ADB's strategy for the ANR sector is to maintain sustainable and inclusive growth of the sector by improving agriculture efficiency and competitiveness, and enhancing rural living standards and resilience to climate change and disasters. As such, ADB provides support to (i) improving water resource management; (ii) developing integrated value chains for high-value segments of agriculture; (iii) linking small farmers with markets; (iv) continuing reforms that allow

a greater role for the private sector; and (v) making the agricultural sector institutional and financial framework more conducive to the introduction of new technologies. Specifically, ADB has maintained a geographic focus in areas where poverty persists, with focus on the central region, northern and northeast areas. Recently, the government requested ADB to also work in the Mekong Delta.

Lessons learned. ADB's future support for the ANR sector needs to take into account (i) the country's graduation from concessional lending; (ii) the government's policy for on-lending official development assistance to provinces; (iii) the country's increasing integration with regional and global markets; (iv) the increasing competition for land, water, and labor resources by other sectors; and (v) the increasing vulnerability to climate change and disasters caused by natural hazards. Further, ADB's Independent Evaluation Department stresses the need to (i) increase synergies across programs; (ii) diversify financing modalities to meet changing government needs; (iii) improve project administration to reduce delays, particularly in project startup; and (iv) increase the focus of knowledge solutions on operational issues. ADB's future support will need also to reflect Ministry of Agriculture and Rural Development objectives for 2021–2025.

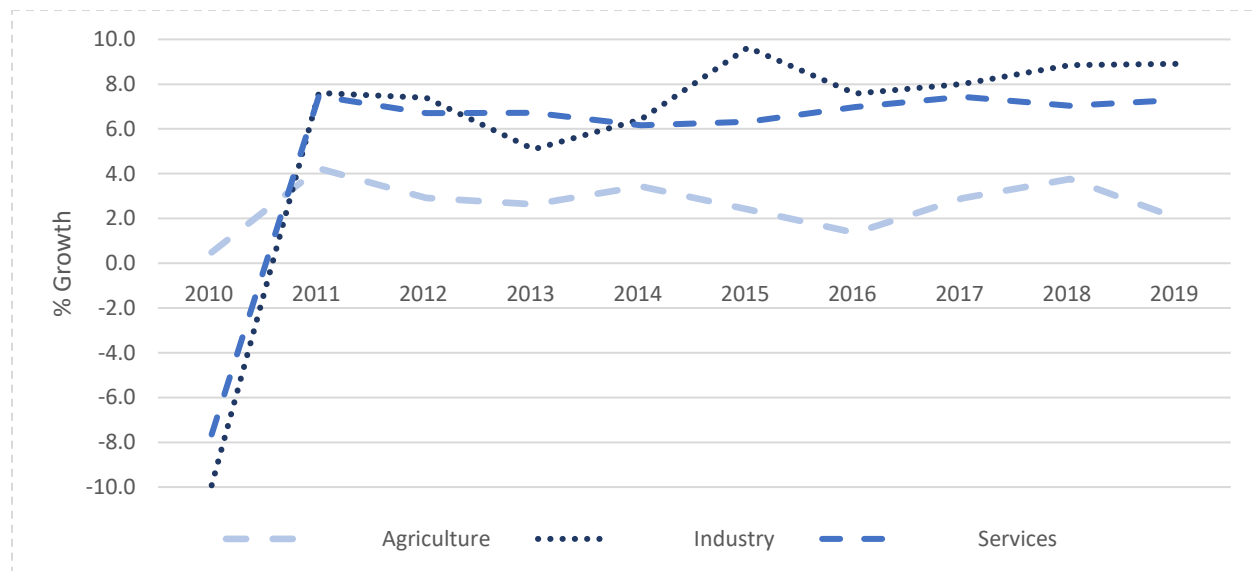
Planned projects for 2021–2025. ADB will continue supporting the sector ensuring a strong focus on inclusive economic growth while strengthening environmental sustainability and resilience to climate change. ADB's support will center on three key areas: (i) climate and disaster resilient rural infrastructure development to strengthen connectivity, protect livelihoods and people, and support agriculture transformation; (ii) water resource management and watershed protection to sustain the country's natural capital; and (iii) promotion of agribusiness development with private sector linkages to strengthen the country's agricultural competitiveness, both domestically and internationally.

I. SECTOR PERFORMANCE

A. Sector Growth and Contribution to Gross Domestic Product

1. Viet Nam's gross domestic product (GDP) increased at an average annual rate of 6.3% over 2010–2019 with impressive performances from the industry and construction sector (averaging 7.7%), and services sector (averaging 6.9%), while the agriculture and natural resources (ANR) sector sustained the modest average growth rate of 2.9% over the same period (Figure 1). Due to the impact of coronavirus disease (COVID-19) pandemic, GDP grew only by 2.9% in 2020.¹ However Viet Nam was one of the few countries in the world to record a net positive GDP growth. GDP is expected to rebound by 3.8% in 2021 (footnote 1). The ANR sector contributes about 15.5% of GDP in 2019, a level that has been steadily diminishing (Figure 2). In spite of the slower growth rates and diminishing contribution to GDP, the sector still provides employment for around one-third of the population. Nationally, the incidence of poverty has decreased dramatically from 38% in 2002 to 1.92% in 2018 associated with a dramatic labor shift from rural to urban areas.² Similarly, the percentage of the population living below the national poverty line decreased from 20.7% in 2010 to 6.7% in 2018.³ On average, labor productivity per worker has more than doubled since 2000.⁴ Agriculture provides a socially stabilizing role in face of volatile macroeconomic conditions, providing the country a reliable, affordable, and increasingly diversified source of food. While the sector is dominated by rice, there is increased diversification into perennial tree crops and other industrial crops, which provide raw materials for a growing agro-processing sector for domestic consumption and export markets.⁵

Figure 1: Sector Growth Rates 2010–2019 Viet Nam



Source: Asian Development Bank. 2020. [Key Indicators for Asia and the Pacific 2020](#). Manila.

¹ Asian Development Bank (ADB). 2021. Asian Development Outlook Update (September 2021). Manila.

² Assessed at the per capita level of income equivalent of \$1.9 purchasing power parity a day. ADB. 2020. Basic Statistics 2020 (April 2020). Manila.

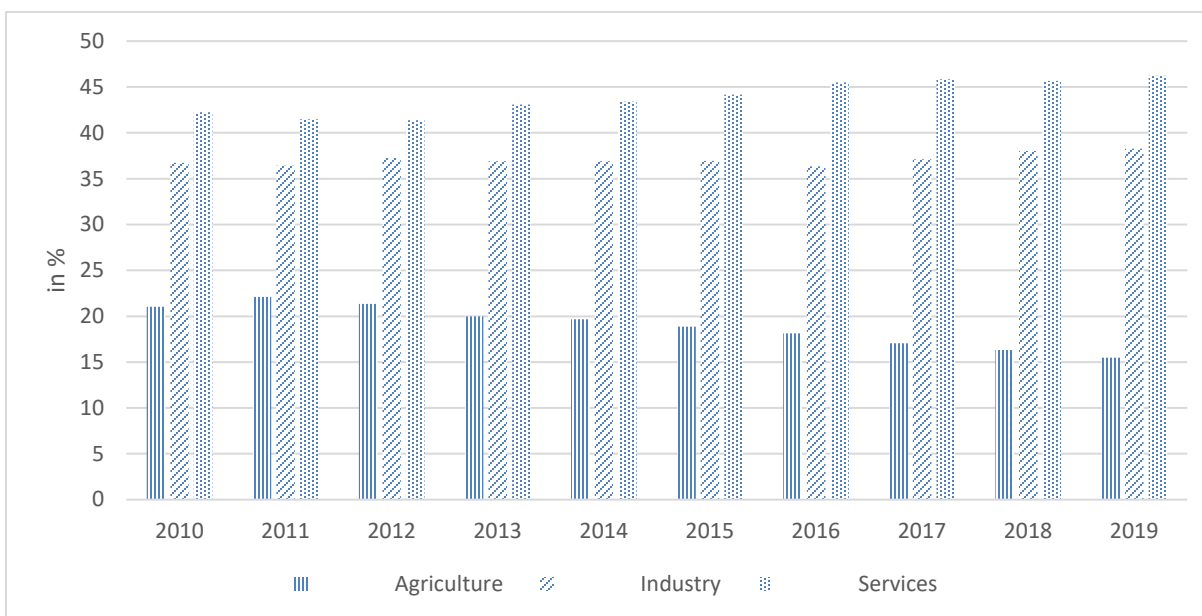
³ World Bank Statistics. 2020. [Poverty headcount ratio Vietnam](#). (accessed 22 September 2021).

⁴ International Labour Organization. 2020. [Statistics on labour productivity](#) (accessed 22 September 2021).

⁵ Viet Nam's ANR sector produces 20% of merchandise exports and the country is now the world's second largest exporter of rice and coffee.

2. The sector's contribution to GDP has been steadily declining under slower growth rates compared with those of industry, construction, and other services (Figure 2). In 2010, sector contribution to GDP was 21% compared with 15.5% in 2019. This decrease reflects a steady relocation of labor out of the sector into more profitable areas for employment in urban and peri-urban areas combined with reduced opportunities for expanded agricultural production with finite arable land resources and a dominance of low valued cropping activities in the sector.

Figure 2: Agriculture, Forestry, and Fishing Sector Contribution to GDP 2010–2019



Source: Asian Development Bank. 2020. [Key Indicators for Asia and the Pacific 2020](#). Manila.

3. The impact of the coronavirus disease 2019 (COVID-19) pandemic on agricultural value chains have not been fully assessed. However, the overall sector performance is expected to fall slightly in 2021. While national food insecurity issues, especially with staple crops, are not anticipated with the continuation of COVID-19 pandemic in 2021, farmers faced difficulties in accessing seeds and other inputs due to lockdown restrictions from time to time. On the demand side, collectors and middlemen could not access farming communities and farmers themselves were not able to sell their produce at markets.

B. Export Performance

4. The value of agriculture, forestry, and fishery exports has been increasing in recent years from \$22.8 billion in 2012 to \$33.8 billion in 2019. The sector is seen as one of the engines of growth for the overall economy.⁶ The biggest contributors to the increase in the value of agriculture, forestry, and fishery exports are fresh and processed vegetables and fruits with their value increasing fourfold. However, the share to total exports decreased from 20% to 13% during the same period.

⁶ General Statistics Office, Viet Nam. Exports of goods in 12 months for 2012, 2015, 2017 and 2019. https://www.gso.gov.vn/default_en.aspx?tabid=626

5. In terms of quantity, rice dominates Viet Nam's agricultural exports with over 6,300 million tons being exported in 2019.⁷ Viet Nam is among the largest exporters of rice in the world. Its success is due to increased irrigated area and cropping intensities. However, intensive cropping also results in lower quality rice, with the surplus over domestic consumption sold on less discerning (lower priced) export markets.⁸ Viet Nam is also among the largest exporters of coffee, pepper, cashew nuts, and green tea, which are grown extensively at higher altitudes in the central highlands and northern mountain provinces. For these high-value crops, greater attention was given to quality to meet international consumer demands. There are also promising signs for the development of export markets in selected fruits—mangoes, lychees, and dragon fruits together with other more temperate species being produced by larger-scale enterprises or aggregated from smallholder farmers. From 2012 to 2019, the value of vegetables and fruits exports has increased by more than 350%, making it the highest increase among all the agricultural exports.⁹ This is ascribed to an increase in demand in markets with high purchasing power such as the United States (US), the European Union (EU) and the People's Republic of China (PRC). Furthermore, both fisheries and timber products continue to be important export items, doubling their export value from 2012 to 2019, as a result of following processing factory conformity with EU hygiene standards. Rubber is another significant export crop with over \$10 million worth of rubber products being exported in its various forms.¹⁰

6. The export-oriented crops, however, are facing increased competition on international markets as rural labor costs escalate in Viet Nam and the urban and industrial centers draw surplus labor away from rural areas where labor productivity is low. One of the key factors for Viet Nam to keep its dominance in primary exports will be improving production efficiency through agricultural restructuring while attending to requirements of the international community on quality and safety of exported commodities. Importing countries are increasingly seeking certificates of origin and sanitary and phyto-sanitary certification that must be addressed if Viet Nam is to keep competing internationally. Accession to various free trade agreements (FTAs) has assisted Viet Nam in improving its capacity to compete internationally as the lower tariff rates that apply within these agreements have forced attention to competition in its export commodities. Viet Nam has negotiated, signed, and is implementing 14 FTAs.¹¹ Two other FTAs are under negotiation.¹² The key agricultural markets of Viet Nam include Association of Southeast Asian Nations, Australia, the EU, Japan, the Netherlands, PRC, the United Kingdom, and the US.

7. The main agricultural exports for the period 2012 to 2019 are summarized in Table 1. This table presents both quantities exported for selected agricultural crops and the value of exports covering a more diverse range of primary goods.

⁷ General Statistics Office, Viet Nam. Preliminary Exports and imports of goods by main countries and territories In 2019. https://www.gso.gov.vn/default_en.aspx?tabid=626&ItemID=19109

⁸ Price of rice (25% broken) per ton: India - \$357; Thailand - \$440; Viet Nam \$331. FAO Food Price Monitoring and Analysis Tool 2020.

⁹ General Statistics Office, Viet Nam. 2019. Preliminary Exports of goods in 2019. https://www.gso.gov.vn/Modules/Doc_Download.aspx?DocID=25215

¹⁰ Water is removed during primary processing of latex into ribbed smoked sheets and crumbed rubber that form the majority of exports (together with other processed rubber products).

¹¹ These include: Association of Southeast Asian Nations (ASEAN) Trade in Goods Agreement, FTA ASEAN-China, FTA ASEAN-South Korea, FTA ASEAN-Japan, FTA Viet Nam-Japan, FTA ASEAN-India, FTA ASEAN-Australia/New Zealand, FTA Viet Nam-Chile, FTA Viet Nam-South Korea, FTA Viet Nam-Europe Asia Economic Union, Comprehensive and Progressive Agreement for Trans-Pacific Partnership, FTA ASEAN-Hong Kong, FTA Viet Nam-EU, and FTA Viet Nam-United Kingdom. The Regional Comprehensive Economic Partnership (RCEP) is signed but not effective yet. RCEP consists of ASEAN with six countries including Australia, India, Japan, Korea, New Zealand, and PRC.

¹² FTA Viet Nam and four free European economies (Iceland, Liechtenstein, Norway, and Switzerland) and FTA Viet Nam-Israel.

Table 1: Quantities and Value of Selected Agricultural Exports 2012–2019

(in '000t)	2012	2015	2019
Cashew nut	221,483	353,268	455,563
Coffee	1,732,156	1,442,077	1,653,265
Tea	146,708	139,785	137,102
Pepper	116,826	214,885	283,836
Rice	8,016,100	5,789,240	6,366,469
Casava	4,227,568	3,899,825	2,533,711

(in \$ mil)	2012	2015	2019
Seafood	6,092	6,569	8,543
Fresh and processed vegetables and fruit	828	1,839	3,747
Cashew nut	1,470	2,398	3,288
Coffee	3,672	2,671	2,854
Tea	224	217	236
Pepper	793	1,259	714
Rice	3,673	2,796	2,805
Casava and casava products	1,352	1,321	966
Wood and wooden products	4,665	6,798	10,647

Source: General Statistics Office, Viet Nam. 2020.

8. Many innovative quality assurance processes like Viet Nam Good Agricultural Practice, International Organization for Standardization, hazard analysis critical control point have been applied in seedling production, animal husbandry, aquaculture, and agro-processing. Progressive harmonization of Viet Nam's national standards with international standards (World Organization for Animal Health, international food code, International Plant Protection Convention) on food safety, and plant and animal quarantine help maintain agricultural competitiveness on international markets. Viet Nam's institutional capacity for monitoring and improving food safety in this complex domestic environment involving traditional wet markets has significantly improved with the developing of retailing arrangements for food. Viet Nam's agro-forestry and fishery products have improved the country's reputation on international markets in terms of competitive price, product characteristics and quality, which meet the requirements of most importing countries like EU, Japan, and the US. The application of science and technology in agriculture has enhanced the competitiveness of the products in the world market and created a breakthrough for some key export commodities such as fish products, coffee, pepper, cashew nut, tea, cassava, honey, vegetables, and selected forest products.

C. Employment in the Sector

9. Albeit increasing, the country still faces low rates of labor productivity in rural areas, with associated low farming incomes. Employment in the ANR sector fell from 50% in 2010 to 38% in 2018, twice as high as the sector's share to total GDP (footnote 4). Jobs in Viet Nam were previously characterized by family farming, collectives, and state-owned enterprises (SOEs), but, over time, employment has shifted toward manufacturing and services, household enterprises outside agriculture, and private domestic and foreign owned firms. In 2018, the total employment was 54.2 million of which farming accounted for 20.5 million. Viet Nam is undergoing transformation of its labor structure with the share working in agriculture declining since 2000 at

a rate of 2% per annum. At the current size of the workforce, this corresponds to a net movement of approximately 900,000 workers per year out of agriculture. These workers move into nonfarm household enterprises and wage work, which have both seen their ranks increase over time. Farming household enterprises have generated a large boost in living standards for millions of Vietnamese but are limited in their potential for productivity growth. There has also been considerable diversification into nonfarm income sources while retaining some farming income in an attempt to advance their livelihood sources. Income diversification also provides a form of social safety net in the event of changes in employment.

10. Despite the country's recent achievements in the labor market, Viet Nam has to evolve quickly to meet future demand and to better integrate in the international trade system. With the rapid pace of economic development achieved to date, it seems unlikely that Viet Nam can further drive productivity growth through migration from farm to factory. Instead, significant improvement in productivity within agriculture, manufacturing, and services will be required. High skilled workers are needed to meet the demand of the Industry 4.0, while at the same time the gender wage gap needs to be reduced. According to an International Labor Organization study, around 75% of manufacturing workers are facing a high risk of automation, especially in the garment and textile industry.¹³ This put, especially women, at risk of unemployment. To counteract these challenges, the agriculture sector will be pivotal, with policy tools and investments developing agro-food system, facilitating business linkages between small and medium enterprises and households, and supporting enterprises moving into knowledge-intensive segments in regional and global value chains.¹⁴

11. This highlights the urgent need for widespread investment in training, science, and technology that will promote increased productivity of both labor and land within the sector. It also justifies the Ministry of Agriculture and Rural Development (MARD) focus on agricultural restructuring and digital technology to improve efficiency, competitiveness, and diversification into higher valued crops compared with traditional rice.

D. Poverty and the ANR Sector

12. Viet Nam has attained the Millennium Development Goal target on poverty reduction ahead of its schedule due to its strong economic growth, trade liberalization, and poverty reduction policies targeted directly at disadvantaged groups. Between 1993 and 2008, expenditure-based poverty rate fell from 58% to 15%, lifting millions out of poverty. Using the new national poverty line definition, poverty rate declined further from 20.7% in 2010 to just 6.8% in 2018. The proportion of population below \$1.9 purchasing power parity a day was only 1.8% in 2018.¹⁵ General living standards have improved significantly with household ownership of durable goods increasing considerably. Prevalence of undernourishment in the population dropped from 15.6% to 6.4% between 2006 and 2019, and prevalence of stunting in children under 5 years of age decreased from 26.7% in 2012 to 23.8% in 2019.¹⁶ However, seasonal hunger related to disasters caused by natural hazards still happens in certain remote and mountainous areas emphasizing the need for improved access in these areas. Unfortunately, these areas have low population densities and involve higher unit costs for infrastructure development making

¹³ International Labour Organization. 2016. *ASEAN in Transformation. The future of jobs at risk of automation*. Geneva.

¹⁴ World Bank. 2018. *Vietnam's Future Jobs. Leveraging Mega-Trends for greater prosperity*. Washington, DC.

¹⁵ World Bank Statistics. 2020. Poverty headcount ratio (accessed 30 August 2021).

¹⁶ Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's Fund, World Food Program, and World Health Organization. 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets*. Rome.

economic returns less attractive compared to alternatives that are available in areas of higher population densities.

13. Despite impressive achievements in poverty reduction, the country faces a number of poverty reduction challenges. The poverty rate varies across different ethnic groups and geographical regions. Poverty and low living standards are still prevalent in remote and mountainous areas and ethnic minority communities. The northern midland and mountainous areas and the central highlands are among the regions that lag behind the rest of the country in terms of poverty reduction. In these areas, a significant proportion of near-poor households (currently just above the poverty line) can fall back into poverty under the influence of future economic shocks, health hazards, or disasters caused by natural hazards. Multi-dimensional poverty has become more prevalent due to urbanization and migration processes whereby low income is only one of many factors such as access to social public services and basic living conditions, which define poverty.

14. Given the dominance of the sector, agriculture plays a critical role in promoting poverty reduction in these areas. There is a strong and urgent need to reform and modernize the sector to increase productivity and quality of agricultural products as well as strengthen agricultural exports. Inequality exists within and between urban and rural populations, regions, and ethnic groups, and tends to persist across generations. Between 2016 and 2019, poverty rates in rural areas dropped from 11.8% to 8.0%, still remaining higher than the national poverty average rates of 9.2% and 5.7%, respectively.

Table 2: Poverty Rates by Area and Region (2016–2019)

	2016	2017	2018	2019
WHOLE COUNTRY	9.2	7.9	6.8	5.7
Urban	3.5	2.7	1.5	1.2
Rural	11.8	10.8	9.6	8.0
Red River Delta	3.1	2.6	1.9	1.6
Northern midlands and mountain areas	23.0	21.0	18.4	16.4
North Central area and Central coastal area	11.6	10.2	8.7	7.4
Central Highlands	18.5	17.1	13.9	12.4
South East	1.0	0.9	0.6	0.5
Mekong River Delta	8.6	7.4	5.8	4.8

Source: [General Statistics Office, Viet Nam, 2020](#).

II. SUBSECTOR PERFORMANCE

A. Annual and Perennial Crop Subsector

15. The contribution of the crop subsector to the total agricultural output has diminished over time largely because it is dominated by rice, a low valued commodity. The area planted to crops has shown a slow increase from 14.01 million hectare (ha) in 2010 to 15.02 million ha in 2018. Annual crops such as cereals comprise about 77% of the planted area. About 8.5 million ha of cereal crops (mainly rice and maize) were planted in 2018 while industrial annual crops including sugar, peanuts, soya beans, and cassava have been in decline with around 0.8 million ha in 2010 to 0.6 million ha in 2018. Planting area for perennial crops has steadily increased from 2.8 million ha in 2010 to 3.5 million ha in 2018. This category is dominated by rubber, coffee, tea, pepper,

and cashew nut trees. The area planted to fruit trees has also slightly increased from 0.7 million ha to around 1 million ha.¹⁷

Table 3: Area Planted by Crop Group (2010–2018)
(‘000s Hectare)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Annual crops	11,21	11,42	11,53	11,71	11,66	11,70	11,79	11,49	11,54
Cereals	4	1	8	4	5	0	9	8	2
Annual industrial crops	8,616	8,778	8,919	9,074	8,996	9,009	8,891	8,807	8,611
Perennial crops	798	788	730	731	710	677	633	612	582
Perennial industrial crops	2,847	2,943	3,098	3,078	3,144	3,245	3,314	3,404	3,482
Fruit crops	2,011	2,080	2,223	2,111	2,134	2,155	2,346	2,220	2,228
Fruit crops	780	773	766	707	799	824	869	928	989

Source: General Statistics Office, Viet Nam. 2020.

B. Livestock Subsectors

16. The livestock subsector has developed significantly over the past 10 years with production becoming more concentrated in larger commercial units where hygiene levels can be better controlled and vulnerability to disease can be more easily addressed. However there are growing concerns over waste management and pollution from these larger intensive units. Previously there were many small producers who kept livestock for immediate household consumption (poultry and pigs) or as draught animals (cattle and buffaloes) used in land preparation for cropping and transport of product to collection points for sale. Widespread losses from animal disease has made pig and poultry production a high-risk activity for small farmers, resulting in industry concentration into larger sized units. The continued pressure to intensify production and the migration of rural labor to urban areas have resulted in widespread mechanization of annual cropping activities. As a result, large animals are no longer required for draught purposes and are kept largely for meat purposes and increasingly milk in the elevated more temperate areas.

17. Data in Table 4 below show that cattle and buffalo numbers are in decline or stagnant while numbers of pigs and poultry have steadily increased. Buffalo numbers decreased by 16% from 2010 to 2018, while cattle numbers remained about the same. Pig numbers increased by about 3% from 2010 to 2018, and poultry numbers increased by 36% during the same time period. In 2018, there were 2.4 million buffaloes, 5.8 million cattle, 28.2 million pigs and 409 million poultry countrywide (footnote 17).

Table 4: Livestock Numbers by Species 2010–2018
(‘in million heads)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Buffaloes	2.9	2.7	2.6	2.6	2.5	2.5	2.5	2.5	2.4
Cattle	5.8	5.4	5.2	5.2	5.2	5.4	5.5	5.7	5.8
Pigs	27.4	27.1	26.5	26.3	26.8	27.8	29.1	27.4	28.2
Poultry	300.5	322.6	308.5	317.7	327.7	341.9	361.7	385.5	409.0

Source: General Statistics Office, Viet Nam. 2020.

¹⁷ General Statistics Office, Viet Nam. 2020. *Agriculture, Forestry, and Fishing*. Ha Noi.

C. Marine Capture and Aquaculture

18. Marine captured species (largely fish and shrimp but also significant quantities of squid) together with fish and shrimp produced in manufactured ponds are an important domestic food and nutrition source as well as generator of foreign exchange on export markets. Total seafood production in 2010 was estimated at 6.1 million tons, increasing to 7.8 million tons in 2018. Capture fisheries output was 3.6 million tons for 2018 comprising 3.4 million tons of marine catch and 0.2 million tons of inland catches. Aquaculture production was 4.1 million tons, with 2.9 million tons of freshwater cultured fisheries (mostly pangasius and tilapia), 0.8 million tons of shrimp and the rest is made up of other marine and brackish water fish. The pond area in 2018 was 1.216 million ha, including 0.74 million ha of marine and brackish water culture (mostly brackish water shrimp–black tiger shrimp and vannamei) and 0.31 million ha of freshwater cultured species (footnote 17).

19. Aquaculture production has continued to increase with pond areas growing steadily in recent years in spite of the threat from climate change in coastal and estuarine environs. The increase in aquaculture production from 2010 to 2018 was almost 40%—the greatest increase coming from shrimp with an increase of 80% over the period. Species caught in the ocean or inland natural waterways have increased by a similar amount at around 53% from 2010 to 2018, with ocean catch dominating (60%) (footnote 17).

Table 5: Production of Marine Species - Aquaculture and Caught

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fish (aquaculture)	2,102	2,256	2,402	2,352	2,459	2,537	2,586	2,735	2,919
Shrimps (aquaculture)	450	479	474	561	615	635	656	747	810
Sea catch total	2,220	2,308	2,511	2,607	2,727	2,866	3,036	3,213	3,397
Fish (sea catch)	1,663	1,721	1,819	1,885	1,970	2,077	2,243	2,453	2,640
Inland catch	194	206	195	197	193	184	190	207	210

Source: General Statistics Office, Viet Nam. 2020.

D. Forestry Subsector

20. In 2018, 42% of Viet Nam's land surface was covered by forests, around 60% more than in 1990 (footnote 17). However, only 0.5% of these could be considered a primary forest, the most bio-diverse form of forest—defined by the Food and Agriculture Organization of the United Nations (FAO) as “naturally generated native forest with no clear signs of human activity and undisturbed ecological processes.”

Table 6: Forest Type and Coverage (2010–2018)
(‘000s hectare)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Area of forest	13,388	13,515	13,862	13,954	13,797	14,062	14,378	n.a	14,491
Natural forest	10,305	10,285	10,424	10,398	10,100	10,176	10,242	n.a	10,256
Planted forest	3,083	3,230	3,438	3,556	3,696	3,886	4,136	n.a	4,236
Planted are - new	357	377	398	396	414	541	n.a	n.a	n.a
Forest coverage (%)	40	40	41	41	40	41	41	n.a	42

Note: New planted are including new ones in 2–3 beginning years, still not reach to forest standard and not count to cover forest rate.

Source: General Statistics Office, Viet Nam. 2020.

21. The country experienced a sustained and intensive deforestation process last century with forest cover decreasing from 60% of the total area at the beginning of the century to about 25% in the early 1990s. It was in that decade that the government implemented reforestation programs along with nongovernment organizations (NGOs). The most important of these was the Five Million Hectare Reforestation Program, which aimed to create 3 million ha of production forest, in particular plantations, and 2 million ha of protection forests (watersheds and vulnerable slopes) and special-use forests (national parks, etc.) through plantations, natural regeneration, and enrichment planting by 2010.¹⁸ The program had a strong focus on smallholder reforestation and allocation of forestland to private households, organizations, and individuals. These efforts resulted in the recent expansion of the forested area, which made Viet Nam 1 of 10 countries with largest annual net gain in forested area in 1990–2010.

22. Despite these efforts and successes, over two-thirds of natural forests are considered to be of “poor” or “recovering” quality and low land forests have been almost completely depleted.¹⁹ There has been extensive deforestation, forest degradation, and fragmentation in the central highlands, central coast, and southeast regions. Moreover, Viet Nam has one of the highest rates in the world of deforestation of primary forests. Several factors lead to continued pressures on primary forests, including: (i) deforestation for infrastructure improvements to support expanding economy; (ii) widespread prevalence of illegal logging; (iii) weak management of state-owned forestry farms; and (iv) expansion of agricultural production as many lower-income farmers still clear forests for agricultural land. Forest conversion to agricultural land is largely due to the expanding area of production of export-oriented commodities, such as coffee and rubber. This is particularly the case in the central highlights where as much as 79% of new rubber plantations were created on natural forestland. In turn, in the poorest communities, particularly in the mountainous areas, shifting cultivation continues to be practiced and its population depends on the forests for daily needs, thus also exerting pressures on the remaining forests.

E. Water Resources

23. Viet Nam has approximately 60% of “uplands” or “mountainous” terrain, 32.5% comprising river valleys and deltas and along the extended central coastal plain where the majority of arable land is found (apart from the elevated plateaus of the central highlands). Viet Nam’s coastal zone is home to a large proportion of the population, a major source of food and raw materials, the location of some of the most valuable natural habitats, and a focus of economic development including tourism. It provides a vital link for transport and trade, but it also is where many natural hazards are experienced. There is a wet season during the summer monsoon (May–September). Annual rainfall is generally abundant, with a national average of 1,960 millimeters (mm). Regional averages vary between about 1,000 mm and 2,500 mm. The north displays a marked variation in rainfall between the five high rainfall months of May to September, and the low rainfall months, when monthly rainfall is generally below 100 mm. In the south, the wet season extends into October, tapering off into November, and in only 5 months is the monthly rainfall below 100 mm.

24. Viet Nam has 16 major river basins, including the southeast river cluster, mainly in the provinces of Ba Ria–Vung Tau, Binh Thuan, Dong Nai, Khanh Hoa, and Ninh Thuan. The three dominant basins, Red River, Dong Nai, and the Mekong, account for 80% of the annual average water resources in the country estimated at 848 cubic kilometers (km³). About 60% of the total

¹⁸ Huong, T. T. T.; Zeller, M.; Hoanh, Chu Thai. 2014. The ‘Five Million Hectare Reforestation Program’ in Vietnam: an analysis of its implementation and transaction costs: a case study in Hoa Binh province. *Quarterly Journal of International Agriculture*. 53(4):341–375.

¹⁹ United Nations-Reducing Emissions from Deforestation and Forest Degradation (REDD) Viet Nam Phase II Program: Operationalizing REDD+ in Viet Nam, July 2013.

renewable water resources estimated at 884 km³ originate from across the borders. Almost 89% of Mekong surface water originates in upstream countries. Nearly 40% in the Red River originates in PRC; 11% of Dong Nai water comes from Cambodia; 18% of the Ma water and 11% of the Ca basin water come from Lao People's Democratic Republic; while the majority of the total water in the Se San and Sre Pok basins originates in Viet Nam and flow to Cambodia.

25. Climate change poses one of the biggest threats to future water resources management. From 2010 to 2020, disasters caused by natural hazards resulted in 2,532 deaths and missing persons and annual damages of about 0.5% of the GDP.²⁰ By 2050, Viet Nam is expected to face (i) increasing rainfall during the rainy season by about 4.1% in the North delta; (ii) decreasing average rainfall by about 20% during the dry season, especially in the southern regions (including the Mekong Delta); and (iii) rising sea level by 30 centimeters, compared to the average for 1980–1999. With the majority of the population living in low-lying river basins and coastal areas, it is estimated that more than 70% of the population will be severely exposed to climate and disaster risks. Risks include changing seasonal weather patterns, rising temperatures, increasing frequency and intensity of floods and droughts, and rising sea level. In general, water resources are affected by increasingly unreliable river flow patterns, increasing the dependency on ground water. Fisheries and coastal resources are also highly vulnerable to climate change because of temperature changes, increased inundations, and salinity intrusion.

26. With the extended dry season, aggregate dry season flows amount to 15%–30% of the total annual volume. Under a business-as-usual scenario, a 32% increase in water demand during the dry season is projected by 2030. This will lead to 11 out of 16 basins in Viet Nam facing water stress by 2030—with the most severe stress in the four key economic basins that generate 80% of Viet Nam's GDP—the Red–Thai Binh, Mekong, Dong Nai, and South East River Cluster. Nearly two-thirds of the country's residents live in the three primary river basins: the Red–Thai Binh, the Mekong Delta, and the Dong Nai. Economic growth and industrialization in expanding urban areas will require twice the daily water supply for the population in urban areas that current systems can provide. Total water withdrawal in 2005 was estimated at around 82 km³ a year, or about 10% of the total national renewable water resources, of which the use for agriculture accounted for 95% of the estimated total withdrawal volume, the industry for 4% and the municipality for 1%. In 2017, it is estimated that the use for agriculture accounted for 92% (81% for agriculture and 11% for aquaculture) of the estimated total water use, the industry for 5% and the municipality for 3%.

27. Increased abstraction for economic use, both within Viet Nam and upstream across its borders, are reducing dry season flows in some basins allowing seawater intrusion in the thin coastal strip and delta areas. The phenomenon, aggravated by sea level rising, is most noticeable in the central zone and the Mekong Delta area where saline water intrusion has been recorded some 60 kilometers inland, threatening the use of river water for agriculture and freshwater fisheries. The government has instructed the Ministry of Natural Resources and Environment (MONRE) to establish “minimum flow” rules, as part of the measures to combat the impact of saline intrusion and maintain flows to allow a natural freshwater habitat along the full inland stretch of the rivers.

28. The annual withdrawal groundwater volume is estimated at 1.402 million km³. Groundwater is the main drinking water source covering approximately 46% of households in

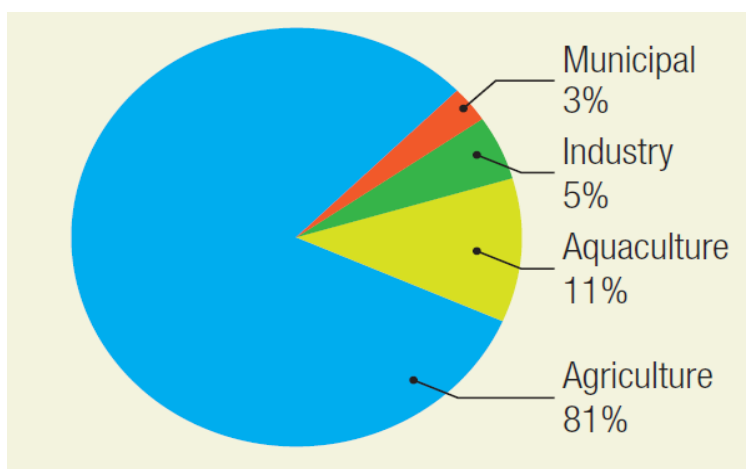
²⁰ <http://phongchongthientai.mard.gov.vn/>; <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=VN>

urban areas and 66% in rural areas.²¹ Excessive extraction rates both in urban areas and for agriculture have resulted in decreasing water tables by as much as 2.5 meter per annum. Water quality in upstream river reaches is still relatively good, but where rivers flow through industrial zones or large urban areas, the quality gradually deteriorates as untreated wastewater is discharged directly into rivers. Groundwater is vulnerable to pollution from many sources, such as the disposal of solid and liquid wastes, and contamination by domestic wastewater discharged into badly functioning septic tanks. In rural areas, the excessive use of fertilizers (often applied to compensate for excessive irrigation) is increasing nutrification of drainage lines and stimulating algal blooms in waterways. Saline intrusion of groundwater is occurring in coastal regions, and in particular the Mekong Delta. The combined effect of increased abstraction and rising sea levels will accelerate this phenomenon.

a. Agriculture and Irrigation

29. Water resources have been continuously and extensively developed to support the growth of agriculture, which resulted in increased food security, poverty reduction, and impressive export expansion (rice, coffee, pepper). Water withdrawal for irrigation is estimated at 66 km³ per year which is as high as 81% of the total water use in the country (Figure 3). On average, 48.8% of the irrigation potential area of around 9.4 million ha is actually irrigated.

Figure 3: Water Withdrawals by Sector in Viet Nam



Source: World Bank. [Viet Nam: Toward a Safe, Clean, and Resilient Water System](#). Washington, DC.

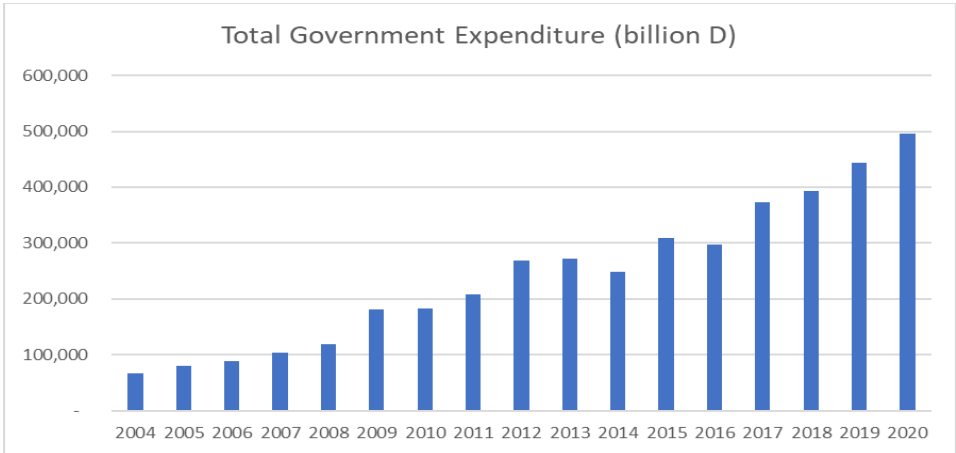
30. **Irrigation Systems.** With a total cultivated area of 9.6 million ha, about 4.585 million ha (48%) is irrigated and about 2.5 million ha (26%) has drainage. Investments in irrigation infrastructure and services have played an important part in the development and growth of agriculture in Viet Nam.

31. Investment in irrigation and flood protection has been a major focus of the government since the 1970s, with some 80% of the capital investment funds available to the agriculture sector allocated to improving and expanding irrigation, and protecting flood prone areas from damage. The rapid expansion in agricultural production in response to the Doi Moi reforms was enabled by earlier investments in irrigation systems. Total central and local government expenditure on

²¹ Multidisciplinary Digital Publishing Institute. 2019. Groundwater as a Source of Drinking Water in Southeast Asia and the Pacific: A Multi-Country Review of Current Reliance and Resource Concerns. *Water* 2019. 11:1605. doi:10.3390/w11081605.

capital development increased from around D60 trillion (\$4 billion) in the early 2000s to over D490 trillion (\$20 billion) in 2020 (Figure 4).

Figure 4: Capital Expenditure from State Budget (2004–2020)



Source: Ministry of Finance, Viet Nam.

32. There are 1,014 separate irrigation schemes throughout the country, of which the vast majority (904) service less than 2,000 ha. It is estimated that 1.6 million ha are serviced by small irrigation systems (< 5,000 ha), 1.2 million ha by medium irrigation schemes (5,000–50,000 ha) and 1.7 million ha by large irrigation schemes (> 50,000 ha). Around half of the total irrigation area is located in the Mekong River Delta with a further 16% in the Red River Delta. Supporting these irrigation networks are an estimated 5,600 reservoirs that store and supply water when needed, supplementing water diverted directly from rivers. About 2.1 million ha is pump irrigated, with over 11,500 pumps lifting water to higher ground when water levels are too low to reach fields.²²

33. MARD has the primary responsibility for irrigation management in cooperation with MONRE and the National Water Resources Committee. Since its establishment in 2002, MONRE has taken over responsibility from MARD for the management of water resources in general including the allocation of inter-provincial water resources. The National Water Resources Committee was established in 2000 to solve conflicts over water resource management between ministries and between ministries and provinces. In addition to irrigation, MARD is responsible for dikes, flood and storm management, and rural water supply. Funding of large capital projects, including investment for main canals of large irrigation and flood-control projects, is largely carried out by the central government. Provincial people’s committees are responsible for the public irrigation systems within their boundaries. Under the guidance of the respective provincial people’s committees, provincial departments of agriculture and rural development are administratively responsible for operating, maintaining, and repairing public irrigation, drainage and flood-control systems, and for survey, design, and construction of minor new works within their respective provinces. Irrigation and drainage management companies are responsible for the actual operation and maintenance of irrigation and flood-control systems. Small-scale structures (such as dams and reservoirs or pumping stations) that irrigate or drain areas within one commune or cooperative are administered at that level.

²² Organisation for Economic Co-operation and Development. 2015. *Agricultural Policies in Viet Nam 2015*. Paris.

b. Industry

34. Industrial water usage is a small proportion of the total water used in a river basin, exceptions being Dong Nai (22.5%), the Red River (13.3%), and the South East River Cluster (15.8%) during the dry season. Total water use for industry was estimated at around 6 billion cubic meters (m³) a year in 2016, with nearly half of that used in the Red–Thai Binh basin, 25% in Dong Nai, 10% in Mekong and 7% in South East River Cluster. The total water use for industry is projected to increase to 15.6 billion m³ by 2030.²³ A major issue is that the water abstracted for industrial uses is mostly returned to the environment without treatment. Wastewater discharged from industrial factories and industrial zones also exerts great pressure on the surface water environment in the country. While it is mandatory by law for industries to treat their wastewater, in practice only 10% of the industrial wastewater is treated.²⁴ Groundwater is also being used by commercial establishments, hotels and resorts, often as an alternative supply.

c. Urban Areas

35. The urban water network and services have significantly improved. Expansion of piped water to urban households has been fast, and piped water reached 86% of the population, with a total design water supply capacity of 9.8 million m³/day in 2018. Most of the remaining not connected urban population is likely to be connected by 2025. Average per capita consumption of just over 100 liters a day is comparable to that in other countries in the region. Most utilities ensure water supply for 14–20 hours a day, and water quality is generally good. At present, many people who are not connected in urban areas resort to buying tanker water. In Ho Chi Minh City, 2 million people depend on tanker water as their primary source. In smaller cities, access to piped water is often available to up to 70% of the population.²⁵

d. Power Generation

36. Energy demand is rising exponentially, but little is known about its impact on water resources. The hydropower accounted for 37% of the electricity of Viet Nam in 2018 and installed hydropower generation capacity was 17,000 megawatts (MW) by 2017. Total projected hydropower generation capacity is planned to reach 21,600 MW in 2020, rising to 23,400 MW in 2025 and 25,400 MW in 2030.

e. Ecosystem Services

37. The interrelationship between the upper reaches of the watershed catchment area and the downstream users of water is complex and becoming increasingly difficult to manage as the demand for water increases. Ecosystem services include, among others: (i) retention of rainwater in the upper reaches of water catchments that is subsequently released during the dry season to sustain river flows, (ii) prevention of soil erosion from excessive surface run-off following heavy downpours, (iii) maintenance of steady water supplies to downstream wetland areas, and (iv) maintenance of a hydraulic pressure to protect against saline intrusions into groundwater in coastal areas. The functionality of watersheds has been compromised by extensive deforestation, initially for the extraction of timber resources but increasingly for the expansion of commercial crops (rubber, coffee, tea, cashews, and pepper). This has resulted in the erosion of topsoil and

²³ 2030 Water Resources Group. 2017. *Vietnam Hydro-Economic Framework for Assessing Water Sector Challenges*. Washington, D.C.

²⁴ Ho Chi Minh University of Agriculture and Forestry. 2013. *Báo cáo tài nguyên nước và hiện trạng sử dụng nước*. Ho Chi Minh City.

²⁵ World Bank. 2019. *Vietnam: Toward a Safe, Clean, and Resilient Water System*. Washington, DC.

consequent increased silt loading of rivers but has also reduced infiltration of rainfall into the groundwater (replenishment). With removal of the vegetative cover through clearing, ecosystem services have been affected. This has also directly impacted biodiversity in the catchment and along downstream waterways.

F. Climate Change

38. Viet Nam is listed among the 10 potentially most affected countries from climate change. Climate change scenarios developed by the government predict increases in average temperature, rainfall, and sea levels. A study by MONRE predicted that in the long term, by 2100, an average temperature will increase by between 1.1–1.9°C in a low-emission scenario, and between 2.1°C and 3.6°C in a high-emission scenario. In turn, sea level is predicted to rise from 65 centimeters (low-emission) up to 100 centimeters (high-emission) and an annual rainfall to increase by between 1% and 5.2%.²⁶ The potential impacts are likely to be most serious on agriculture and on water resources, as flood inundation and droughts are predicted to happen more frequently as a result of an increase in rainfall intensity and reduction in number of rainy days. In particular, large cultivation areas in the Mekong and Red River deltas are likely to be affected by salt water intrusion due to sea level rise while minimal ecosystem flow rates in rivers are not maintained, reducing the hydraulic pressure thus inviting saline intrusions.²⁷

39. Annual total rainfall will increase everywhere, but by as much as 10% in the Red River Delta area. In contrast, during the dry months, especially in the southern regions (including the Mekong Delta), average rainfall will decrease by about 20%. Rising sea levels will greatly affect the Mekong Delta and Ho Chi Minh City, parts of the Red River Delta, and also a significant coastal strip, including many small estuaries. Without preventative action, a one-meter rise in sea levels would cause as much as 9.3% of total land surface to be inundated, affecting nearly 11% of the population, increasing poverty, reducing food production, agro-processing and exports.

G. Food Safety

40. **Growing awareness of food safety.** There is growing concern among consumers over food safety with an associated demand for the improvement in food hygiene and quality standards—particularly in relation to pesticide and other chemical residues. Reports of increasing foodborne illnesses constitute a significant public health burden. The World Health Organization reported that from 2011 to 2016, on average, there were around 670,000 foodborne diseases cases with 21 deaths per year.²⁸ National statistics on the incidence of food safety related illness are equally alarming. However, food safety incidents are highly underreported (as they are viewed as an integral part of dietary risk), particularly in Viet Nam where wet markets still dominate the retail distribution system for perishable goods. There has been a tendency for overuse of pesticides and herbicides that could result in toxic residues in the agriculture produces, presenting potential dangers to toxic chemicals for both farmers and consumers. Similarly, there have been cases of banned substances used for growth promoters and abuse of antibiotics in livestock sectors that pose the challenges of dangerous residues as well as antibiotic resistance issues. Food preparers in the house still practice extensive washing of fruit and vegetables in brine prior to cooking to remove agro-chemicals used in pest and disease control and kill worm larvae infestations that escape chemical treatment during production and storage.

²⁶ Ministry of Natural Resources and Environment. 2010. Viet Nam's second national communication to the United Nations Framework Convention on Climate Change. Hanoi.

²⁷ Institute of Strategy and Policy on Natural Resources and Environment. 2009. Viet Nam assessment report on climate change. Hanoi.

²⁸ World Health Organization. 2020. Food Safety in Viet Nam. <https://www.who.int/vietnam/health-topics/food-safety>

41. Similarly for meat, fresh and unprocessed animal proteins (e.g., meat and milk) constitute an increasing portion of the local diet with increasing per capita incomes. These are more prone to risks of foodborne illnesses than many staples (e.g., rice) as they require cool and hygienic storage, safe handling and processing—infrastructure and capacities that remain underdeveloped in Viet Nam. With rapid migration of labor resources from rural to urban areas, consumers are demanding more processed food as people have less time to spend in their kitchens. Food processing may bring benefits of convenience but also requires updated skills and capacity to reduce foodborne infections and other food safety risks. Meat is still purchased warm to minimize the possibility of E. Coli infection where inappropriate and outdated handling and storage methods persist.

42. The challenges relating to food safety are enormous in Viet Nam. Food production takes place in a large number of relatively small-scale and geographically dispersed producers. Food distribution system is underdeveloped from farm gate to retail outlets. There is limited knowledge of the requirements and implications of food safety by food producers and those along the marketing chain and, imported food items receive only tacit inspection at border points complicated by the highly permeable land border with Cambodia, Lao People's Democratic Republic, and the PRC. In addition, a complex institutional structure is in place to address food safety, involving five national ministries and 26 provincial authorities that operate in a decentralized environment with considerable independence.

43. **Increased government priority for domestic food safety.** The government has recognized these difficulties and has responded by changing its food safety legislation in 2010, revising the institutional structure and updating relevant regulations.²⁹ It streamlined institutional structure by reducing the number of ministries dealing with food safety from six to four. The Food Safety Law also introduced the concept of risk-based control. Public laboratories have been upgraded, and there is capacity to test for most foodborne pathogens. However, the majority of control and testing is focused on final products, whereas there is very little testing at the beginning of value chains, such as for raw materials, soil, and water. It is also not clear how testing and inspection results are used in decision making (though most tests and inspections report high compliance rates). There persists a lack of clarity on the roles and responsibilities of the private sector in managing domestic food safety risk. Implementation of the regulations is also weakened by the extensive decentralization process where provincial based inspection services are managed by the provinces.

44. The main ministries dealing with food safety include (i) Ministry of Health -Viet Nam Food Administration; (ii) MARD; (iii) Ministry of Trade and Industry; and (iv) Ministry of Science and Technology that sets the food safety standards for the country. With multiple agencies responsible for administering the law on food safety, coordination problems persist as it is difficult to achieve a unified approach to food safety. Viet Nam has elected to operate a risk-based system for food safety with multiple agencies contributing to the task whereas in other countries, a dedicated single agency has been created with nationwide responsibility for food safety.

45. **Increased donor interest.** A number of development partners are active in the area of food safety. Among the multinational development agencies, Asian Development Bank (ADB), the World Bank, and FAO have financed a number of food safety initiatives. Closed in 2019, the World Bank's Livestock Competitiveness and Food Safety Project upgraded more than 380 wet markets with improved facilities and trained staff-operators to demonstrate benefits of improved

²⁹ Law No. 55/2010/QH12 titled "Food Safety Law" passed by the National Assembly in 2010. Ha Noi.

food safety practices. At the same time, rapidly growing urban centers have been pushing small-scale wet markets and slaughterhouses outside of city limits to free up space and create more hygienic conditions for city growth. These trends in turn, are driving the change in food value chains making them more complex. The ADB-financed Quality and Safety Enhancement of Agriculture Products and Biogas Development Project (i) created effective regulatory institutions for state management of agro-product safety and quality systems to meet domestic and export requirements; (ii) accelerated the development of agro-production, processing, and marketing to ensure the safety and quality of vegetable, fruit, and tea products for domestic consumption and export; and (iii) improved the quality of physical environment for quality and safety by reducing environmental pollution and greenhouse gases from livestock waste in agricultural areas through increased utilization of biogas technology.³⁰

46. FAO has taken a lead role in donor coordination, acting as coordinator of the Food Safety Working Group. In its strategic direction, FAO recognizes that the trend of food safety incidences in Viet Nam has increased during the last decade, which signals the urgent need to strengthen public and private sector. Priority Area 1 of the FAO Country Programming Framework focuses on “Increased food security with focus on alleviation of hunger, malnutrition and food safety concerns.”

47. With the elevated priority for improvement of domestic food safety and the keen interest by development partners in assisting in this area, and given the extent of assistance needed to effectively address these issues, there is a need for improved donor coordination with government above that of current levels. The donor Food Safety Working Group is being used as a point of dialogue between development partners and the government and will need to assume a stronger role in coordination as lending activities increase in the near future.

III. CONSTRAINTS TO SECTOR GROWTH

48. Viet Nam has a diverse array of agro-ecosystems ranging from upland undulating plateaus and mountainous areas in the west to a relatively narrow coastal strip where the majority of rice is grown connected by river basins that rise in the west and deliver into Tonkin Bay. High biodiversity is threatened by unmanaged agricultural and marine (estuarine) development. Furthermore, the country is considered one of the most vulnerable ones to climate change, having significant impacts on these agro-ecosystems. Coastal areas are subject to regular flooding, extended drought, and catastrophic typhoons while salinity intrusions impact crop productivity and domestic ground water sources. Considerable environmental damage has resulted from the removal of protective coastal mangrove forests to make way for shrimp farming ponds and salt production, increasing exposure to extreme climate events. In the upland areas, the poorer soils, uphill land, and widespread erosion resulting from extensive deforestation add additional development challenges. Excessive use of groundwater, particularly for coffee and fruit tree crops, has resulted in unsustainable extraction rates and a lowering of the water table. Additionally, competition for water resources from downstream users (urban areas and industry) has focused attention on the efficiency of water use in the sector. Anticipated climate change impacts include (i) flooding and salinity intrusion in the lowlands and increased droughts during the dry season; (ii) increased temperatures, leading to increased water needs for agriculture; (iii) variable stream flows; (iv) increased incidence and prevalence of pests and diseases; (v) changes to planting patterns and cultivation calendars; (vi) increased forest fires; and

³⁰ ADB. 2018. [Completion Report: Quality and Safety Enhancement of Agriculture Products and Biogas Development Project](#). Manila.

(vii) rising sea levels, which may potentially reduce rice production by 7%, and will reduce mangrove areas.

49. Other sector development issues include (i) the condition and, in more remote locations, the existence of rural access roads that effect the cost of accessing markets; (ii) the incomplete development of irrigation infrastructure and the run-down state of reservoirs, head-works and delivery channels arising from poor quality during their construction and subsequent inadequate maintenance; (iii) undeveloped post-harvest handling and storage facilities that result in quality deterioration; (iv) weak enforcement of environmental regulations resulting in the proliferation of deforestation in upper catchments; (v) the tacit assumption that water has no monetary value and can be accessed, at will, from natural waterways; (vi) a lack of recognition of the value of ecosystem services; (vii) the excessive application of agricultural chemicals and fertilizers that pollute ground water and waterways with consequent environmental repercussions; and (viii) the weak planning arrangements for the use of land and other natural resources.

A. Low Productivity

50. **Labor productivity.** Rural land holdings are small and often not contiguous, limiting the capacity to adopt modern technologies such as mechanization in land preparation and other farming operations.³¹ Operations tend to be labor-intensive and restricted to traditional production technologies. Without a mechanism to facilitate amalgamation of holdings, labor-intensive farming operations are likely to persist despite the dwindling labor supply in rural areas. This acts as a limiting factor on rural labor productivity. With decreasing labor growth rates and reduced rural–urban labor migration, coupled with the limited availability of arable agricultural land to absorb any surplus labor, there is an urgent need to improve labor productivity particularly in agriculture. Skill levels of the farming population are also low as land passes from father to son and higher education seems less relevant to those remaining on family farms. The capacity to adopt new technologies where opportunities exist, are confounded by the relatively low skills level among those remaining on farms.

51. **Crop productivity.** Recent gains in rice productivity have been attributed to (i) privatization of agricultural land, (ii) expanding irrigated land allowing increased cropping intensities, (iii) the introduction of higher yielding varieties, and (iv) increased applications of fertilizers. High international prices further stimulated rice and maize production and contributed to farmers adopting yield maximization strategies, disregarding quality considerations. Consequently, surplus Vietnamese rice is exported to lower priced international markets. Generally, the increase in productivity has been comparatively low compared with that achieved in other countries, particularly in the case of non-cereal crops.

Table 7: Average Annual Yield Achievements 2010–2018
(ton/hectare)

	2010	2012	2015	2018
Paddy	5.34	5.64	5.76	5.81
Maize	4.11	4.30	4.54	4.72
Sugarcane	60.06	62.99	64.49	66.31
Cotton	1.37	1.28	0.81	0.67
Peanut	2.11	2.14	2.27	2.47
Soya-bean	1.51	1.45	1.45	1.52

Source: General Statistics Office, Viet Nam. 2020.

³¹ The average agricultural land holding area in the Mekong Delta is 0.94 ha/household and 1.83 ha/household in the Central Highlands whilst the country-wide figure is 0.85 ha/household.

52. The low adoption rates for higher yielding production technologies is also influenced by (i) limited budgetary allocations for adaptive research; (ii) an under-resourced public technical extension service—poorly trained staff and inadequate funds to either contemplate adaptive and applied research or access whatever technical information might be available from research institutions; and (iii) the educational status of those engaged in farming activities.

B. Underdeveloped Rural Infrastructure

53. **Rural access roads.** Most of the major national roads running through rural Viet Nam have been, or are being, upgraded, linking rural areas to important domestic and international markets. However, the lower order roads remain in poor condition due to continued practice of low-budget allocation for routine and periodic maintenance. Rural roads are increasingly being used by heavy axle-load vehicles that lead to accelerated deterioration. As alignments are rehabilitated, subsequent traffic volumes often exceed planned levels. The fragmentation in the road network reduces competitiveness by imposing higher transport costs when transferring agricultural surpluses to traders along the marketing chain, resulting in disguised price signals while contributing to quality deterioration in transit (especially for the more perishable items such as fresh fruit and vegetables). The poor condition of the infrastructure network also makes the development of other commercial activities problematic including agro-processing enterprise development and tourism.

54. **Irrigation.** With changing demographics, dietary preferences and the emergence of new value chains in food staples and other crops, there is now a broader demand for irrigated agriculture. However, incomplete structure and water losses during operations have many irrigation schemes operating at only 60%–70% of their capacity.³² Rates of water productivity in agriculture are well below those of other Asian countries. For rice, water productivity in Viet Nam is \$0.03 per m³, while it is double in the PRC, and triple in India (footnote 32). The low water productivity in agriculture poses a threat given climate change impacts and increased competition for water resources. Further, a 32% increase in water demand in all sectors is projected by 2030 during the dry season under a business-as-usual scenario with the vast majority of water use for agriculture (footnote 25). Water availability is also strained as dry season flows decrease in some river basins, and excessive groundwater extraction has resulted in lowering of water tables. The consequence is that water availability would not be able to meet the increase in water demand. Moreover, as a result of the continued expansion of cultivation areas, deforestation, land degradation, and depletion of water resources have been of increasing concern. Viet Nam's existing irrigation and drainage systems will require remodeling to deliver the level of service required by an increasingly diversified and commercialized agricultural sector. Specifically, the overarching limitation is that the irrigation and drainage system has been developed largely for paddy rice production with flood irrigation and is not suited to produce high-value crops due to insufficient drainage capacity and poor water management.

C. Weak Market Linkages

55. Linked to the quality issue is the state of market-chain organization. These are currently highly fragmented with limited collective action at farmer level and weak direct linkages between farmers, agro-processors, traders, and distributors. Transaction costs are high among the large number of small-scaled farmers as produce is progressively aggregated along the marketing chain. Moreover, incentives to produce and maintain higher quality produce and raw materials

³² World Bank. 2016. *Transforming Vietnamese Agriculture: Gaining More from Less*. Washington, DC.

remain weak, which further contributes to the masking of market signals through the price mechanism. These often also result from institutional weaknesses and regulatory barriers for land, cooperative and enterprise development, and private investment in the sector.

56. With a disjointed supply chain organization, market orientation has suffered and Viet Nam has considerable difficulty in meeting food quality and safety standards demanded by importing countries. The notable exception is the seafood subsector where strict adherence to import standards by the more developed countries has forced Viet Nam to comply. This success is due in part to the commitment by the limited number of SOEs supplying these markets that enabled the rigorous quality control and hygiene certification of premises and product. The situation differs considerably in other agricultural processing where the sheer number of processors and suppliers makes quality and hygiene certification logistically difficult. Furthermore, institutional mechanisms for quality certification and certification of origin have been thwarted by weak governance that continue to threaten food safety on both domestic and international markets.

D. Perpetuation of State-Owned Enterprises

57. The influence of SOEs in Viet Nam's economy has slightly declined in recent years, from a share of GDP of 29.34% in 2010 to 27.06 in 2019. During the same period, the share of total employment in SOEs declined from 10.2% to 7.7%.³³ Nevertheless, SOEs continue to be an important source of revenue and foreign reserves for the government. Many SOEs have been only partly privatized through a so called "equitization" process, through which they are converted into public limited companies or corporations by selling a part of their equity to the public or a special investor, while the state still holds the majority of shares. The process is made more difficult given the run-down state of the equipment and machinery and a reluctance of private investors to invest in their ownership. In addition the newly-created equity shares are often held by the state, while the firm may continue to hold advantages from their ex-SOE status (i.e., continued market power or easier access to credit). Within the agro-food sector, SOEs are involved in agricultural input supply firms, processing and storage firms, and marketing including exporting firms.

58. The continued dominance of SOEs and equitized SOEs in agro-processing limits new investment in agro-processing as there is little interest in operating on an uneven playing field. Consequently processing of agricultural products continues with older technologies using out-of-date equipment, resulting in processed goods difficult to compete on more quality conscious and higher priced markets. No doubt, the government's restructuring policies are directed also at agro-processing, yet modernization in this area is less likely in the presence of SOEs.

E. Access to and Availability of Appropriate Credit

59. Formal credit sources have developed significantly in Viet Nam, particularly in urban areas where the cost of administering loans is considerably less. There is a widening range of loan products available from overdraft facilities to term credit, but all require collateral to access. Lending to the agricultural sector remains a relatively high risk activity for commercial financial institutions, but they also play a relatively small role in agricultural credit. The Viet Nam Bank for Agriculture and Rural Development intends to be the primary lender to rural enterprises, supported by Viet Nam Bank for Social Policies. Traditional credit sources prevail, including family members, outside remittances, and increasingly, traders who offer in-kind credit for inputs on the promise of product delivery upon crop maturity. Term credit in rural areas is nonexistent except

³³ General Statistics Office, Viet Nam. 2019. *Annual employment by type of ownership*. Ha Noi.

in targeted credit programs financed by multilateral and bilateral development agencies (e.g., for the establishment of smallholder rubber groups where there is a 7-year gestation period before income streams are generated). The large number of small holdings make the administration costs of rural credit very costly and the sector does not have the margins to tolerate the higher interest rates that must be charged.

60. Microfinance is a popular credit source for farming households in rural areas. Its providers can be generally grouped into three main categories: formal, semiformal, and informal. The formal ones are state-owned or directed financial institutions such as Viet Nam Bank for Agriculture and Rural Development, Viet Nam Bank for Social Policies, and Viet Nam Postal Savings Service Company. They control about 70% of the rural credit market share. However, their financing requires certain access requirements, namely, larger-scale households, those who have collaterals, or through local associations such as women's unions and farmer's associations. The semiformal microfinancers are international NGOs. They tend to serve the more remote rural areas with a large number of poor households where the formal providers do not reach. However, their level of outreach is less significant and usually relies on a limited pool of international donor funding. The informal form of microfinance is a popular form of rotating savings and credit associations. It also can come from relatives, friends, neighbors, or moneylenders. This form of microfinance often comes with high interest rates and is of short-terms.

61. There is increasing use of financial intermediaries in providing credit to farmers. Input suppliers, aggregators, and processors have better financial resources or have the collateral to gain access to credit from the formal financial institutions. There are a number of examples where such funds have been on-lent to farmers where the administration costs can be absorbed by the intermediary more readily than the formal institutions as they have regular dealings with farmers. Intermediaries operate under a range of arrangements in terms of security from word-of-mouth to formal contracts depending on the nature of the relationship between the farmer and the intermediary. This can be done with individual farmers or farmer cooperatives under supply contracts.

F. Increased Competition for Water but Farmers Do Not Recognize its Value

62. The high use of water for crop irrigation and aquaculture and the conflicting demands for water from other sectors has encouraged the government to look to improving the efficiency of water use in the sector. There is growing appreciation that rice (the main crop) is relatively water inefficient requiring 900 mm to 2,000 mm per square meter of crop that equates on average of just under 3 m³ per kilogram of rice at a yield of 5 ton/ha.³⁴ With water being made available to farmers at no cost, farmers adopt a yield maximization strategy that results in excessive quantities of water being applied. Technologies are available for improving water-use efficiency for rice but there is little incentive for farmers to adopt such practices while water remains free. However, government programs seek to improve the value of production through improved productivity and diversification to higher valued crops that will improve water use efficiency in the sector.

63. With rural water supply beneficiary households still revert to using ground water for domestic supplies even though piped water systems have been installed as ground water is free. Scheme utilization rates are well below those planned during design as cheaper alternatives can be accessed. Households tend to use more piped water during the dry season when ground water supplies are limited or become contaminated. The same attitude exists in agriculture where farmers default to the cheapest source of water for their crops. The government even waived

³⁴ <http://www.fao.org/rice2004/en/f-sheet/factsheet1.pdf>

water service fees in 2008 for farmers in irrigated areas as a subsidy for increasing farmer incomes. Persistent uncontrolled extraction of water for agriculture from rivers, groundwater and water storage structures makes water shortages for other users who depend on these sources. Without a fee being imposed for this resource, inefficient water use will continue contributing to increased conflict between upstream and downstream users.

G. Vulnerability to Impacts of Climate Change

64. The Fourth Assessment of the Intergovernmental Panel on Climate Change characterized Viet Nam as a “hotspot of key future climate impacts and vulnerabilities”. With the majority of the population living in low-lying river basins and coastal areas, it is estimated that more than 70% of the population is exposed to risks from multiple natural hazards. Viet Nam ranks seventh globally on economic risk and ninth on land area and population exposed. Projected climate change impacts on the ANR sector are significant in that many rice cultivars used in Viet Nam are already close to their heat threshold while increasing crop evapotranspiration rates will increase water usage and the damaging effects of drought. The sea-level rise predicted by 2050 would increase areas affected by flooding by 0.28 million hectares and areas affected by saline intrusion by 0.42 million hectares, and 0.59 million hectares of rice production area could be lost.

65. Floods disrupt economic activities; exacerbate economic and social inequalities; disproportionately affect vulnerable groups, including women; and lead to loss of lives and damage to property. Floods and sea level rise in river deltas cause not only damage to the agriculture but also cause urban development damages and health problems. Without preventative action, a 1 meter rise in sea levels would cause as much as 9.3% of total land surface to be inundated, affecting nearly 11% of the population, increasing poverty, reducing food production, agro-processing and exports. Floods in the Red River Delta have particularly led to significant economic and social losses. As the economic and political center of Viet Nam, the Red River Delta has the highest population (22.6 million in 2019) among all river basins in the country). In the Red River Delta since 2009, 150 people perished in floods that also destroyed 1,600 houses and damaged 56,000 hectares of agriculture lands. Reported estimated damage amounted to \$385 million. The climate adaptive and integrated flood risk management approach is required however the following challenges have hampered to take this approach (i) weak coordination and planning capacities for flood risk management, (ii) insufficient flood protection infrastructures, and (iii) low flood preparedness.

66. Groups that are already most socially vulnerable (women, ethnic minorities, and disabled people) are disproportionately less able to adapt to the impacts of climate change. They are exposed to greater risk in that their livelihoods are generally based on agriculture and natural resources and they lack sufficient assets to recover or shift to alternative livelihoods. Adaptation strategies for rural inhabitants include (i) changes in sowing dates, (ii) switch to drought-tolerant crop species, (iii) adoption of salinity-tolerant crop varieties, and (iv) diversify into marine culture—all of which require access to financial resources to implement. In aquaculture, adaptation involves high investment costs. In forestry, adaptation measures require facilitation by the government. For flood and coastal protection, people will be largely reliant on government interventions to build and upgrade dikes and flood defenses that have dominated responses to natural disasters, climate change, and flood prevention in the past. Sea walls were included as subprojects under the ADB-financed Rural Infrastructure Sector Project as early as 1997.

67. The vulnerability to climate change varies throughout the country with the most vulnerable comprising (i) Mekong River Delta that has the largest number of rural poor people; (ii) central highlands that has high rates of poverty, a large ethnic minority population and the prevalence of

rain-fed subsistence agriculture. This zone also has high in-migration rates, which will increase with displacement of populations from coastal areas and the Mekong River Delta; (iii) northern mountains that has the highest rates of poverty and the largest ethnic minority populations; and (iv) central coast, both northern and southern, especially areas of ethnic minorities and poor communities dependent on fishing or rain-fed agriculture.

H. Gender Issues

68. Due to their higher representation as agriculture workers, women and ethnic minority groups are particularly disadvantaged by the limited earnings and fewer worker protections in agriculture sector employment.³⁵ Gender divisions of labor in agriculture and unpaid care work in the home create a high time burden for women, in particular for ethnic minority women.³⁶ Despite their labor contribution, women are less involved in major production decisions or equipment purchases on family farms, in particular in ethnic minority communities.³⁷ Women and ethnic minority groups have less access to technical training that is needed as the agriculture economy becomes less labor-intensive and more knowledge-based.³⁸ Women are assuming a greater workload for agriculture production as the sector becomes more prone to disaster risks. However, women have less access to the services, technology, and capital needed to develop more resilient agriculture livelihood systems.³⁹ Due to traditional gender roles and responsibilities, women are more likely to bear the brunt of the increased workload and pressures around household food security caused by the COVID-19 pandemic.⁴⁰ Although women have a key role in agriculture, policies to restructure and modernize the sector do not integrate gender considerations such as enhancing women's knowledge and access to time-saving equipment to upgrade their positioning in agriculture value chains. Similarly, national target programs to raise rural incomes are gender neutral and do not have specific interventions to address gender equality issues that constrain women's voice in decentralized decision making or their specific needs for livelihood development.

IV. GOVERNMENT POLICY ENVIRONMENT

69. The Socio-Economic Development Strategy, 2021–2030, the country's foremost guiding policy statement, was approved at the Communist Party Congress XIII in January 2021 and envisioned Viet Nam becoming a modern industrialized nation by 2030.⁴¹ The Socio-Economic Development Plan 2021–2025 has been prepared to contribute to this objective by (i) improving socialist-oriented market economy institutions; (ii) accelerating the economy restructuring

³⁵ FAO. 2019. *Country Gender Assessment of Agriculture and the Rural Sector in Vietnam*. Ha Noi. Women represent close to half of agriculture workers (49%). In total, 63% of rural women in the labor force are engaged in agriculture compared to 57% of men.

³⁶ ActionAid. 2016. *Make a House Become a Home*. Ha Noi.

³⁷ Le Thi Hong Nhung. 2016. The Women's Role in Agriculture and Irrigation Management: A Case Study at Gia Xuyen Commune, Gia Loc District in Hai Duong Province, Vietnam. *International Conference on the Mekong, Salween and Red Rivers: Sharing Knowledge and Perspectives Across Border*. Bangkok: Faculty of Political Science, Chulalongkorn University.

³⁸ Government of Viet Nam. General Statistics Office. 2019. *Labor Force Statistics Quarter 1 2018*. Ha Noi. Only 3% of female and 5% of male agriculture workers are trained with technical qualifications. Only 5.7% of ethnic minority women and 6.3% of ethnic minority men have professional technical qualifications in any sector compared to 19.9% of the majority population.

³⁹ VUFO-NGO Resource Center. 2017. *Policy Brief: Gender Equality in Climate Change Adaptation and Disaster Resilience in Viet Nam*. Ha Noi.

⁴⁰ United Nations Children's Fund. 2020. *Rapid Assessment on the Social and Economic Impacts of Covid-19 On Children and Families in Viet Nam*. Ha Noi.

⁴¹ Details can be found in documents produced for the Communist Party Congress XIII organized in January 2021 and available at <https://daihoi13.dangcongsan.vn/tu-lieu/van-ban-chi-dao-huong-dan>.

together with the growth model reformation, improvement of labor productivity, quality, efficiency, and competitiveness; (iii) developing digital economy and society; (iv) strengthening effective mobilization, distribution, and use of resources; (v) enhancing the development of uniform and modern strategic infrastructure network; (vi) improving quality of human resources in connection with strengthened innovation, application, and development of science and technology; and (vii) promoting the development regional economy, economic zones, and urban development.⁴² Key objectives of the plan include achieving an average annual economic growth rate of 6.5%-7% for the plan period; by 2025, the country's per capita GDP being around \$4,700–\$5,000; the contribution of processing and manufacturing industry to total GDP being more than 25%, digital economy being 20%; and budget deficit will be reduced to 3.7%. Labor productivity will increase by an average of more than 6.5% per annum.

A. Economic Restructuring Master Plan

70. The prime minister signed Decision 339/QĐ-TTg on 19 February 2013 approving the Master Plan on Restructuring of the overall economy in which he called for the application of growth models to improve quality, efficiency, and competitiveness for 2013–2020. Specific targets outlined in Decision No.339 include (i) improving the socialist-oriented market economy, creating a range of relevant, sustainable and long-term stimuli, especially tax incentives and measures to attract investment, enhancing the market-based allocation and use of public resources in commodities that have a competitive advantage, improving labor productivity, and other factor efficiency to improve competitiveness; (ii) applying appropriate economic structures to develop sectors, areas and economic zones with hi-tech and high-value added industries and areas that can gradually replace existing low tech systems; and (iii) progressively strengthening internal economic advantages, accelerating international integration, securing the nation's status in the international arena, and maintaining political stability, national security, social order, and safety.

71. The decision sought for agriculture and rural develop by expanding scale, modernizing, and improving quality and added value of agricultural production sustainably in combination with building new rural areas. The decision called for the review and amendment of land-use and agricultural production planning according to local advantages while (i) maintaining 3.8 million ha of land for rice to ensure national food security; (ii) ensuring effective implementation of green development strategies and effective response to climate change; and (iii) eliminating unfinanced projects and improving the quality of state management to ensure sustainable use of natural resources. On forest utilization, the decision included (i) reviewing and evaluating forest planning to maintain reasonable areas for watersheds and specially-purpose forests; (ii) developing innovative mechanisms for forest management by households and businesses; and (iii) converting existing forest areas into production forests to improve incomes and lives of forestry workers. On livestock and fisheries, the decision included (i) reviewing, planning, and managing breeding areas for environmental and food safety; (ii) investigating fishing grounds, analyzing sources, and reserves of marine products, and monitoring fishing volume; and (iii) protecting resources and the environment.

72. On agricultural production and agro-processing, the decision proposed to (i) increase the proportion of the state's capital budget for agriculture and rural development; (ii) develop agricultural technical extension services and training for livelihood development to improve the living standard of residents and communities; (iii) prioritize investments that developed agro-processing industry (including agriculture, forestry, fisheries) involving modern processes and

⁴² Viet Nam National Assembly. 2021. Resolutio No.16/2021/QH15 on Socio-economic Development Plan, 2021–2025. Ha Noi.

equipment; and (iv) progressively reduce the export of raw agricultural materials. On land aggregation, the decision proposed to develop mechanisms for farmers to contribute their land (yet retaining legal ownership) to facilitate larger-scale production using mechanized equipment thereby improving quality and achieving international standards of food hygiene and safety. On agricultural extension services, the decision proposed to improve extension services to assist in the adoption of improved plant varieties and animal breeds, improve product quality, reduce post-harvest losses, preserve and market products.

73. On supply chains, the decision proposed to access research and technology to assist in the development of input supply and marketing chains connecting input suppliers, producers, processors, distributors, and marketing to promote mutual commercial advantage in concentrated areas of production. On new rural development, the decision proposes (i) accelerated rural development reducing the inequities between urban and rural areas; (ii) improving connectivity between villages, commune and district centers to provincial centers and cities; (iii) expanding and improving the quality of healthcare services at the grassroots level, especially at the district level restoring users confidence in the service; (iv) improving education services (facilities, vocational training, equipment, programs and curricula); (v) preserving cultural heritages and promoting tourism; and (vi) reducing environmental pollution in handicraft villages and reducing environmental impacts from garbage and crop and livestock wastes.

B. MARD's Agricultural Restructuring Strategy

74. In response to Decision No.339, MARD developed an aligned strategy for the ANR sector for consideration by the prime minister. MARD's Agricultural Restructuring Program was approved in June 2013.⁴³ In 2017, the prime minister ratified an updated plan to restructure the agriculture sector for 2017–2020. The plan aims for a GDP growth of 3% by 2020 for the agriculture sector.⁴⁴ The overall strategy calls for a shift in sectoral goals beyond physical targets (output or trade) to a broader set of indicators relating to sustainable development. It proposes core principles to guide ANR sector development, with the following most significant ones: (i) agriculture will be market-led and consumer-driven, rather than state-directed and production-led; and (ii) the government's role will shift from being the primary investor and service provider to being the facilitator of investments and services provided by the private sector, community organizations, research institutions, commercial banks and others.

75. The targets approved in Prime Minister's Decision No.899 aim to:

- (i) sustain growth, and raise efficiency and competitiveness by increasing productivity, quality, and value addition to meet domestic and international demands. Agricultural GDP growth rate should reach 3.5%-4% during 2016–2020;
- (ii) raise incomes and improve living standards of rural residents, ensure food security (including nutrition security) that contribute to poverty reduction. By 2020, rural household incomes should increase 2.5 times that of the 2008 figure while 50% of communes shall meet the criteria of "new rural areas" by 2020; and
- (iii) enhance natural resource management, reduce greenhouse gas emission and negative impacts on the environment, utilize environmental benefits, raise capacity for risk management, enhance disaster preparedness, increase forest coverage to 45% by 2020, and contribute to the National Green Development Strategy.

⁴³ Prime Minister Decision No.899/QD-TTg of 10 Jun 2013 approving the Agricultural Restructuring towards Raising Added Values and Sustainable Development Program. Ha Noi.

⁴⁴ MARD. 2017. Prime Minister approves agricultural restructuring plan in 2017-2020.

<https://www.mard.gov.vn/en/Pages/prime-minister-approves-agricultural-restructuring-plan-in-2017-2020.aspx>

76. During 2010–2015, MARD implemented a number of national targeted programs that provided additional focus in areas where accelerated development were sought. For example, the National Targeted Program (NTP) on Clean Water and Rural Environmental Sanitation was effective in extending rural access to hygienic water supplies to 86% of rural inhabitants by the end of 2015. Under the New Rural Development (NRD),⁴⁵ investments are identified by beneficiary communities and central budget funds (combined with provincial and district budget allocations as well as beneficiary contributions in cash or kind) were used to develop infrastructure and other priority investments. There were 16 other NTPs (complemented by a number of other priority development programs) that also provide funds to assist in achieving NRD targets. In 2015, the prime minister announced that the number of NTPs for 2016–2020 would be reduced to two: one for NRD to be implemented by MARD and one on poverty reduction to be implemented by the Ministry of Labor, Invalids and Social Affairs. An NTP to support ethnic minorities was approved by the National Assembly in June 2020. Feasibility studies for this NTP were planned to be ready by the end of 2020 but have been delayed and are expected to be finalized in 2021–2022.

77. **NTP on NRD 2015-2020.** The NTP on NRD for 2015–2020 updated the original 9 criteria to 19 criteria to assess the development status of communes to ascertain if they meet the criteria for “new rural areas.” These include (i) planning; (ii) transportation; (iii) irrigation; (iv) electricity; (v) schools; (vi) cultural infrastructure; (vii) rural commercial infrastructure; (viii) information and communications; (ix) housing; (x) income; (xi) poor households; (xii) employment; (xiii) production organization; (xiv) education and vocational/technical training; (xv) health care; (xvi) culture; (xvii) environment and food safety; (xviii) political system and access to legislation; and (xix) defense and security. As of 2019, among the total 8,902 communes countrywide, 55.3% had satisfied the 19 criteria, 9.4% achieved 15–18 criteria, 21.7% achieved 10–14 criteria, and the rest 13.6% achieved 5–9 criteria. Number of criteria achieved country scope was 10 per commune.

78. NTP’s Coordination Office in MARD has summarized how the funds raised through government bonds have been used (Table 8). Rural access roads dominate expenditure (53%) followed by cultural houses (14%) and irrigation facilities (10%) that together account for 77% of the available funding. Schools are the other significant area of investment.

Table 8: Utilization of Government Bond Funding under the National Targeted Program on New Rural Development

Nature of Investment	Proportion (%)
Transport Facilities	53.3
Irrigation	10.0
Electricity Supplies	0.7
Schools	9.2
Health Centers	1.7
Cultural Houses	13.8
Rural Markets	1.3
Rural Water Supplies	1.5

⁴⁵ The prime minister approved the National Targeted Program on New Rural Development (Resolution No.800 QD-TTg) in June 2010 for 2010–2020.

Nature of Investment	Proportion (%)
Drainage Facilities	0.4
Environment	2.5
Cemeteries	0.2
Commune Centers	4.9
Others	0.6

Source: Results of the 2010-2015 National Targeted Program on New Rural Development Implementation, Ministry of Agriculture and Rural Development, Ha Noi.

79. Investment funds to implement the NTP have come from five sources (i) the national budget; (ii) the provincial budget; (iii) the district budget; (iv) the private sector; and (v) target beneficiaries and other inhabitants of the village or commune. The sources of financing for the program are far from clear and the coordination office cannot provide a precise summary of sources and uses of funds. From the government's perspective, this is an attractive financing arrangement as the NTP has the capacity to mobilize significant alternate sources of finance. During the first 5 years of implementation, central budgetary sources were minimal compared to the total investment. For those provinces that remain heavily dependent upon central budgetary allocations for their resources, provincially generated revenue allocations to the NTP are considerably smaller.

80. Program costs during the first phase was estimated at D851,380 billion of which:

- (i) D266,785 billion (31.3%) was allocated from the state budget (including funds allocated to finance similar objective initiatives that are not directly under the NTP-NRD);
- (ii) D434,950 billion (51.0%) from state credit;
- (iii) D42,198 billion (4.9%) from business sector (mainly SOEs); and
- (iv) D97,716 billion (10.9%) from local community.

81. The direct allocation from the state budget to NTP-NRD was D98,664 billion (11.6% compared to the proposed 17.0%), of which:

- (i) D16,400 billion from the national state budget (recurrent: D3,480 billion, capital investment: D2,420 billion; and government bonds: D10,500 billion); and
- (ii) D82,264 billion from local state budgets.

82. The financing arrangements has attracted some criticism from NGOs and development partners in that the program is used to mobilize resources for their implementation. Not all communes have the same capacity to contribute either by cash or in-kind labor for the proposed investments. Some consider the burden placed on the poor and more vulnerable households excessive and competing directly with their livelihood generating activities.

83. During the 5-year implementation of the NTP on NRD, there have been encouraging results yet some frustrations. Table 9 suggests that performance is satisfactory against targets but gives no information on the levels for each criteria. The program has been complicated by a wide variation in the status of communes, each with widely divergent assets that make some communes more challenging to reach the criteria. Rural livelihoods are difficult to change where farm sizes are small with scattered plots and largely traditional low technologies. Unfavorable living conditions in the rural areas are a constraint to farmers' development limiting their capacity to assimilate knowledge and production skills. Added to these are the inevitable shortage of development funding, in spite of the multiple funding sources.

Table 9: Achieved Targets Against Individual Criteria
(% of communes meeting criteria/indicators)

Criteria / Indicators of Achievement	Target for Plan Period 2016–2020 ^a	Actual Achievement (by December 2019) ^b
NRD Planning	100	99.7
Rural Transport	55	68.3
Irrigation	77	92.9
Rural Electricity	100	91.1
School Infrastructure	80	67.7
Culture Infrastructure	75	65.6
Rural commercial infrastructure	70	89.6
Information and communication	95	91
Housing	...	77.3
Rural Incomes	80	69
Employment	80	97.9
Poverty	60	69.5
Production organization	85	81
Education and Training	80	90.4
Health care	75	86.4
Culture	75	83.4
Environment and food safety	70	65.5
Political System and access to legislation	95	80.7
Defense and security	98	93.6

NRD = New Rural Development.

^a Government of Viet Nam. 2016. Prime Minister's Decision No.1600/QĐ-TTg "approving National Targeted Program for New Rural Development, 2016-2020". Ha Noi.

^b Progress Report NTP on NRD Coordination Office. Ha Noi. December 2019.

84. The main constraints identified during implementation of the program between 2016 and 2020 include:

- (i) Insufficient resources were made available to finance the extent of infrastructure development identified, especially in the northern mountains region;
- (ii) A number of commune and village leaders and concerned officials misunderstand requirements for resource mobilization (10% has been suggested), and contributors have not always been given the opportunity to prioritize investment projects and therefore are somewhat reluctant to make their individual contributions;
- (iii) The low rates of agriculture land consolidation has limited the opportunities for mechanization and adoption of improved technology applications;
- (iv) Program officials give low priority to livelihood improvement initiatives;
- (v) The rural environment has impacted upon rural villagers' health reducing their capacity to contribute to development;
- (vi) Indicators for measuring achievements in rural cultural life were difficult for commune officials and villagers to assess;
- (vii) Vocational training has not been sufficient for the adoption of high technology agriculture production;

- (viii) Many criteria used in the assessment of NRD status are not relevant in the local context, including those on cultural infrastructure, cemeteries, rural electricity, housing etc., making assessing the status of communes difficult; and
- (ix) Many local level leaders have low ownership of the Program limiting its implementation.

C. MARD's Development Plan 2021–2025

85. MARD's development objectives for 2021–2025 include (i) continuation of the agricultural restructuring and transformation toward sustainable agricultural development, increase in quality, added value, and agricultural competitiveness; (ii) protection of the environment and ecology; (iii) contribution to improved income for people in rural areas; (iv) ensuring food security and national defense; and (v) promoting the development of modern agriculture, clean agriculture, organic agriculture in linkage with agricultural processing industry, adapting to climate change and sustainably connecting with global agricultural value chains.⁴⁶ Targets set for 2025 include:

- (i) The value added growth rate of the agricultural sector reaches around 2.5%–3.0%/year. The growth rate of labor productivity in agriculture, forestry and fishery reaches an average of 6%–8%/year;
- (ii) The proportion of value of agricultural, forestry, and fishery products produced in the forms of cooperation and association reaches about 30%; the proportion of value of agricultural products produced under good or equivalent processes reaches about 25%; the proportion of value of agricultural products applying high technology reaches about 20%; the growth rate of value added in the agricultural product processing industry reaches over 8%/year; the area of agricultural land for organic production reaches about 1.5%–2% of the total area of agricultural land; the growth rate of export turnover of agricultural, forestry and aquatic products reaches an average of over 5% per year;
- (iii) The proportion of agricultural labor in the total social labors decreases to about 25%; the rate of trained agricultural workers reaches over 55%; over 80% of agricultural cooperatives operates effectively; rural residents' income increases at least 1.5 times compared to 2020; and
- (iv) The rate of organic fertilizers in the total fertilizer output reaches over 15%; the proportion of biological plant protection drugs on the list of allowed plant protection drugs increases by over 30%; the rate of forest coverage remains stable at 42%.

86. MARD's subsector development plans have been outlined in the 5-year planning document, which specifies crop production areas and growth rates to be achieved. Many of the objectives however lie outside the control of the government as they require private investment. There is greater need to focus on developing a conducive investment environment that will result in the targets being achieved.

D. Environmental Development Programs

87. MONRE had developed a Natural Resources and Environment Sector Strategic Plan 2011–2020 that largely conform with other international analyses of the nature and extent of unsustainable resource use in Viet Nam. Its stated objectives to (i) modernize the sector; (ii) complete the environmental regulatory framework; (iii) improve institutional and technical

⁴⁶ Government of Viet Nam. 2021. Prime Minister's Decision No.255 dated 25 February 2021 approving the Master Plan for Agricultural Restructuring for 2021–2025. Ha Noi.

capacity; (iv) ensure environmental quality and protect biodiversity; (iv) improve the management of fisheries, seas and islands; (v) reduce greenhouse gas emissions; and (vi) anticipate climate hazards and natural disaster

88. Subsector-specific objectives that are stated in this strategic plan include (i) completing the land information system and anticipating the impacts of climate change on land resources; (ii) introducing efficient water resources planning and pricing; (iii) completing the regulatory framework for geology and mineral extraction; (iv) more fully implementing the Law On Environmental Protection, raising environmental awareness, and expanding protected areas; (v) implementing the National Target Program to Respond To Climate Change and raising awareness of climate issues; and (vi) updating the surveying, planning and management of Viet Nam's seas and islands. These require a general upgrading of global information systems and mapping capabilities across all subsectors.

89. The National Plan on Climate Change Adaptation for 2021–2030 was approved by the prime minister in July 2020.⁴⁷ The goal of the plan is to minimize vulnerability to and risks of climate change by strengthening resilience, adaptation capacity of communities, economic sectors, and ecosystems and by promoting the integration of climate change adaptation into strategies and planning. The first implementation phase 2021–2025 will focus on (i) completing mechanisms and policies on climate change adaptation; (ii) preparing the legal basis and technical conditions to promote the integration of climate change into policies, strategies, and planning; and (iii) implementing tasks and priority solutions to adapt to climate change, enhance the capacity to respond to and minimize damages linked to disasters caused by natural hazards. The second phase 2026–2030 will continue to (i) improve the resilience capacity of the infrastructure system, the adaptability of natural ecosystems and biodiversity; (ii) enhance the resilience of natural ecosystems, protect and conserve biodiversity in the context of climate change; (iii) promote adaptation actions that have co-benefits in climate change mitigation and are economically, socially, and environmentally effective; and (iv) monitor and assess the impacts of global climate change response activities on Viet Nam, identify mitigation solutions and take advantage of opportunities for socioeconomic development.

V. SECTOR EXPERIENCE

90. ADB has substantially supported the ANR sector in the country. It has financed a series of sector modality rural infrastructure development projects in priority areas that have contributed to poverty reduction from improved access. It has also financed food quality and safety enhancement, low carbon agriculture support, reforestation, biodiversity corridor conservation, trade facilitation, and emergency rehabilitation to assist in the recovery from extreme climate events. At present, there are three ongoing loans amounting to \$399 million focus on basic infrastructure development (rural roads, irrigation, markets and flood protection), water resources management, and irrigation efficiency improvement.

Table 10: Ongoing ANR Sector Projects

Project Name	Duration	Amount (\$ million)
Water Efficiency Improvement in Drought-Affected Provinces Project	2018–2026	100.0
Basic Infrastructure for Inclusive Growth in the Northeastern Provinces Sector Project	2018–2023	150.0

⁴⁷ Prime Minister's decision on the promulgation of the National Adaptation Plan for 2021–2030, with a vision to 2050 (Resolution No. 1055/QĐ-TTg).

91. ADB's Country Partnership Strategy (CPS) 2016–2020 supported Viet Nam's goal to rise to an upper-middle income country by addressing (i) inclusive growth; (ii) economic efficiency; and (iii) environmental sustainability. The strategy followed a three-pronged approach. Pillar 1 aimed to promote job creation and competitiveness by (i) deepening structural reforms; (ii) improving physical connectivity; (iii) encouraging private sector development and employment creation; and (iv) enhancing transparency and accountability of public expenditure. Pillar 2 aimed to increase the inclusiveness of infrastructure and service delivery by (i) supporting inclusive urbanization; (ii) enhancing access to services; and (iii) promoting livelihood opportunities for remote and rural people. Pillar 3 aimed to improve environmental sustainability and climate change response by (i) promoting sustainable natural resources use; and (ii) supporting climate change adaptation and mitigation. The upcoming CPS will continue to support inclusive green growth.

92. Within the CPS, ADB's strategy for the ANR sector focuses primarily on multisectoral rural infrastructure for inclusive growth and on efficient water use for enhanced agricultural productivity and climate resilience. Specifically, ADB provides support to (i) improving water resource management through institutional reforms and technological innovations; (ii) developing integrated value chains for high-value segments of agriculture that are closely linked to modern logistics, processing, and organized retailing; (iii) linking small farmers with markets; (iv) continuing reforms that allow a greater role for the private sector and prioritize contract farming; and (v) making the agricultural sector institutional and financial framework more conducive to the introduction of new technologies.

93. ADB has maintained a geographic focus in areas where poverty persists especially regarding physical assets creation and rehabilitation with the intention to improve access to inputs and to markets as part of its overarching goal—those being the central region, northern, and northeast mountains together with emergency assistance in locations as required. The focus on the central region has been sustained for three CPS planning periods while the northern mountains have been included in the immediate past two CPS documents. Recently, ADB has been requested by the government to also work in the Mekong Delta.

94. **Lessons learned.** For future operations, ADB's Independent Evaluation Department stresses the need for ADB to (i) make greater efforts to stay ahead of policy changes in Viet Nam and to be prepared to adjust its strategy to the changing context; (ii) maximize the impact of its portfolio by fully leveraging available modalities and funds, along with its development network; (iii) improve overall performance through better portfolio management, higher-quality project design, and reduced inefficiencies; (iv) focus on specific and verifiable environmental interventions to maximize impact for environmental sustainability and climate change; and (v) provide more technical assistance for strategy and capacity development in Viet Nam.⁴⁸

95. Lessons learned reinforce the need to address cumbersome project administration arrangements which result in implementation delays and governance issues. By nature, ANR sector projects involve community engagement and comprise large numbers of relatively small contract packages. Adopting country systems, if compatible with ADB requirements, can

⁴⁸ Independent Evaluation Department. ADB. 2021. [Validation of Viet Nam Country Partnership Strategy Final Review, 2016–2020](#). Manila.

potentially streamline implementation. Decentralized implementation arrangements engender ownership but capacity constraints, especially at the provincial level, need to be addressed with corresponding capacity development technical assistance. Experience suggests that project investment loans are time consuming to prepare. Programmatic lending using new financing modalities such as results-based lending, policy-based lending, sector development program and multi-tranche financing facility can be explored. However, as of now, government regulations are not making a distinction based on project modalities and therefore the processing time would remain the same regardless of the project modality chosen.

VI. SECTOR STRATEGY AND ROAD MAP

A. Factors Guiding Future ANR Sector Support

96. The main influences affecting ADB's future support for the ANR sector include (i) the country's graduation from concessional lending; (ii) the government's policy for on-lending official development assistance (ODA) to provinces; (iii) the country's increasing integration with regional and global markets; (iv) increasing competition for the use of land, water and labor resources by other sectors; and (v) increasing vulnerability to climate change and disasters caused by natural hazards. In addition, there are operational considerations influencing future support including (i) adoption of a more programmatic approach using different lending modalities to maximize investment opportunities; (ii) increased reliance on country systems to reduce administrative burdens during implementation; and (iii) added synergies with other sectors in thematic and geographic areas as well areas of interest amongst other development partners.

97. **Graduation from concessional lending.** Viet Nam graduated from the World Bank's International Development Association in July 2017 and ADB's Asian Development Fund in January 2019. The graduation removed an important source of funding traditionally prioritized by the government to finance activities in health, education, and agriculture and rural development, while there remains an "unfinished agenda" for poverty reduction and inclusive development.

98. The government is concerned about current debt level and is closely scrutinizing any commitment that increases this. It is aware of the implications of ordinary capital resources repayment conditions and has been very selective and restricting borrowing to areas that generate financial returns. ANR sector interventions, while of a public nature, provide less opportunity to generate funds to enable loan servicing. In such situation, grant cofinancing becomes a must. The Ministry of Planning and Investment requires a "grant element" as a percentage of each loan if the loan is not a concessional loan.

99. **ODA regulations and On-lending Ratios to the Provinces.** The overall ODA and concessional loans environment of Viet Nam has been severely affected by a rapidly rising public debt that was approaching the government's statutory limit of 65% of GDP. The government aggressively tightened regulations governing ODA use. As a result, the government's appetite for ODA has been sharply reduced. The Law on Public Investment was further amended in July 2019, and the latest Decree on ODA management (Decree 56) was approved in May 2020. In addition, the government started implementing total or partial on-lending of concessional and nonconcessional loans in 2018 to all provinces and municipalities, with varying rates based on the original ODA loan terms and provincial fiscal strength. These two changes have significantly complicated project processing as well as implementation and caused unexpected delays and their real impact is yet to be fully assessed.

100. **Increasing integration into regional and global markets.** Viet Nam is signatory to 13 FTAs and is negotiating 3 additional ones.⁴⁹ Accession to the World Trade Organization in 2007 was a significant step in facilitating the country's exposure to international markets. The progressive reduction in protection required under this agreement has forced producers and processors to adopt more efficient production techniques and adhere to more demanding sanitary and phyto-sanitary requirements of quality conscious importing countries. Equally, the removal of artificial barriers to trade has exposed the rural economy to increased competition from higher labor productivity countries. This pressure must be countered by a parallel increase in productivity and post-harvest handling efficiency if the country is to retain its impressive performance on export markets. Viet Nam has limited experience in digital agriculture. ADB will look into providing support in this field in partnership with the private sector. While Viet Nam comprises a quite diverse range of private sector investors, foreign direct investment in agriculture remains low mainly due to low labor capacity and unclear regulations. ADB will work on strengthening the linkages with the private sector.

101. **Competition for resources from other sectors.** While competition on domestic and international markets is increasing, the sector is challenged by increased competition for productive resources, in particular land and water from other sectors. Prime agricultural land is progressively being converted to alternative uses to accommodate an expanding urban and industrial sector to the extent that some provinces have established agricultural production zones to, amongst others, sustain its use for agriculture. Similarly, the demand for water for power generation, urban development and industry has increased significantly. While agriculture remains the largest single user of surface water, it is coming under increased competition and will need to use the resource more efficiently with the adoption of more efficient delivery systems and on-farm water saving technologies combined with improved regulation of ground and surface water extraction. The single largest challenge facing agricultural water utilization is that farmers view water as a free commodity whereas the other sectors recognize its value and raise user charges for its consumption.

102. **High levels of climate change and disaster risk.** Viet Nam ranks high in the Global Climate Risk Index. Probabilistic analysis estimates that Viet Nam experiences an average annual loss of \$2.37 billion as a consequence of natural hazards, especially floods.⁵⁰ Floods continue to adversely affect local communities, especially the poor living in rural areas, with damages to housing, transport, and irrigation infrastructure; agricultural and fisheries livelihoods; and access to social services. Climate change scenarios point to fewer and more intense storm events, with reduced rain in the dry season and increased average and extreme temperatures. The excessive extraction of water for agriculture is threatening ecosystem base flows in rivers reducing the hydraulic pressure inviting saline intrusion into coastal areas. The Mekong Delta is particularly affected by floods, land erosion, and saline intrusion. Given the extensive deterioration of upper catchments through deforestation, the hydrology of river basins has changed with drastic downstream consequences. Viet Nam has invested heavily in riverbank reinforcement and training to prevent flooding while dikes are employed extensively to protect human settlements from extreme rainfall that is likely to increase under current climate projections. The extensive coastline is vulnerable to disasters caused by natural hazards as much of the coastline lies in the cyclone pathway. Despite significant investment in coastal protection, the country routinely suffers damage during the cyclone season. The development of improved climate-based information systems to inform the underlying systems of early warning, infrastructure planning, and future risk sharing through insurance is required. Sound decision-making information is key for the rapidly

⁴⁹ ADB. 2020. Tracking Asian Integration – Free Trade agreements. <https://aric.adb.org/fta-country>. Manila.

⁵⁰ PreventionWeb. [Viet Nam Disaster and Risk Profile](#).

expanding range of data users, including early warning system managers, urban and infrastructure planners and designers, private sector investors, and the finance and insurance sectors. However, the current data systems within the public sector are fragmented, often poorly maintained—both financially and physically, and inaccessible. Future investment needs to target the demand for an expanding range of knowledge based on an increasing scope of information types and sources, real time reliable and accessible data. There is a high level of interest by the private insurance market to procure this kind of quality information. Resilience-building measures can support communities, especially women, in resisting, absorbing, adapting to, and recovering from climate- and disaster-related shocks and stresses.

103. **Strategy For efficiency.** The practice of providing discrete, stand-alone investment loans that cover a large number of provinces will be discouraged in the future lending program and is not supported by new government regulations. Over the 2016–2020 CPS period, ADB support shifted toward a more programmatic approach where there are sequenced interventions within each thematic area. With limitations on available staff resources to administer the plethora of smaller loans (in spite of considerable delegation to the country office) and the high front end costs for design and appraisal, ADB is seeking greater efficiency in its loan portfolio. This means fewer, but larger loans or one-province multisectoral loans. Closer alignment with existing government programs will assist in facilitating this change as ADB may elect to provide budget support for an existing development program, subject to other criteria being satisfied. However, the government rules have not been very supportive of budget support modalities, therefore when sector loan and project loan are the only possible options, they should cover a limited number of provinces to ensure timely processing and feasible implementation. It is also important to explore one-province multisectoral loans which will be larger in size and will cover various types of infrastructure within the same province. This will help in reducing transaction costs and in speeding up project processing. Provinces' borrowing capacity will need to be carefully assessed.

104. **Synergy with development partners.** Coordination with development partners and international NGOs is being done through regular and ad hoc group meetings of the international support group of MARD. These assist in preventing duplication (technical content and geographic areas) and they serve as a point of dialogue to coordinate development partners' areas of interest. Although the international support group was not very active during the last few years, its operations gear toward investment needed in specific subsectors. ADB co-chairs the Disaster Reduction Partnership that coordinates the activities of 20 international funding agencies and 4 national ministries.⁵¹ In food safety, ADB is a member of the Working Group on Food Safety that is currently chaired by FAO with other members being World Bank, Canada International Development Agency, United National Industrial Development Organization, and the World Health Organization. ADB is also a member of the Ethnic Minorities Working Group. Given the level of interest by development partners in a wide range of areas requested by government, support for and participation in the various coordinating mechanisms is essential.

⁵¹ Ministry of Agriculture and Rural Development, Ministry of National Defense, Ministry of Industry and Trade, Ministry of Natural Resource and Environment, World Bank, Asian Development Bank, Japanese International Cooperation Agency, United Nations Children's Fund Viet Nam, United Nations Development Programme Viet Nam, United Nations Entity for Gender Equality and the Empowerment of Women Viet Nam, FAO Viet Nam, Asian Disaster Prevention and Control, Care International Viet Nam, Oxfarm Viet Nam, Save the Children Viet Nam, Plan International Viet Nam, Habitat Viet Nam, Die Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and Adventist Development and Relief Agency International.

B. ADB's Forward Sector Strategy

105. Given the significant role of the ANR sector in supporting the country's economy, ADB's continued support to the sector ensures a strong focus on inclusive economic growth while strengthening environmental sustainability and resilience to climate change. ADB's strategy is to maintain sustainable and inclusive growth of the sector by improving efficiency and competitiveness, and enhancing rural living standards and resilience to climate change and disasters. ADB's support will center on three key areas: (i) provision of climate and disaster resilient rural infrastructure to strengthen connectivity, protect livelihoods and people, and support agriculture transformation; (ii) water resource management and watershed protection to sustain the country's natural capital; and (iii) promotion of agribusiness development with private sector linkages to strengthen the country's agricultural competitiveness, both domestically and internationally.

106. **Climate-resilient inclusive rural infrastructure for agricultural transformation.** Under this category, the key areas of support will be (i) the expansion and upgrading of rural road network and water ways to facilitate access to markets and public services, (ii) the rehabilitation and completion of infrastructure needed for more efficient water utilization, and (iii) the expansion of the rural water supply network (with associated sanitation) to improve rural hygiene and raise rural living standards. Previous ADB initiatives focused on the improvement of rural roads connecting provincial and commune networks identified in provincial development plans. The upgrading of the rural road network remains a priority of government given their impact on supporting development in remote areas, especially where ethnic minorities live. To facilitate longer-term sustainability, ADB's ANR initiatives will increasingly be coordinated and rationalized into the overall transport program as supported by ADB and other development partners.

107. Past and ongoing water resource projects have rehabilitated existing irrigation, drainage, and flood protection infrastructure directed at the larger irrigation schemes operated and maintained by irrigation and drainage management companies (typically with command areas of greater than 1,000 ha per scheme). There is a need to complete irrigation infrastructure development for expanded command areas where water sources remain underutilized, as well as to rehabilitate existing schemes with more water efficient delivery systems (e.g., sealed pipes) while assuring adequate resource availability and that minimum ecosystem flow rates are sustained. Also, a significant number of smaller schemes with command areas of less than 1,000 ha require upgrading to service their potential command areas. Provincial budget resources have traditionally been used for small-scale irrigation rehabilitation but demand exceeds available funding. Alternate financing mechanisms need to be investigated to support the rehabilitation of small-scale irrigation systems including the incorporation of enhanced climate resilience and innovation. There is also a growing need to work more on protecting areas with high levels of climate and disaster risk by providing flood protection infrastructure.

108. Many areas in Viet Nam don't have reliable and safe year-round water supply. Most of such supply is linked to mountain streams or surface water systems that face decreasing water availability and quality particularly during the dry season, requiring water fetching, which is time and effort consuming and is usually borne by women and children. At times, potable water must be purchased during the dry season. Investment in rural domestic water supply schemes will be prioritized. It is important to note that the sustainability of these schemes is often problematic. To improve this situation, it is key to (i) invest in appropriate technology for efficient management and distribution of water supply, and (ii) develop skilled staff and systems to operate the schemes. Rural water supplies are often developed in parallel with irrigation development as canals serve both purposes. Given the increasing competition for water from sectors outside agriculture,

greater attention will be given to adopting a basinwide approach whereby downstream demand is taken into consideration when determining water availability. In this context, minimum stream flows for environmental sustainability (including the maintenance of hydraulic pressure to protect against saline intrusions) will be incorporated into system designs.

109. Effective use and management of natural resources for sustainable ecosystems.

Viet Nam has prioritized socioeconomic development including food security and poverty reduction over the past 40 years. Its focus remains on inclusive economic growth but increased attention has been directed at climate change and disaster management, environmental sustainability, and green growth. With the impressive performance in reforestation, the country can boast a forest cover of 48% in 2016 while it has attended to maintaining biodiversity through its corridor programs in cooperation with neighboring countries.⁵² Nevertheless, watersheds remain vulnerable to deterioration with expanding agriculture, growing urban populations, and downstream industry. Future interventions might include the expansion of community forestry in watersheds, afforestation along the Mekong Delta and coastal area, bio-engineering to stabilize slopes and reduce land erosion, regulating and awareness raising for reducing extraction of ground water, transfer payments by downstream users for maintaining ecosystem services, and developing government capacity to use climate change and disaster risk management systems. ADB recently became the co-chair of the Disaster Reduction Partnership and will become more engaged into the Mekong Delta working group and in the implementation of the Mekong Delta Integrated Regional Masterplan.

110. Improved competitiveness—productivity, quality, and food safety. In support of government strategy for agricultural restructuring, ADB will finance initiatives to enhance agricultural productivity, improve the quality of agricultural produce, and assist in the delivery of more hygienic food onto domestic and international markets to improve overall competitiveness. Each of these are complex areas and will require technical input to define areas where assistance can best be directed. Mechanisms for group management of agricultural land (in contiguous blocks) need to be developed to facilitate modernization. Water use efficiency needs to be improved in an environment of climate change (water shortages) and uncontrolled extraction. With rice dominating sector output, water efficiency is extremely low. It can be improved by diversification into higher valued crops, by upgrading delivery facilities, by adopting on-farm water saving technologies and by regulating extraction. Policy reforms will be also needed to incentivize more efficient and sustainable farming systems. To address the product quality and food safety, ADB will strengthen linkages along the value chain to improve the transmission of market signals and facilitate cooperative action involving post-harvest handling and storage of aggregated product. ADB will continue its participation in the Food Safety Working Group and provide resources as appropriate to assist in identifying priority interventions in a well-coordinated manner. Initiatives in this area will build on the improved road network and include diversification into higher valued but more perishable crops. The possibility of introducing certificates of origin and quality standards on selected commodities will be further investigated where export opportunities are known to exist. This will most likely involve private sector operators along the value chain to sustain quality standards in the longer term. This type of support will require exploring public–private–partnership options and cooperation with the ADB Private Sector Operations Department.

111. Building on the thematic areas described and ADB’s experience in the sector, ADB support over the next CPS period will focus on innovation and high technology. The ANR sector

⁵² World Bank. 2020. Data on Forest area (% of land area)
data.worldbank.org/indicator/AG.LND.FRST.ZS?locations=VN.

will complement investments in other sectors including urban development, transport, energy, finance, and private sector. Synergies with the education sector will also be identified to address skills development through tertiary education networks. Collaboration with the finance sector is considered important since agricultural finance is a critical gap, especially in unleashing growth opportunities through small- and medium-scale enterprises. Synergies with regional programs, especially under the Greater Mekong Subregion will be maximized.

112. **Gender mainstreaming in ADB ANR sector operation.** In its possible support to agriculture and rural infrastructure development projects, ADB plans to work with government and other development partners to better institutionalize knowledge about gender equality and social inclusion. Such efforts would include ensuring that capacity-development programs for district and commune staff include strong gender equality mainstreaming components. ADB may also consider assisting governments to design human resource policies for national target programs that increase female staffing targets in decision making and technical roles as well as strengthen monitoring systems to generate more data disaggregated by sex and ethnicity for program analysis and planning. ADB will increase its portfolio investments in rural development, forestry, and flood protection measures that have the double impact to increase women's incomes and reduce their time burden in response to the government's request. In investment projects' gender action plans, ADB will ensure resources are available to meet targets for women's increased access to training and representation in decentralized rural decision-making bodies such as irrigation management committees, disaster risk prevention and control committees, forestry management committees, farmers' cooperatives, and value chain development associations. In its policy dialogue with government and other development partners, ADB could transfer knowledge through workshops, studies, technical assistance to support agriculture policy makers to better analyze impacts of the health or natural hazards on rural women and ethnic groups and the models of agriculture transformation that stimulate their access to the benefits of economic recovery.

C. Project Pipeline

113. The ANR sector project pipeline for 2021–2025 following consultations with the government is presented in Appendix 2. ADB operations will introduce innovations and new technologies, such as digital technology in agriculture, climate-smart agriculture value chains, climate-resilient water management and irrigation modernization, sustainable management of coastal forests and nature-based solutions, and climate-resilient infrastructure for ethnic minorities. A knowledge and support technical assistance funded by the Japan Fund for Poverty Reduction will strengthen institutional capacity for the implementation of the Master Plan on Socio-Economic Development of the Ethnic Minorities and Mountainous Areas in Viet Nam 2021–2030. More specifically, the technical assistance will strengthen the government's capacity to develop policies for implementing the master plan, identify livelihood opportunities and investments benefiting ethnic minorities and marginalized groups in the mountainous areas, and enhance coordination and systems to monitor strategic outcomes and progress of the master plan.

VII. APPENDICES

Appendix 1: Agriculture and Natural Resources Sector Problem Tree

Appendix 2: Matrix of Planned Projects for Viet Nam Country Partnership Strategy (2021-2025)

**MATRIX OF PLANNED PROJECTS FOR VIET NAM COUNTRY PARTNERSHIP STRATEGY
(2021–2025)**

Project name	Preparation status	Total	Planned Processing (\$ million)				
			2021	2022	2023	2024	2025
Climate-Resilient Inclusive Infrastructure for Ethnic Minorities Project I	Approved on 25 August 2021	60	60				
Climate Adaptation Through Irrigation Modernization Sector Project	Project proposal approved in February 2021	70		70			
Climate-Adaptative Integrated Flood Risk Management Project	Project proposal approved in January 2021	200		200			
Climate-Smart Agriculture Value Chain Infrastructure Project	Project proposal resubmitted to the Ministry of Planning and Investment for approval	183				183	
Climate-Resilient Inclusive Infrastructure for Ethnic Minorities Project II	Fact-finding mission scheduled in November 2021						
		60		60			
Climate-Resilient Inclusive Infrastructure for Ethnic Minorities Project III	Investment Policy Paper under preparation	60			60		
Climate-Resilient and Green infrastructure for Ethnic Minorities Project	Project proposal under preparation	213					213
Essential infrastructure for Agri transformation in the Mekong Delta	Project proposal under preparation	170					170
Restoration and Sustainable Management of Coastal Forests in the Mekong Delta	Project proposal under preparation	50			50		
Nam Dinh Climate-Resilient Water Management Project	Project proposal under preparation	53			53		
Total		1,119	60	330	163	183	383

Source: Asian Development Bank.