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MARCH 2025

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ELECTRIFYING JOURNEYS

E-mobility Transition in Viet Nam

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS AND ACRONYMS

2W	Two-wheeler
ASEAN	Association of Southeast Asian Nations
AUM	Assets under management
BAU	Business-as-usual
BPS	Basis points
BTM	Behind-the-meter
CAGA	Compound annual growth rate
CIF	Cost, insurance, and freight
CIT	Corporate Income Tax
CO2eq	Carbon dioxide equivalent
COVID-19	Coronavirus disease-19
CPI	Consumer Price Index
DPPA	Direct power purchase agreement
E-mobility	Electric mobility
E-PC	Electric passenger car
EV	Electric vehicle
E-2W	Electric two-wheeler
EVCI	Electric vehicle charging infrastructure
EVN	Viet Nam Electricity
FDI	Foreign Direct Investment
FOB	Freight-on-board
FOLs	Foreign ownership limits
FX	Foreign exchange
GDP	Gross Domestic Product
GHG	Greenhouse gas
GSO	General Statistics Office
GVC	Global Value Chain
HNX	Ha Noi Stock Exchange
HOSE	Ho Chi Minh Stock Exchange
kWh	Kilowatt hours
ICE	Internal combustion engine
IMF	International Monetary Fund
IPI	Industrial Production Index
IPO	Initial Public Offerings

LF	Labor force
LHS	Left-hand scale
LUR	Land Use Rights
MoF	Ministry of Finance
MPI	Ministry of Planning and Investment
NAV	Net Asset Value
NDC	Nationally Determined Contribution
NPL	Non-Performing Loan
NSA	Not Seasonally Adjusted
OMO	Open market operation
PC	Passenger car
PDP8	Viet Nam's Eighth National Power Development Plan
PIT	Personal Income Tax
PM	Particulate matter
PM10	Particulate matter 10 microns
PMI	Purchasing Managers Index
Q/q	Quarter-over-quarter
RHS	Right hand side
RoK	Republic of Korea
SBV	State Bank of Viet Nam
SOE	State-owned enterprise
SSC	State Securities Commission
2W	Two-wheeler
4W	Four-wheeler
TW	Terawatt
TWH	Terawatt hours
UPCOM	Unlisted Public Company Market
VAT	Value-Added Tax
VBMA	Viet Nam Bond Market Association
VND	Viet Nam Dong
VNX	Viet Nam Exchange
WB	World Bank
WBG	World Bank Group
Y/y	Year-over-year
YTD	Year-to-date

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EXECUTIVE SUMMARY

Recent Economic Developments

Growth accelerated in 2024 driven by a strong rebound in exports

Viet Nam's real GDP growth reached 7.1 percent in 2024, driven by a strong rebound in exports, outpacing most regional peers. External demand strongly rebounded in 2024 after a contraction in 2023. Final consumption and investment growth also accelerated in 2024 reaching 6.6 and 7.2 percent, respectively, supporting the growth momentum. However, private consumption remained a moderate driver of aggregate demand relative to the region (54 percent of GDP compared to a median of 61.7 percent, respectively) as household savings increased amid heightened uncertainty in recent years.

Trade strongly rebounded in 2024, driven by the global technology upcycle. Total exports grew 15.5 percent in 2024, in stark contrast to a -2.5 percent contraction in 2023. Merchandise export growth reached 14 percent by the end of 2024, driven by strong electronics exports - in particular computers. Merchandise exports grew strongly during January-August, before stabilizing over September-December 2024. Reflecting the high import content of Viet Nam's exports, import growth mirrored this rebound, reaching 16.5 percent by December 2024.

Manufacturing led the recovery of output, investment and jobs

Manufacturing output accelerated in response to buoyant external demand. Manufacturing production in Viet Nam registered a 9.8 percent growth in 2024, up from 3 percent in 2023, with a sharp acceleration in the first six months. However, manufacturing growth softened in the second half of 2024 as external demand softened and typhoon Yagi disrupted production in the northern industrial zones and led to some supply chain and logistics delays in September. The electronics, motor vehicles, and machinery registered the largest increases in production.

Private investment growth also picked up in 2024 with total investment reaching near pre-pandemic growth rates. Total investment registered 7.2 percent growth in 2024 in real terms, up from 4.1 percent in 2023, but slightly below the pre-COVID average of 7.5 percent in 2019. Private investment drove the acceleration, contributing 62 percent to total investment growth in 2024, but below its 80 percent contribution in 2019. Foreign investment registered the highest growth in 2024 (10.6 percent), reaching US$38.2 billion in commitments by year-end supported by an uptick in manufacturing investment (67 percent of total FDI commitments). Meanwhile, public sector investment growth eased in 2024 to 3.5 percent compared to

19.3 percent in 2023, when the 2022–23 post-pandemic fiscal stimulus package was implemented.

Labor market conditions improved as manufacturing job creation recovered

Formal employment remained stable, yet small improvements in underemployment contrasted with persistently high youth unemployment. There were 52.1 million Vietnamese employed by December 2024, adding about 550,000 workers over the last 12 months (GSO). Labor force participation and formal unemployment remained relatively stable at 68.5 and 2.2 percent in 2024, respectively, while underemployment rates lowered at 1.7 percent at the end of 2024 (-0.3 pp from the same period in 2023) suggesting greater labor utilization. However, youth unemployment rose, reaching 8 percent by end–2024, from 7.6 percent the previous year.

Manufacturing employment growth ticked up to 3.4 percent (y/y) by November 2024 from a low base (-2.3 percent (y/y) a year earlier), marked by a rebound in machinery jobs. The surge in manufacturing employment in 2024 was mostly underpinned by job creation for machinery production (8.6 percent (y/y) in November 2024 compared to -11.6 percent in the same period in 2023). In contrast, employment in other manufacturing sectors had already recovered starting H2-2023 and eased in 2024, including in the textile sector – a traditional harbor of manufacturing employment. Manufacturing output continued to grow at a faster rate than employment in 2024, reflecting potential for increased labor utilization and productivity.

Household consumption remained stable amid positive wage growth and nascent property sector recovery

Private consumption remained stable, but below pre-pandemic rates as low consumer confidence dampened sales of durable and non-essential goods. Retail sales grew 9.3 percent (y/y) by Q4–2024, stable from 2023, but below a pre-pandemic average of 11.6 percent, despite a 2-percentage point reduction in VAT to 8 percent throughout 2024. Consumer confidence was impacted by the slow real estate recovery and rising inflation in H1-2024, which dampened demand for non-essential goods and services. As a result, private consumption of goods remained relatively weak compared to consumption of services such as accommodation and catering (11.5 percent growth y/y) or tourism (16 percent y/y), that benefited from a rebound in tourist entries.

Amid improved labor market conditions and public sector wage hikes, real income grew modestly after 2023's headwinds but has not translated into higher private consumption. The average income of employees reached VND8.2 million/month (US$326) in December 2024, growing on average in 2024 by 8.6 percent in nominal terms and 4.8 percent in real terms, below pre-pandemic levels. Income growth has not fully translated into domestic consumption, instead contributing to higher gross savings rate, which reached 37.2 percent in 2024 compared to 33.6 percent in 2023, according to CEIC.

The balance of payment deficit widened to 2.3 percent of GDP as the current account surplus was offset by capital outflows

The current account surplus shrank in the first 9 months of 2024, compared to the same period in 2023, due to a rising services deficit. The merchandise trade registered a surplus of 10.6 percent of GDP in 9M–2024, comparable to 10.8 percent in the same period of 2023, after a rebound of exports. The services account deficit widened to 2.9 percent of GDP in 9M–2024, from 2.1 percent a year earlier, due to growing trade services imports (US$14.6 billion, 40 percent of total services imports). Net income outflows remained stable at 2.3 percent of GDP in 9M-2024. Overall, the current account surplus reached US$17.5 billion, or 5.4 percent of GDP in 9M–2024, down from US$19.6 billion or 6.3 percent of GDP in 9M–2023.

Steady FDI inflows were offset by large capital outflows. FDI remained large at 4.1 percent of GDP in 9M–2024 comparable to 2023 (4.6 percent of GDP in 9M–2023), thanks to foreign investors' continued confidence in Viet Nam's economic prospects and the ongoing relocation of supply chains across the region. However, large capital outflows amid continued interest rate differentials led to a financial account deficit of 2.5 percent of GDP in 9M–2024 (-2.1pp), rising from 0.4 percent in 9M–2023. Overall, the balance of payments turned negative at -2.3 percent of GDP in 9M–2024 (compared to a surplus of 1.0 percent of GDP in 9M–2023) with the current account surplus offset by financial outflows, and unrecorded capital outflows of US$16.9 billion (-5.2 percent of GDP, up from -4.9 percent in 9M–2023).

Monetary policy remained accommodative, focused on foreign exchange interventions

The State Bank of Viet Nam (SBV) intervened to reduce depreciation pressures on the VND via sales of reserves and open market operations (OMOs). The VND depreciated by 4.4 percent (y/y) against the US$ by December 2024, with an exchange rate of VND25,333. Depreciation pressures pushed the exchange rate close to the +/- 5 percent band set by the SBV. In response, the SBV intervened by selling foreign reserves worth US$9.4 billion in 2024, drawing down current reserves to about 2.5 months of imports by Q3-2024, from 3.1 months a year earlier. The SBV also withdrew liquidity by using OMOs and issuing T-bills (worth 82.4 trillion VND and 60.8 trillion VND, respectively). As a result, the overnight interbank rate rose to 4.04 percent (y/y) by December 2024, easing pressure on the local currency.

Credit growth picked up during 2024, reaching the government's target of 15 percent by the end of the year. Credit growth increased in the second half of the year, driven by wholesale and retail trade, manufacturing, and real estate. Credit growth ceilings in recent years have provided an incentive for banks to extend credit to maintain their quotas, creating bunching by year end. These efforts to meet the credit ceiling could create inefficiencies by allocating resources to unproductive activities and distorting asset prices. However, in 2024, the SBV started to introduce a more flexible approach to its credit growth caps, allowing selected banks with a strong capital base to expand loan bases beyond the predetermined indicative

cap without having to seek approval for additional credit if they reached 80 percent of their limit by August.

Despite a significant public sector wage hike, under-disbursement of public investment led to fiscal tightening

After a large 2023 fiscal stimulus, under-disbursement of public investment and reduced recurrent expenditures led to fiscal tightening in 2024, with the fiscal account registering a surplus of 1.8 percent of GDP. Current expenditure reached 11.3 percent of GDP, compared to 12.4 percent in 2023. Disbursement of public investment is estimated at 4.6 percent of GDP in 2024 (7.1 percent in 2023) corresponding to 77.5 percent of the prime minister's approved budget as end of December 2024. Planned annual savings in recurrent expenditures are earmarked to finance the civil service salary reform agenda, including a substantive wage bill increase from July 1, 2024 (on average, 30 and 15 percent increases in salary base and pensions, respectively).[1] Slow capital disbursement was attributed to delays in land clearance and compensation for major national highway projects, scarcity of backfill materials (stone and sand), and fluctuating prices of raw materials. In addition, regulatory hurdles and lengthy approval procedures continued to slow implementation of public investment projects.

Electricity intensity of GDP increased

Power generation and sales growth rates outpaced GDP growth, increasing electricity intensity of production. In 2024, Viet Nam's electricity sales grew by 9.2 percent, while power generation climbed by 10 percent. Electricity sales and GDP growth have historically been highly correlated as large economic sectors are electricity intensive, such as manufacturing production. However, in 2024, electricity sales outpaced economic growth, increasing the energy intensity of GDP to 590 kWh per US$1,000 from 579 kWh per US$1,000 in 2023, its highest level since 2015. This reversed recent decoupling between electricity usage and GDP growth in 2022 and 2023 during the post-pandemic recovery. Increased electricity intensity was driven by increased industrial electricity usage due to a shift towards electricity-intensive sectors such as steel, aluminum, rubber and plastics, and chemicals. Electricity demand is expected to rise rapidly in the coming years due to the contribution of new demand segments such as electric vehicles (EVs) (see special topic of this edition).

[1] Decree No. 73/2024/ND-CP (June 30, 2024) on prescribing statutory pay rate and bonus policies for officials, public employees, and armed forces.

Outlook and Policy Implications

Viet Nam's GDP growth is forecast to moderate to 6.8 percent in 2025 before settling at 6.5 percent in 2026 (Table 0.1). The rebound in exports in 2024 is expected to ease in 2025 and further into 2026 due to projected economic slowdown in China and the United States in the near-term - Viet Nam's largest trade partners – and uncertain global trade prospects from shifts in trade policy. Domestic activities and services are expected to continue to firm up in 2025 and into 2026 as the real estate market recovery gathers steam.

The outlook for Viet Nam remains positive but with heightened uncertainties. Given Viet Nam's openness to the global economy, the main uncertainty stems from slower-than-expected global growth and trade disruptions, particularly among major trading partners such as the United States, European Union, and China. Such developments, including heightened uncertainties from trade policy shifts and deepening trade fragmentation, could impact Viet Nam's manufacturing exports, industrial production, and growth. On the other hand, increased public investment could further support demand and contribute to growth. An accelerated recovery in the real estate market thanks to faster project clearance could further boost domestic demand.

Table 0.1. Selected economic indicators, Viet Nam 2021–26

Indicator	2021	2022	2023	2024e	2025f	2026f
GDP growth (%)	2.6	8.0	5.0	7.1	6.8	6.5
Growth of expenditure components						
Private consumption	2.0	7.8	3.5	6.6	7.1	7.3
Public consumption	4.7	3.6	4.9	4.5	4.5	4.4
Investment	3.7	5.8	4.1	7.3	8.4	8.1
Exports	13.9	4.9	-2.5	15.5	12.1	5.5
Imports	15.8	2.2	-4.3	16.1	12.7	6.3
Consumer Price Index (average, %)	1.8	3.1	3.3	3.5	3.5	3.5
Current account balance (% of GDP)	-2.2	0.3	6.1	1.9	1.8	1.7
Fiscal balance (*) (% of GDP)	-1.4	0.7	-2.4	1.8	-1.4	-1.0
Public & publicly guaranteed debt (**) (% of GDP)	42.5	37.1	36.0	35.6	34.2	32.4

Source: GSO; MoF; SBV; IMF; and World Bank staff calculations.

Note: e = estimate; f = forecast,*: excluding unallocated expenditures and following Government Finance Statistics (GFS),**: calculated based on the approved fiscal plan for 2025 and three-year fiscal plan for 2025–27.

Policies to support growth should focus on expanding public investments, mitigating financial sector risks, building energy resilience, and engaging in structural reforms. First, while the economy is projected to register robust growth in 2025-2026, existing infrastructure gaps call for greater investments. Existing fiscal space and optimized public investment management could provide resources essential for these projects to secure sustainable growth dynamics for the medium to long term, particularly in the energy, logistics and transport sectors. Second, building on recent reforms, further steps to mitigate financial sector risks and vulnerabilities remain crucial. The authorities could encourage banks to improve capital adequacy ratios and strengthen the institutional framework and SBV mandate for prudential supervision (including to detect and address issues arising from affiliation of banks with business groups) and early interventions (early identification of problems and crisis prevention). Third, building energy resilience can mitigate supply risks that could constrain growth. Operationalizing targets set out in the National Energy Efficiency Plan (VNEEP 3) would improve industry productivity and reduce energy intensity. Avoiding delays in the development of planned generation capacity and licensing will be key for ensuring energy security. Improving pricing and procurement framework would also ensure that the planned increase of renewable generation capacity are met. Finally, structural reforms are crucial to sustain long-term growth, including strengthening the regulatory environment in critical backbone services, greening the economy, building human capital and deepening trade integration and integration of the domestic private ecosystem into global value chains.

Special Focus: E-mobility transition

Viet Nam has set ambitious goals to decarbonize its economy by 2050. At the United Nation's Climate Change Conference in Glasgow in November 2021 (COP26), the Prime Minister of Viet Nam made an ambitious pledge to achieve economy-wide net zero emissions by 2050, which set into motion plans to decarbonize the transportation sector.

The energy sector is the biggest contributor to GHG emissions, of which transport is a main driver. Without decarbonation, this share would rise significantly with the rapid increase in car use. The transport sector in Viet Nam accounted for about 32.9 million tons of carbon dioxide equivalent (MtCO2eq) in 2021, or 7.2 percent of total economy-wide GHG emissions, the majority of which are generated from road transport. Although car ownership remains a luxury for most Vietnamese today, a growing middle class is fueling auto sales at a compounded average growth rate of 15 percent between 2010 – 2022, among the fastest in the region. Viet Nam is well positioned to benefit from its nascent car motorization and leapfrog over traditional cars and into EVs.

E-mobility transition in Viet Nam would also require the transition of the two-wheeler (2W) segment to electric 2Ws (E-2Ws) given

that they will remain the dominant vehicle choice until 2035. In 2022, the registered 2Ws in Viet Nam reached 72.16 million (ca. 94 percent of the total registered vehicles stock). This represents a motorization rate of close to 518 units of 2Ws per 1,000 population – in sharp contrast to the rate for passenger cars (PCs) at about 22 units per 1,000 population. E-Mobility transition will be driven by the uptake of electric 2Ws (E-2Ws), as it has been since 2014.

Moving towards electric mobility also represents significant economic opportunities. To achieve the EV uptake targets, EV sales in Viet Nam need to increase from 500,000 units in 2022 to about 1.5 million units by 2030, and 7.3 million by 2050. Cumulatively, this represents a market demand for EVs of all kinds of more than 7 million between 2024-2030, and 71 million between 2031-2050. Domestic EV market evolution is expected to yield significant growth in the entire EV value chain including vehicle and battery production as well as charging infrastructure. Additional demand is also expected for the fields of EV maintenance and recycling, opening up the labor market for new competent positions. Reaching e-mobility transition is estimated to generate up to 6.5 million new jobs cumulatively over 2050 across the EV Value Chain, of which 61 percent from the EV charging infrastructure industry.

A set of recommendations were developed to help the Government of Viet Nam achieve its targets for E-mobility transition. The targets set under the Decision 876/QD-TTg related to transitioning the road transportation sector towards electric mobility (E-Mobility) using electric vehicles (EVs) – to have 50 percent of urban vehicles and 100 urban buses and taxi to be powered by electricity or green energy by 2030, and subsequently reach to 100 percent for all road vehicles by 2050. The recommendations include:

- **Establish a cross-ministerial governing body** for steering the E-mobility across the EV ecosystem throughout the transition period.
- **Encourage the update of EVs across all vehicle categories** by addressing existing gaps and concerns and providing future incentives including via the development of charging infrastructure.
- **Prepare the power sector for upcoming EV charging impact** by (i) integrating projected EV charging impact to the power system in the next power development planning update (ii) increase the investment planned for power generation supply incorporating EV charging demand (iii) increase investment for power network capacity for transmission and distribution (iv) promote smart charging by introducing differentiated electricity tariffs, encouraging the installation of smart chargers for off-peak charging and encouraging the development of behind-the-meter rooftop solar at public charging stations.
- **Promote transport demand modal shift** (i) from personal car to public mass transit and from intercity commercial buses to railways; and (ii) from trucks to railway sand waterway transport for intercity freight transport.

CHAPTER 1

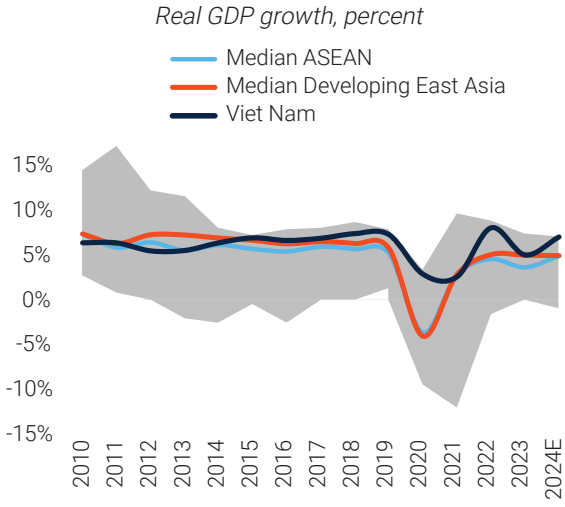
ECONOMIC DEVELOPMENTS AND PROSPECTS

1.1 Recent Economic Developments

Growth accelerated in 2024 driven by a strong rebound in exports

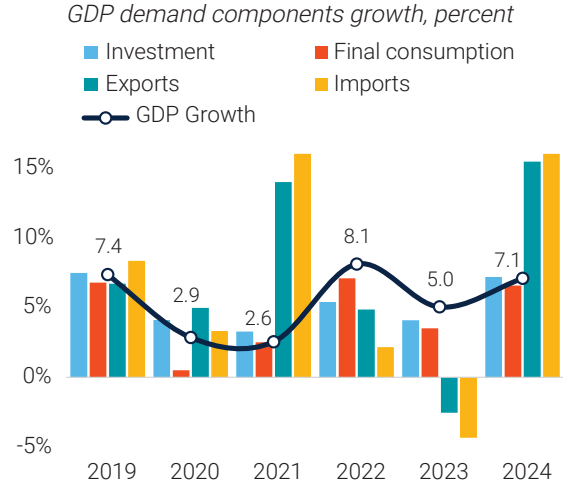
Viet Nam's real GDP growth reached 7.1 percent in 2024, driven by a strong rebound in exports, outpacing most regional peers. GDP growth is estimated to be the highest of developing countries in East Asia in 2024, including ASEAN countries, surpassing the government's target of 6–6.5 percent[2] (Figure 1.1). External demand weakened in 2023, leading to a trade contraction and a slowdown in GDP growth to 5 percent real GDP. This was followed by a sharp rebound in 2024 with exports and imports growing by 15.5 and 16.1 percent, respectively. Further, final consumption and investment growth accelerated in 2024 reaching 6.6 and 7.2 percent, respectively, also supporting growth momentum (Figure 1.2). However, private consumption remained a moderate driver of aggregate demand relative to the median in the region (54 percent of GDP compared to 61.7 percent, respectively) and has slowly declined as household savings increased amid heightened uncertainty in recent years (Figure 1.3).

Figure 1.1. Viet Nam was the fastest-growing developing economy in East Asia in 2024



Source: Haver Analytics, GSO and World Bank
Note: Shaded area shows range of GDP growth in Developing East Asia. GEP January 2025 projections and GSO for Viet Nam. Developing East Asian countries are Cambodia, China, Indonesia, Lao PDR, Myanmar, Malaysia, Mongolia, Philippines, Thailand, Viet Nam. ASEAN countries are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam.

Figure 1.2. GDP growth was driven by a strong rebound in exports



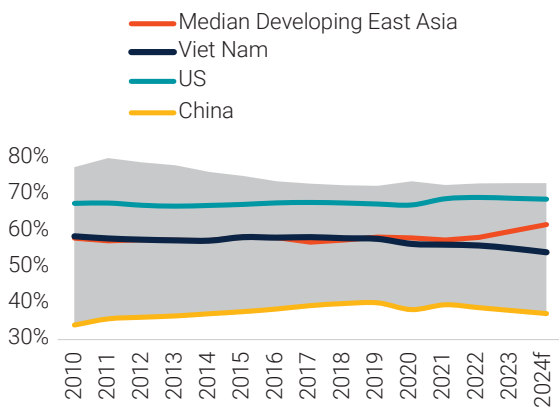
Source: GSO and World Bank calculations.

[2] Resolution No. 103/2023/QH15 on the plan for socio-economic development in 2024.

On the supply side, GDP growth was led by manufacturing, trade, and tourism. The industrial sector grew by 8.2 percent on average (Figure 1.4) and contributed 42 percent of GDP growth in 2024, with manufacturing production increasing by 9.8 percent driven by exports and contributing 32 percent of GDP growth (Figure 1.5). The services sector was a key contributor to economic activity (7.4 percent growth, 45.9 percent contribution to overall GDP growth). Service exports[3] in particular grew by 10.8 percent, the fastest of all services activities, contributing 8.7 percent of GDP growth. The hospitality sector[4] was also a strong performer (9.8 percent growth) on the back of tourism activities, recording 17.6 million foreign visitors in 2024 (a 39.5 percent increase compared to 2023). Meanwhile, real estate services recovered slowly, inching up 3.3 percent, up from 1.4 percent in 2023 but below growth rates prior to real estate turmoil in 2022 following the Saigon Commercial Bank (SCB) scandal.[5] The agriculture sector recorded a modest 3.3 percent growth, down from 3.8 percent in 2023 due to destructive Typhoon Yagi and other natural disasters disrupting agricultural production in northern provinces.

Figure 1.3. Private consumption remains a moderate driver of growth in Viet Nam

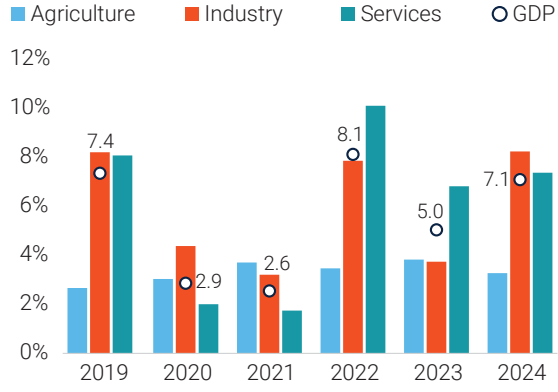
Private consumption, percent of GDP



Source: Haver Analytics, GSO and World Bank
Note: Shaded area shows range of private consumption in Developing East Asia. 2024 values based on GSO for Viet Nam, forecast for all series based on 2023 trends. Country list is provided under Figure 1.1.

Figure 1.4. GDP growth was led by industry and services

GDP supply components growth, percent (y/y)

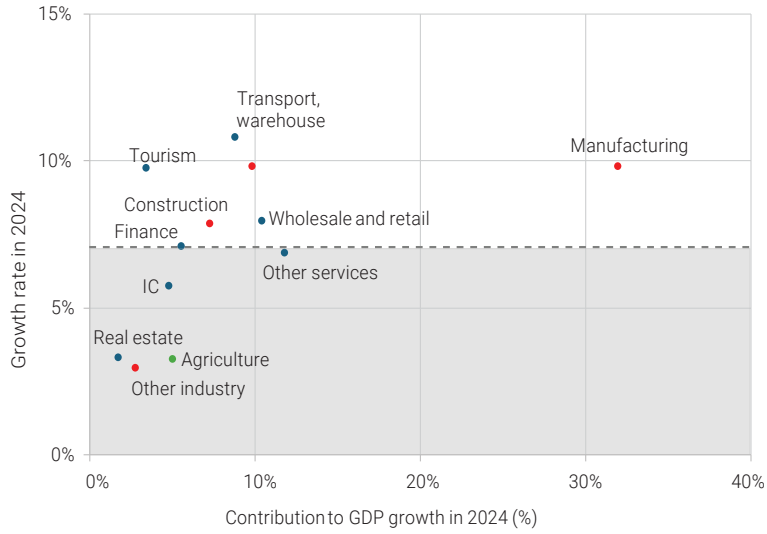


Source: Haver Analytics, GSO and World Bank

[3] Represents transport and warehouse activities.
[4] Represents accommodation and catering services.
[5] The case of alleged corporate bond issuance fraud by Van Thinh Phat real estate group, associated with Saigon Commercial Bank, eroded confidence in bank and corporate bonds, especially those issued by real estate companies.

Figure 1.5. Export-oriented manufacturing and services drove GDP

Sectoral growth and contribution to GDP, (%)

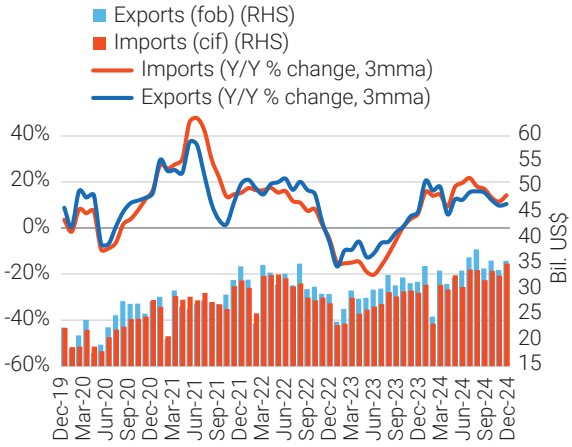


Source: GSO and World Bank staff calculations
Note: Colored dots represent sectors (red=industry, blue=services, green=agriculture). Tourism services refer to accommodation and food services.

Trade rebounded strongly in 2024, driven by the global technology upcycle. Total exports grew 15.5 percent in 2024, in stark contrast to a -2.5 percent contraction in 2023 caused by a slowdown in global trade volumes (Figure 1.6). Merchandise export growth reached 14 percent by the end of 2024, driven by strong electronics exports - in particular computers (Figure 1.7). Merchandise exports grew strongly during January-August, before stabilizing from September to December 2024. Reflecting the high import content of Viet Nam's export, import growth reached 16.5 percent by December 2024. Consequently, robust trade balance recorded a surplus of US$24 billion (5.0 percent of GDP) for merchandise trade, though lower than in 2023 (US$28.4 billion).

Figure 1.6. Merchandise trade continued to recover since 2023

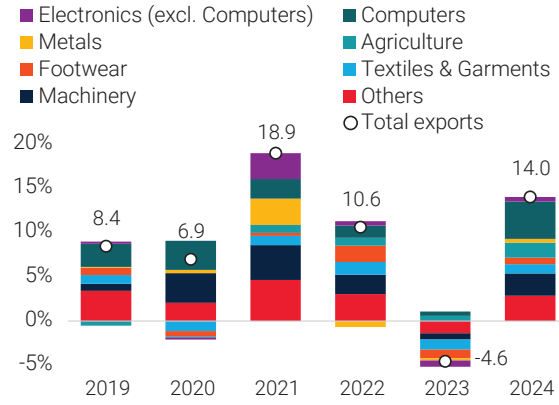
Exports and imports of goods, (% and US$ bn)



Source: Haver Analytics and World Bank staff calculations
Note: fob = free/freight on board and cif = Cost, insurance, and freight RHS = right hand side

Figure 1.7. Merchandise exports growth driven by strong electronics exports

Export by products, (percentage points, y/y)



Source: Haver Analytics and World Bank staff calculations
Note: Electronics consist of computers and electric products, phones, and cameras

Manufacturing led the recovery of output, investment and jobs

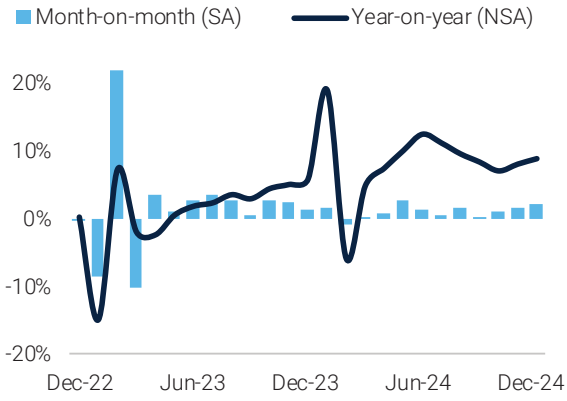
Manufacturing output accelerated in response to buoyant external demand. Manufacturing production registered a 9.8 percent growth in 2024, up from 3.0 percent in 2023, with a sharp acceleration in the first six months (Figure 1.8). However, manufacturing growth softened in the second half of 2024 as external demand softened and typhoon Yagi disrupted production in the northern industrial zones and led to some supply chain and logistics delays in September. The electronics, motor vehicles,[6] and machinery registered the largest increases in production (Figure 1.10). The Purchasing Managers Index (PMI), capturing new orders, also displayed similar dynamics as production, rising sharply in H1–2024 above 50 to show expansionary manufacturing production,[7] before contracting in September and ending the year in contractionary territory as firms scaled backed employment and inventories (Figure 1.9).

[6] The majority of motor vehicle production is serving the domestic market. About 60 percent of total car sales were domestically assembled, according to the Viet Nam Automobile Manufacturer's Association (VAMA). Additionally, Viet Nam is a major manufacturer of, and domestic market for, motorbikes, with 3.1 million units produced and 2.9 million units sold (GSO).

[7] The PMI is an indicator of manufacturing orders based on surveys of manufacturing firms' purchasing managers. The IPI is an index of manufacturing production capacity based on the level of industrial output.

Figure 1.8. Robust manufacturing production in 2024

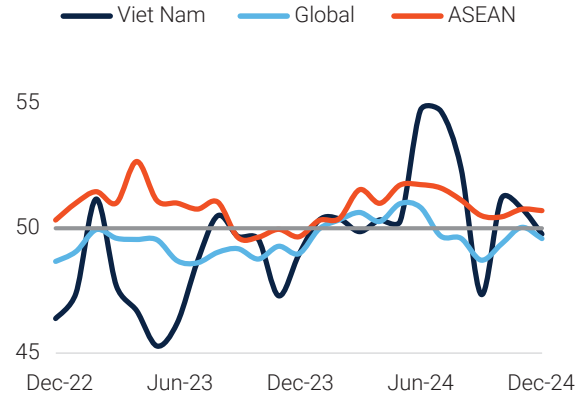
Industrial production growth, percent



Source: Haver Analytics and World Bank staff calculations
Note: SA = seasonally adjusted; NSA = not seasonally adjusted

Figure 1.9. PMI showcased similar dynamics as production

Manufacturing PMI index (SA, 50+ = Expansion)



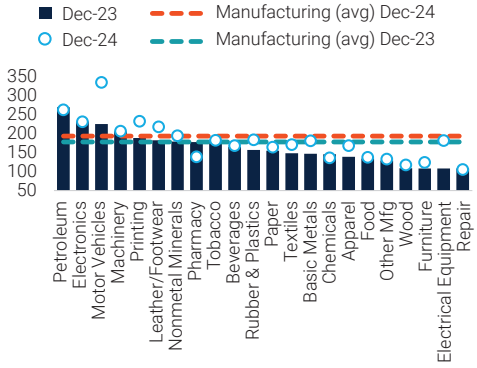
Source: Haver Analytics and World Bank staff calculations
Note: SA = seasonally adjusted

Manufacturing employment growth ticked up to 3.4 percent (y/y) by November 2024 from a low base (-2.3 percent (y/y) a year earlier), marked by a rebound in machinery jobs. In contrast to falling manufacturing employment as export growth stalled a year earlier, in 2024 the surge in manufacturing employment was mostly underpinned by job creation for machinery production (8.6 percent (y/y) in November 2024 compared to -11.6 percent in the same period in 2023) (Figure 1.11). In contrast, employment in other manufacturing sectors had already recovered starting H2-2023 and eased in 2024, including in the textile sector – a traditional harbor of manufacturing employment. Manufacturing output continued to grow at a faster rate than employment in 2024. Manufacturing output growth reached 10.0 percent (y/y) in November 2024 compared to 3.4 percent (y/y) for manufacturing employment. This reflects the lagged recovery of manufacturing employment, potential for increased labor utilization, and/or productivity.[8]

[8] Labor productivity measures are not available at monthly or quarterly frequency. In 2023, labor productivity in manufacturing – as measured by output per number of employed workers – climbed by 2.4 percent, representative of VND204.2 million per worker (US$8,000). Labor productivity has historically been low in Viet Nam compared to regional peers, such as Indonesia, the Philippines and Thailand.

Figure 1.10. Manufacturing production driven by electronics, motor vehicles and machinery

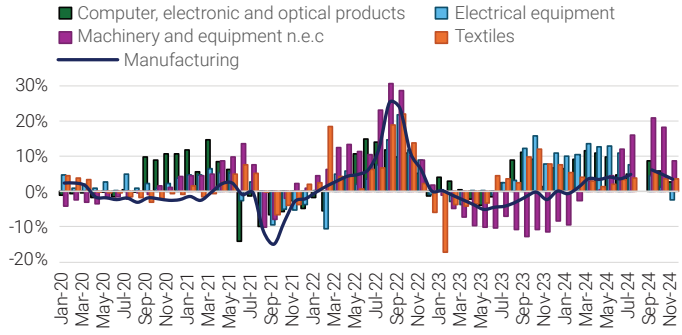
Manufacturing sub-sector growth, index 2015=100



Source: GSO and World Bank staff calculations

Figure 1.11. Manufacturing employment growth marked by rebound in machinery jobs

Sectoral employment growth, percent (y/y)



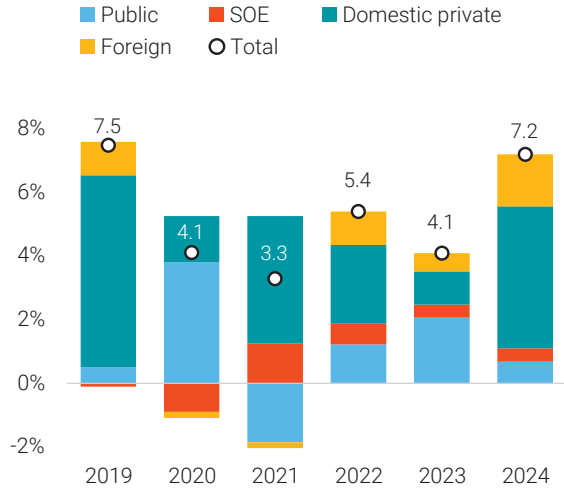
Source: GSO and World Bank staff calculations
Note: Employment is the number of active workers in industrial firms on the first day of the month. Output is the IPI. Missing value for August 2024

Private investment growth accelerated in 2024 with total investment reaching near pre-pandemic growth rates (Figure 1.12). Total investment registered 7.2 percent growth in 2024 in real terms, up from 4.1 percent in 2023, but slightly below the pre-COVID average of 7.5 percent in 2019. Private investment drove the acceleration, contributing 62 percent to total investment growth in 2024, but below its 80 percent contribution in 2019. Foreign investment registered the highest growth in 2024 (10.6 percent), reaching US$38.2 billion in commitments by year-end supported by an uptick in manufacturing investment (67 percent of total FDI commitments) (Figure 1.13). Meanwhile, public sector investment[9] growth eased in 2024 to 3.5 percent compared to 19.3 percent in 2023, when the 2022–23 post-pandemic fiscal stimulus package was implemented.

[9] Including State-Owned Enterprise investment.

Figure 1.12. Private investment propelled acceleration in total investment

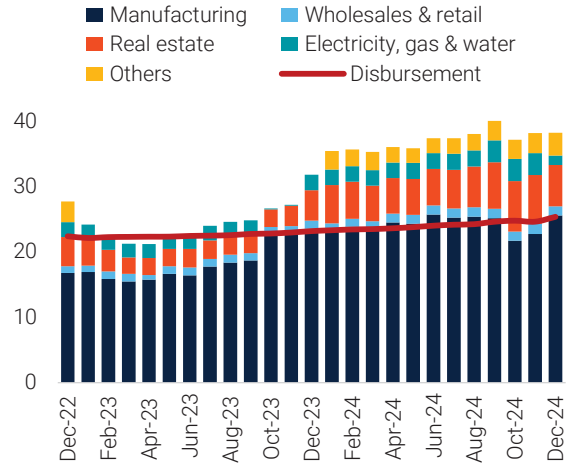
Investment growth, percent (y/y)



Source: GSO and World Bank staff calculations
Note: Real investment growth contribution is calculated by using the growth rate of real total investment from GDP demand component and assuming the same contribution percentage in nominal investment

Figure 1.13. FDI commitments increase largely directed to manufacturing sector

FDI commitments, 12 months cumulative-US$ billion



Source: MPI, Haver Analytics and World Bank staff calculations
Note: Dec-2024 indicates cumulative FDI over Jan-Dec 2024

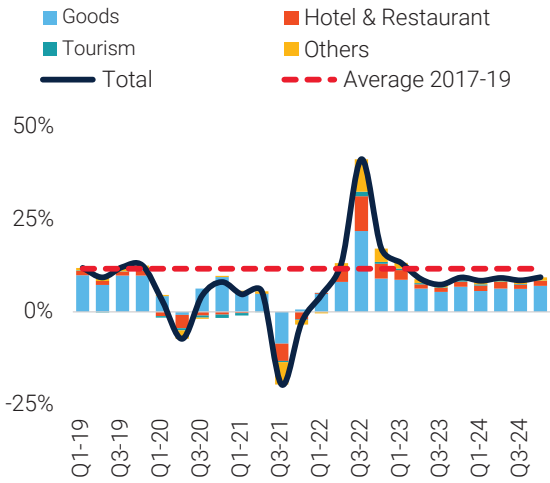
Household consumption remained stable amid positive wage growth and a nascent property sector recovery

Private consumption remained stable, but below pre-pandemic rates as low consumer confidence dampened sales of durable and non-essential goods. Retail sales grew 9.3 percent (y/y) by Q4–2024, stable from 2023, but below a pre-pandemic average of 11.6 percent (Figure 1.14), despite a 2-percentage point reduction in VAT to 8 percent throughout 2024. Consumer confidence was impacted by the slow real estate recovery and rising inflation in H1-2024, which dampened demand for non-essential goods and services. As a result, private consumption of goods remained relatively weak compared to consumption of services such as accommodation and catering (11.5 percent growth y/y) or tourism (16 percent y/y) that benefitted from a rebound in tourist entries. The lack of domestic demand was also highlighted as a primary factor impacting local firms in 2024 (Figure 1.15). At the same time, as a sign of a growing middle class, high-end purchases recently increased as evidenced by sales of 293,000 cars in 2024 (+24 percent y/y by Q4–24), including 10,000 hybrid vehicles[10] and increased demand for mid-range apartment units.[11]

[10] Viet Nam Automobile Manufacturers' Association.
[11] Some 6,700 Grade B units were sold in Ha Noi in Q3–2024, representing 98 percent of sales. Overall sales grew 226 percent (y/y).

Figure 1.14. Domestic consumption remained stable

Contribution to retail sales growth, percentage points



Source: GSO and World Bank staff calculations.

Figure 1.15. Weak domestic demand was reported as a key factor impacting business activities in Q4–2024

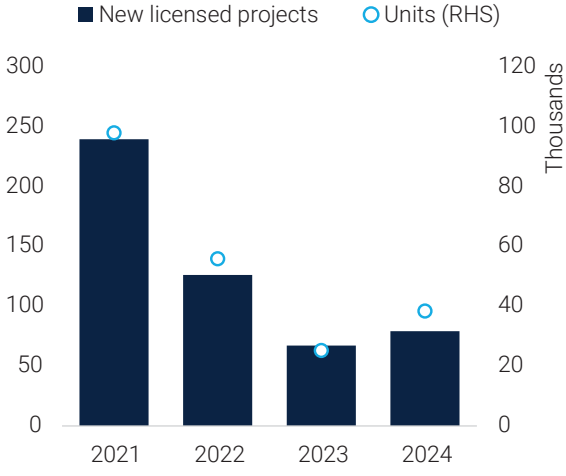
10 most important factors most affecting business activity (%)

Source: GSO - Quarterly business trend survey of Q4-24.

The real estate market is showing signs of recovery. The supply of newly licensed property projects and apartment units in 2024 was more robust than a year earlier, totaling 79 projects (+18 percent y/y) and 38,315 units (+52 percent y/y), but still below 2022's levels prior to real estate turmoil triggered by scandal-hit Saigon Commercial Bank (Figure 1.16A). More attractive mortgage rates for new loans bumped up the number of transactions by 24.2 percent (y/y) in 2024 from a low base in 2023 (Figure 1.16B).

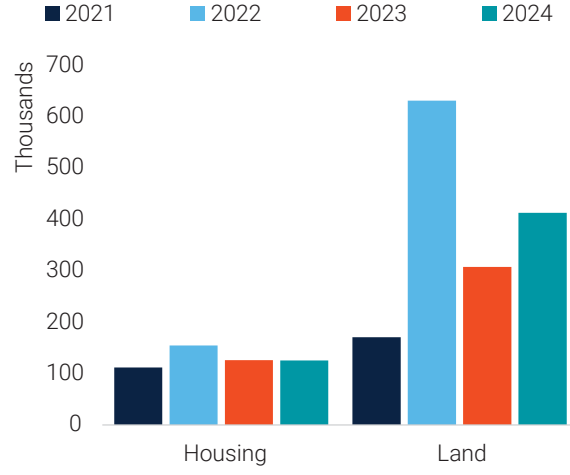
Figure 1.16. Real estate market shows signs of recovery

A. New licensed projects and units



Source: Ministry of Construction

B. Number of transactions



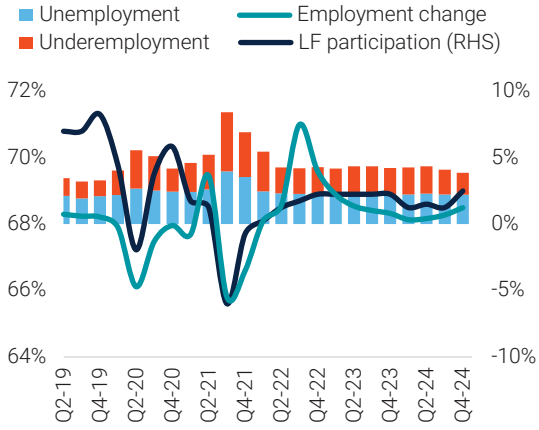
Source: Ministry of Construction

Formal employment remained stable, yet small improvements in underemployment contrasted with persistently high youth unemployment. There were 52.1 million Vietnamese employed by December 2024, adding about 550,000 workers over the last 12 months (GSO). Labor force participation remained relatively stable at 69 percent in December 2024 (Figure 1.17), but below 2019's 71.1 percent partly due to agricultural employment measurement and structural changes since the pandemic.[12] Unemployment remained stable at 2.2 percent in 2024, while underemployment rates lowered at 1.7 percent at the end of 2024 (-0.3 pp from the same period in 2023) suggesting greater labor utilization. However, youth unemployment rose, reaching 8 percent by end–2024, from 7.6 percent the previous year.

Amid improved labor market conditions and public sector wage hikes, real income grew modestly after 2023's headwinds but has not translated into higher private consumption. The average income of employees reached VND8.2 million/month (US$326) in December 2024, growing on average in 2024 by 8.6 percent in nominal terms and 4.8 percent in real terms, below pre-pandemic levels (Figure 1.18). Income growth has not fully translated into domestic consumption, instead contributing to higher gross savings rate, which reached 37.2 percent in 2024 compared to 33.6 percent in 2023, according to CEIC.

Figure 1.17. Formal employment remained stable

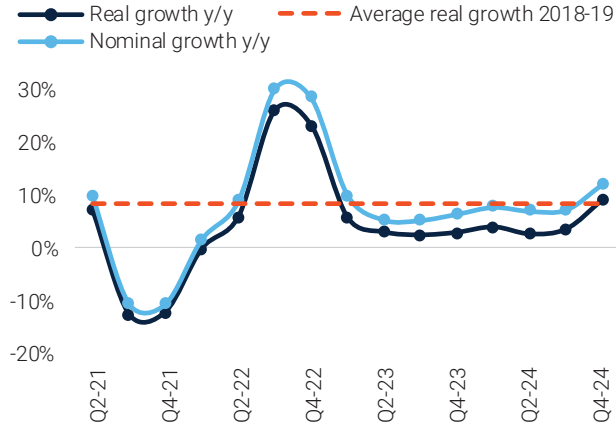
Employment market, percent



Source: GSO and World Bank staff calculations
RHS = right hand side

Figure 1.18. Income growth remained below pre-pandemic trends

Average monthly earnings of workers, percent



Source: GSO and World Bank staff calculations.

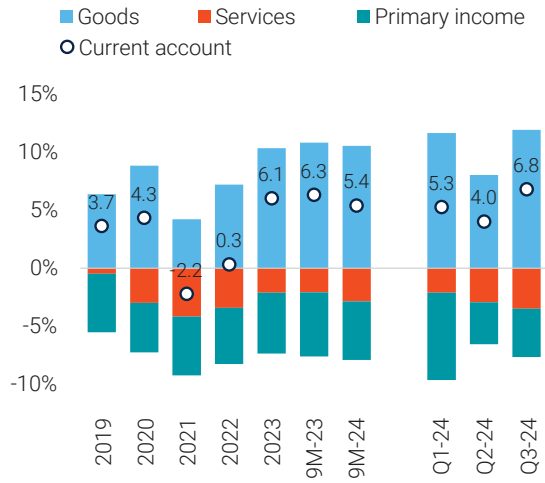
[12] A change in GSO survey definitions in 2021 means subsistence farmers are no longer categorized as being in the labor force, partly causing a shrinkage in the agricultural labor force by 1.8 million between 2020–21. Labor force growth has also reduced across all sectors compared to pre-pandemic periods (see World Bank Poverty and Equity Update 2024 for more details).

The balance of payment deficit widened as the current account surplus was offset by capital outflows

The current account surplus shrank in the first 9 months of 2024, compared to the same period in 2023, due to a rising services deficit. The merchandise trade registered a surplus of 10.6 percent of GDP in 9M–2024, comparable to 10.8 percent in the same period of 2023, after a rebound of exports. The services account deficit widened to -2.9 percent of GDP in 9M–2024, from -2.1 percent a year earlier, due to growing trade services imports (US$14.6 billion, 40 percent of total services imports). Primary income net outflows increased to 5.0 percent of GDP in 9M–2024 from 5.5 percent 12 months earlier, while secondary net income inflows declined to 2.8 percent of GDP, down 3.1 percent in 9M–2023, as a sign of lowering remittances. Together, net income outflows remained stable at 2.3 percent of GDP in 9M-2024. Overall, the current account surplus reached US$17.5 billion, or 5.4 percent of GDP in 9M–2024, down from US$19.6 billion or 6.3 percent of GDP in 9M–2023 (Figure 1.19).

Figure 1.19. Current account lowered due to rising services deficit

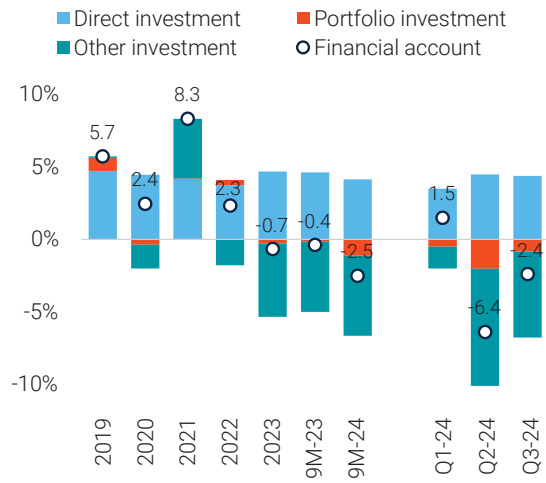
Current account, percent of GDP



Source: SBV and World Bank staff calculations
Note: Annual GDP for 2019–23, and quarterly GDP for 2024 as denominator.

Figure 1.20. Rising financial account deficit driven by higher net outflows

Financial account, percent of GDP

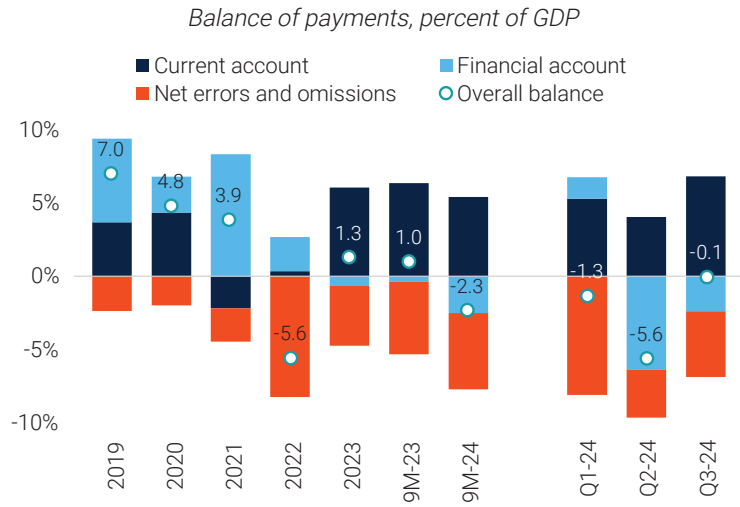


Source: SBV and World Bank staff calculations
Note: Annual GDP for 2019–23, and quarterly GDP for 2024 as denominator.

Steady FDI inflows offset by large capital outflows led to an increased financial account deficit and a negative balance of payments. FDI remained large at 4.1 percent of GDP in 9M–2024 comparable to 2023 (4.6 percent of GDP in 9M–2023), thanks to foreign investors' continued confidence in Viet Nam's economic prospects and the ongoing relocation of supply chains across the region. However, large capital outflows amid continued interest rate differentials led to the financial account deficit of -2.5 percent of GDP in 9M–2024 (-2.1pp) (Figure 1.20), rising from -0.4 percent in 9M–2023. Overall, the balance of payments turned negative at -2.3 percent of GDP in 9M–2024 (compared to a surplus

of 1.0 percent of GDP in 9M–2023) with the current account surplus offset by financial outflows and unrecorded capital outflows (registered as net errors and omissions) of US$16.9 billion (-5.2 percent of GDP, up from -4.9 percent in 9M–2023). (Figure 1.21).

Figure 1.21. Balance of payments turned negative with the current account surplus offset by financial outflows and unrecorded capital outflows



Source: SBV and World Bank staff calculations
Note: Annual GDP for 2019–23, and quarterly GDP for 2024 as denominator.

Monetary policy remained accommodative, while intervening to contain FX pressures

The State Bank of Viet Nam (SBV) intervened to reduce depreciation pressures on the VND via sales of reserves and open market operations (OMOs). The VND depreciated by 4.4 percent (y/y) against the US$ by December 2024, with an exchange rate of VND25,333. Depreciation pressures pushed the exchange rate close to the +/- 5 percent band set by the SBV (Figure 1.22). In response, the SBV intervened by selling foreign reserves worth US$9.4 billion in 2024, drawing down current reserves to about 2.5 months of imports by Q3-2024, from 3.1 months a year earlier (Figure 1.23). The SBV also withdrew liquidity by using OMOs and issuing T-bills (worth 82.4 trillion VND and 60.8 trillion VND, respectively[13]). As a result, the overnight interbank rate rose to 4.04 percent by December 2024 (Figure 1.24), easing pressure on the local currency.

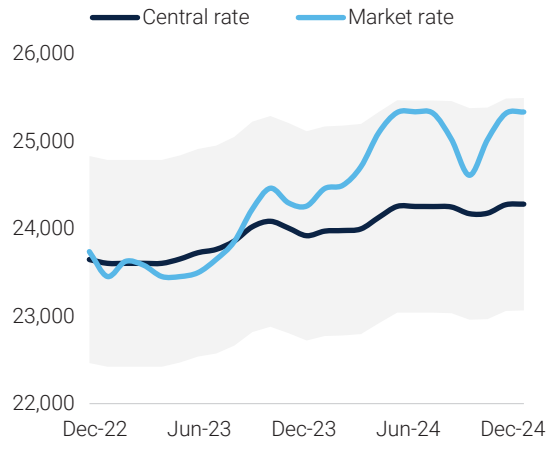
The monetary policy stance has remained accommodative. The SBV has maintained its policy rates (refinancing and discount rates) at 4.5 and 3.0 percent, respectively, unchanged and at record-low levels[14] since June 2023 (Figure 1.24). This accommodative stance supported the economic rebound,

[13] Source: Fiingroup
[14] With the exception of the COVID-19 pandemic support period.

with a real policy rate close to zero. In addition, the SBV used a series of instruments such as OMOs, caps on deposits and lending, credit growth ceilings, and foreign exchange interventions to control inflation, support economic growth and ensure macro-economic stability, including variations in the exchange rate.

Figure 1.22. Continued pressure on the exchange rate led to depreciation

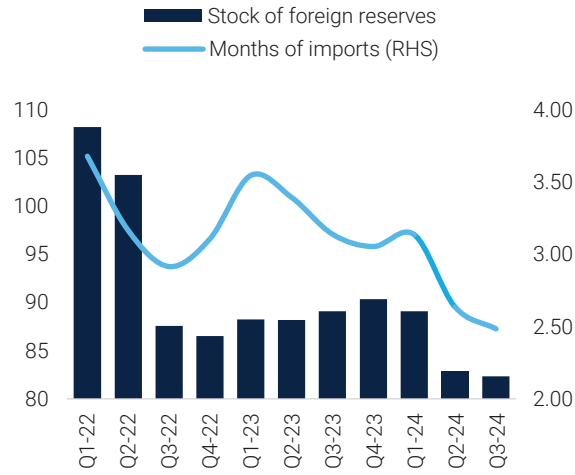
VND/US$



Source: Haver Analytics

Figure 1.23. SBV managed a gradual depreciation by selling foreign reserves

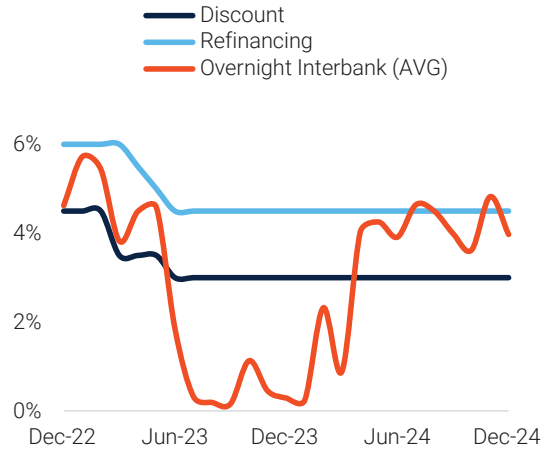
Foreign reserves, US$ billion



Source: SBV and World Bank staff calculations

Figure 1.24. SBV maintained its policy rates

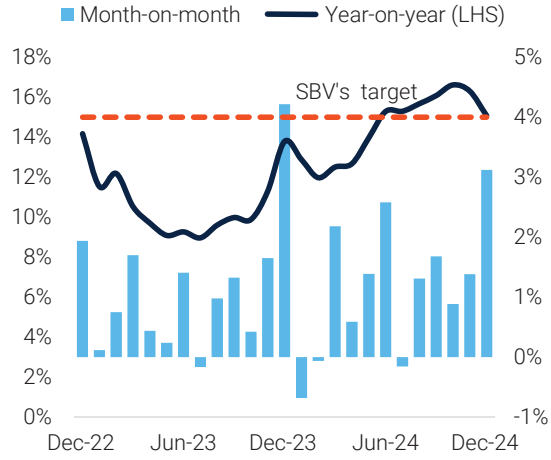
Interest rates, percent



Source: Haver Analytics

Figure 1.25. Credit growth reached SBV's target

Credit growth, percent



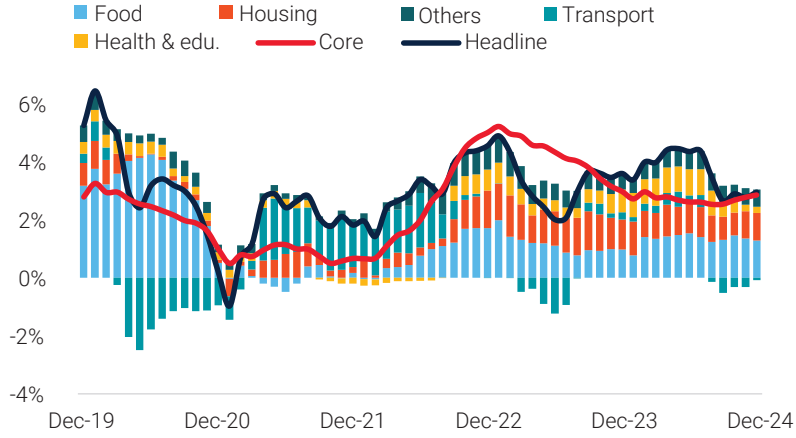
Source: Haver Analytics and World Bank staff calculations

Credit growth picked up during 2024, reaching the government's target of 15 percent by the end of the year. Credit growth increased in the second half of the year, driven by wholesale and retail trade, manufacturing, and real estate (Figure 1.25). Credit growth ceilings, a monetary and macroprudential tool to control inflation and excessive growth, have provided an incentive for banks to extend credit to maintain their indicative quotas, creating bunching by year end. These efforts to meet the credit ceiling could create inefficiencies by allocating resource to unproductive activities and distorting asset prices. However, in 2024, the SBV introduced a slightly more flexible approach, allowing selected banks with stronger capital bases to exceed their quotas once they reached 80 percent of their limit by August, without having to seek approval for additional credit room.

Headline inflation reached 3.6 percent in 2024, undershooting the SBV target of 4–4.5 percent. Inflation increased in H1–2024 to 4.4 percent (y/y) as food prices rose due to outbreaks of African swine fever affecting pork prices, and planned increases in administered prices, including with impacts on education and health. H2–inflation eased as transport costs subsided and the impact of administered prices for health and education faded. Core inflation (excluding food and energy prices) remained relatively steady throughout 2024, averaging 2.7 percent for the year (Figure 1.26).

Figure 1.26. Inflation

Percent, Percentage points (y/y)



Source: GSO, Haver Analytics, and World Bank staff calculations
Note: Food includes grain, foodstuffs, and food consumption outside the home. Housing includes rent, utilities (electricity, water, fuel), and construction materials.

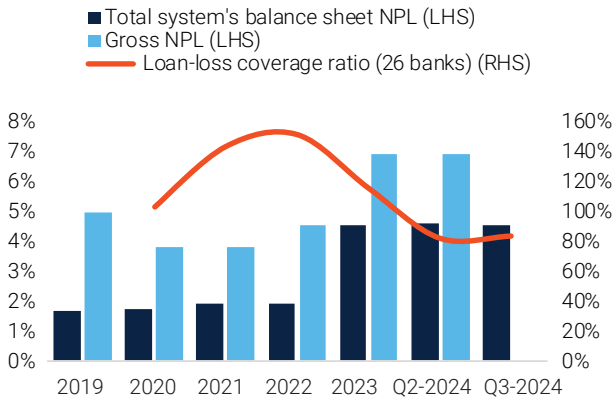
Reported asset quality appeared relatively stable, but underlying risks persist due to loan forbearance, restructuring, and declining loan-loss coverage. System-wide balance sheet non-performing loans (NPLs) increased slightly from 4.6 percent in 2023 to 4.9 percent in May 2024, before stabilizing at 4.6 percent by September 2024. (Figure 1.27). This improvement may be attributed to a surge in loan disbursements in Q2 and Q3–2024. Total (adjusted) NPLs including restructured loans and Viet Nam Asset Management Company (VAMC) debts held steady at 6.9 percent across the year. In September 2024, the government implemented additional forbearance measures to support households and

businesses affected by September's Typhoon Yagi, with total impacted loans estimated at VND165 trillion (1.1 percent of total outstanding loans). Meanwhile, the average loan-loss coverage ratio among 26 banks declined from 88 percent in Q4–2023 to 83 percent in Q3–2024, well below the peak of 151 percent in 2022.

Corporate bond issuances rebounded from low levels in 2023, driven by the banking sector's additional need for funding. Total issuances reached VND443 trillion (US$17.6 billion) in 2024, a 37 percent (y/y) rise. The banking sector accounted for issuances, with 69 percent of total issuances, representing a 103 percent (y/y) annual jump (Figure 1.28). The real estate sector, after a period of dampened activity, experienced a recovery in Q4–2024, which led to 26 percent (y/y) growth in issuances. Other sectors, such as consumer goods and construction, saw negligible issuances. Coupon rates averaged 7.5 percent in Q4–2024, slightly higher than the previous quarter, reflecting a higher proportion of real estate bond issuance with higher yields. The value of bonds maturing in 2025 is VND217 trillion (US$8.6 billion), with around half issued by the real estate sector.

Figure 1.27. Reported asset quality appeared relatively stable

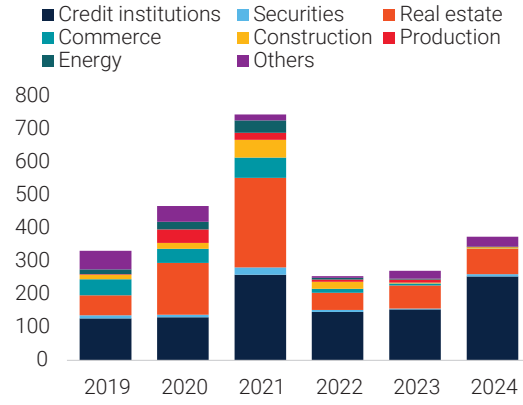
NPL ratio



Source: Fiingroup, SBV

Figure 1.28. Corporate bond issuances rebounded, driven by the banking sector

Corporate bond issuance, trillion VND



Source: VBMA

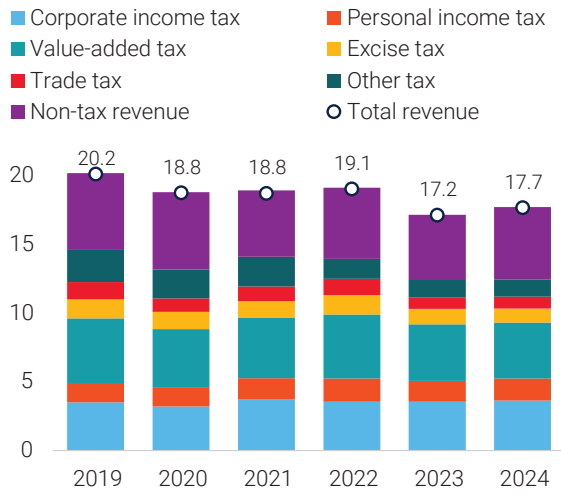
Under-disbursement of public investment led to fiscal consolidation

Increased total revenues were driven by greater land sales, while tax revenues remained stable (Figure 1.29). Overall, total revenues reached 17.7 percent of GDP in 2024, up 17.2 percent in 2023. Tax revenues remained unchanged (12.4 percent) from 2023, with VAT revenue stable at 4.1 percent of GDP in 2024 as the government extended a VAT rate cut to 8 percent started in 2022 until June 30, 2025. Increased overall revenues were attributed to more land sales, with non-tax revenue reaching 5.3 percent of GDP (+0.5 percent from 2023).

After the disbursement of the large 2023 fiscal stimulus, under-disbursement of public investment and reduced recurrent expenditures led to fiscal consolidation in 2024, registering a positive surplus 1.8 percent of GDP (Figure 1.30). Current expenditure reached 11.3 percent of GDP, compared to 12.4 percent in 2023 and equivalent to 94.5 percent of that targeted. Disbursement of public investment was estimated at 4.6 percent of GDP in 2024 (7.1 percent in 2023) corresponding to 77.5 percent of the prime minister's approved budget allocation as end of December 2024, dipping below the 81.9 percent disbursement rate for the same period in 2023. Planned annual savings in recurrent expenditures are earmarked to finance the civil service salary reform agenda, including a substantive wage bill increase from July 1, 2024 (on average, 30 and 15 percent increases in salary base and pensions, respectively).[15] Slow capital disbursement was attributed to delays in land clearance and compensation for major national highway projects, scarcity of backfill materials (stone and sand), and fluctuating prices of raw materials. In addition, regulatory hurdles and lengthy approval procedures continued to slow implementation of public investment projects. Total bond issuances reached VND330.4 trillion (US$13.2 billion), equivalent to 82.6 percent of the annual plan, exceeding VND298.5 trillion planned in 2023.[16]

Figure 1.29. Increased revenues were driven by greater land sales

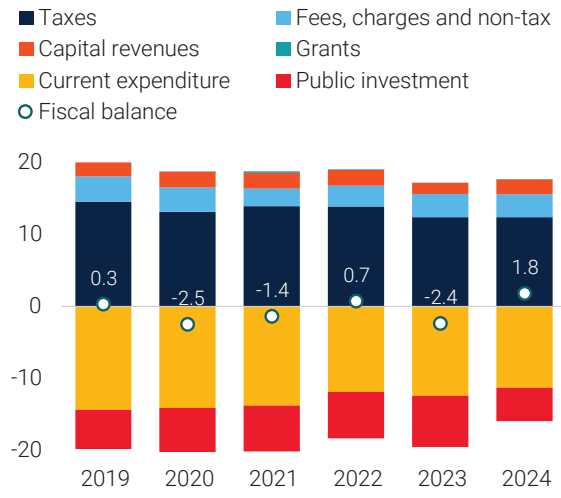
Decomposition of fiscal revenue, percent of GDP



Source: MoF and World Bank calculations
Note: 2019–22: Final accounts, 2023: Second estimate, 2024: breakdown using first estimate and total revenue reported by GSO which refers to latest MoF report (Jan 3, 2025).

Figure 1.30. Under-disbursement of public investment led to positive fiscal balance

Fiscal balance, percent of GDP



Source: MoF and World Bank calculations
Note: 2019–22: Final accounts, 2023: Second estimate, 2024: breakdown using first estimate and total revenue reported by GSO which refers to latest MoF report (Jan 3, 2025).

[15] Decree No. 73/2024/ND-CP (June 30, 2024) on prescribing statutory pay rate and bonus policies for officials, public employees, and armed forces.

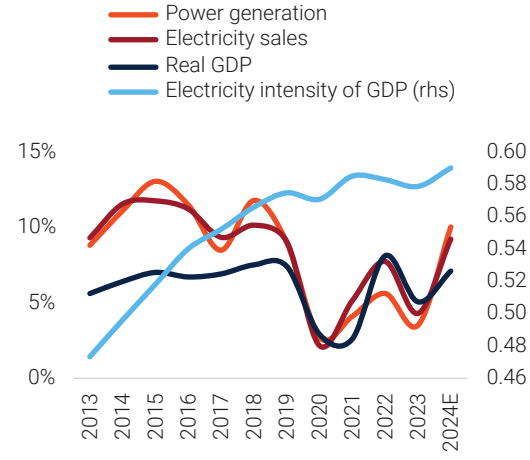
[16] Source: Viet Nam Bond Market Association (VBMA)

Electricity intensity of GDP increased

Electricity intensity of GDP increased to its highest level as power generation and sales growth rates outpaced GDP growth. In 2024, Viet Nam's electricity sales grew by 9.2 percent, while power generation climbed by 10 percent. Electricity sales and GDP growth have historically been highly correlated, especially since 2020, as large economic sectors are electricity intensive, such as manufacturing production. However, in 2024, electricity sales outpaced economic growth, increasing the electricity intensity of GDP to 590 kWh per US$1,000 from 579 kWh per US$1,000 in 2023, its highest level since 2013. This reversed the recent decoupling between electricity usage and GDP growth in 2022 and 2023 during the post-pandemic recovery (Figure 1.31). Electricity demand is expected to rise rapidly in the coming years due to the contribution of new demand segments such as electric vehicles (EVs) (see special topic of this edition).

Figure 1.31. An increasingly electricity-intensive GDP growth

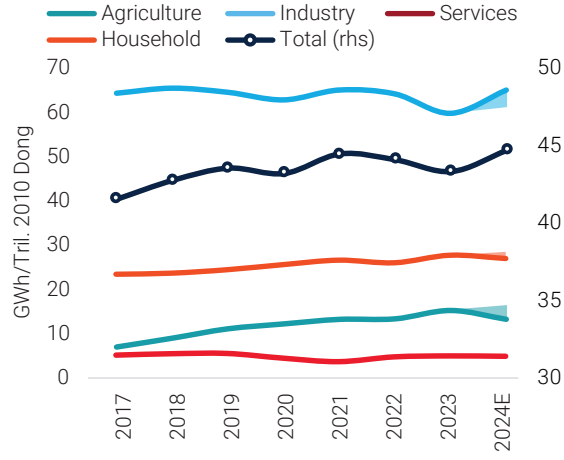
Growth rate (percent) and electricity intensity of GDP (kWh per US$ in constant 2014 US$)



Source: EVN and World Bank staff calculations. 2024 GDP based on GSO estimates.
Note: rhs = right-hand side

Figure 1.32. Industrial usage led to recent changes in electricity intensity

GWh/ Trillion of 2010 Dong



Source: GSO, EVN and World Bank staff calculations.
Notes: 2024 estimates based on historical share of annual electricity sales by category over 2017-2023. Shaded area estimates are based on 2023 shares only, with lower sales shares from industry.
Note: rhs = right-hand side

Increased electricity intensity was driven by industrial usage. Increased electricity intensity could be caused by less efficient use of electricity for production or a shift towards electricity-intensive sectors such as manufacturing (which was a driver of growth in 2024 and accounts for 40 percent of GDP[17]). Estimates of electricity demand by sector in 2024 suggest that, even under conservative

[17] Manufacturing output growth reached 9.8 percent in 2024, outpacing GDP growth (7.1 percent).

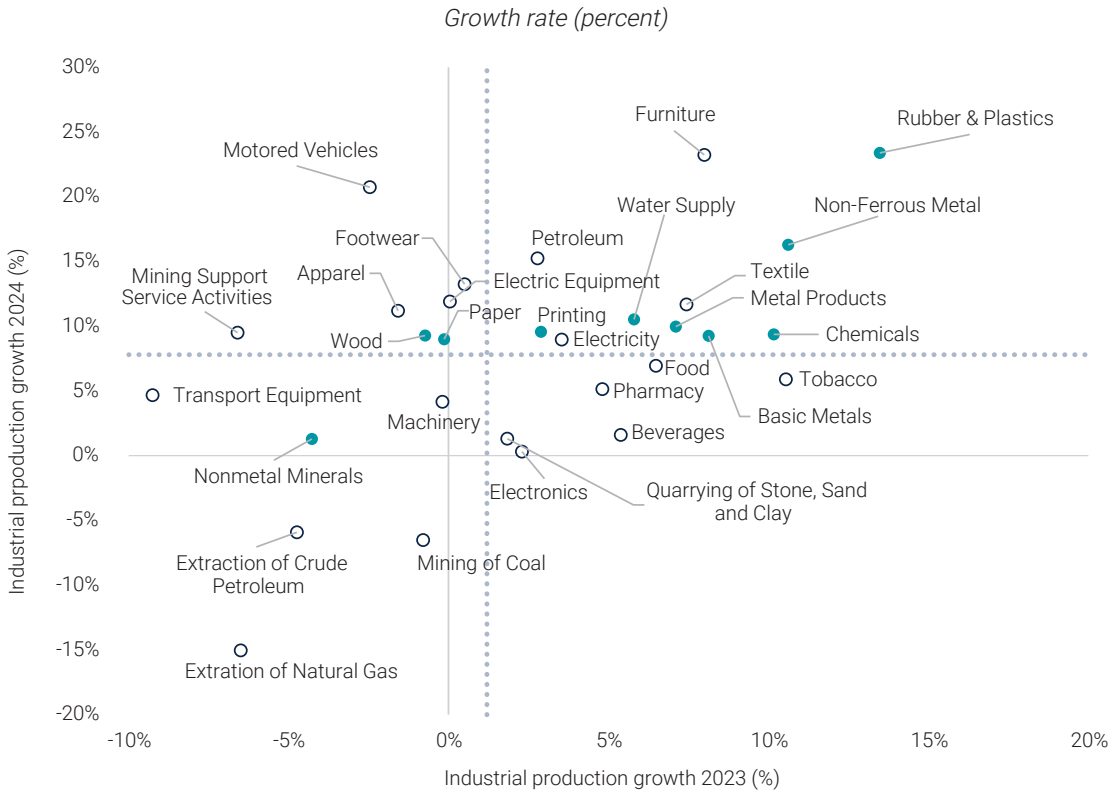
assumptions, recent increases in electricity intensity were driven by increased electricity demand for industrial production, increasing by 10-16 percent in 2024 leading to a 2-7 percent increase in industrial electricity inefficiency. There is no evidence of significant changes in electricity efficiency from services or household consumption, while agricultural electricity efficiency could have improved (Figure 1.32).

Energy-intensive industries – including steel, aluminum, rubber and plastics – drove industrial output and are likely behind increased electricity inefficiencies in 2024. Energy-intensive sectors with significant electricity consumption such as basic metals production (including steel), non-ferrous metal ores (including aluminum), and rubber and plastics grew at 9.3, 16.3 percent, and 23.4 percent in 2024, respectively, significantly faster than in 2023 and at a higher rate than industrial or economywide production (7.8 and 7.1 percent respectively). As a result, this shift towards more energy-intensive industries likely led to less efficient use of electricity in production. (Figure 1.33). Historically, large industrial enterprises (inc. steel, cement, and sugar industries) demonstrated poor energy efficiency benchmarks, while few policies are mandating and encouraging investment in energy efficiency and the cost of finance has globally increased. Viet Nam remains an outlier on energy efficiency when compared to regional peers in developing Asia.[18]

Implementation delays have slowed the deployment of renewable energy. Despite being home to the largest solar energy capacity in Southeast Asia[19] and of one of the highest offshore wind resources in the world, electricity generation from renewable energy was estimated at about 128.4 billion kWh in 2024 (inclusive of hydropower generation), registering a growth of about 8 percent y/y (compared to a 10 percent y/y growth in total power generation[20]). The slow deployment of renewable energy has been among others due to the lack of pricing and procurement frameworks, delays in the approval of PDP8 and subsequent delays in the rolling out of related investments, and uncertainties related to its revisions. The recent decree on direct power purchase agreement (DPPA) enacted in 2024 is meant to increase renewable energy deployment by allowing renewable energy generators to directly sell to large electricity consumers (either through private power lines, or using the national grid). Greater use of renewable energy will be required to meet planned power generation plans.

[18] Viet Nam Country Climate Development Report, World Bank, 2022.
[19] This excludes China.
[20] EVN

Figure 1.33. More energy-intensive industries drove industrial output growth in 2024



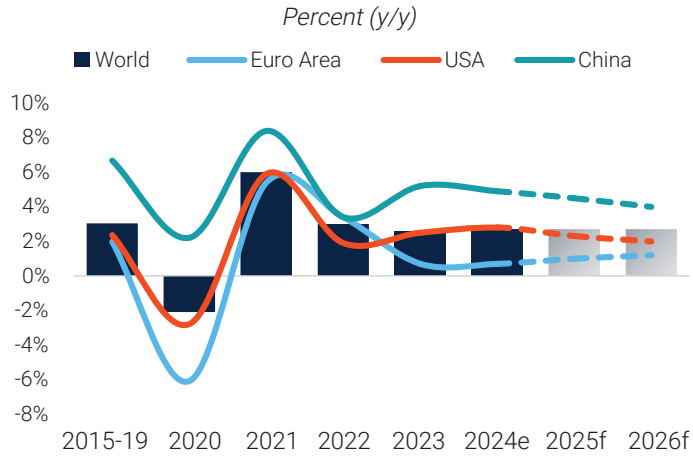
Source: GSO and World Bank staff calculations
Note: Most energy-intensive sectors are highlighted, based on ECB and IEA classification. Non-ferrous metals include aluminum. Basic metals include steel. Nonmetal Minerals include cement. Dotted lines show the average IP growth in 2023 and 2024.

1.2 Outlook and Policy Implications

Outlook remains positive, but with heightened uncertainties

Global growth is expected to stabilize at 2.7 percent over 2025–26, at the same pace as 2024, amid growing trade uncertainties. A deceleration in the main engines of the global economy –China and the United States – is expected to be offset by firming growth elsewhere, including the European Union. Advanced-economy policy rates are expected to further decline as more countries close in on inflation targets, but policy rates should remain above the low levels of the 2010s. However, heightened trade uncertainty and adverse trade policy shifts represent key risks to the global outlook.

Figure 1.34. Global growth is stabilizing after years of overlapping negative shocks



Source: Global Economic Prospects, January 2025, World Bank
Note: e = estimate, f = forecast.

Viet Nam's GDP growth is forecast to moderate to 6.8 percent in 2025 before settling at 6.5 percent in 2026 (Table 1.1). The rebound in export activities in 2024 is expected to ease in 2025 and further in 2026 due to projected economic slowdown in China and the United States in the near-term - Viet Nam's largest trade partners – and uncertain global trade prospects given expected shifts in trade policy. Domestic activities and services are expected to continue to firm up in 2025 and into 2026 as the real estate market recovery gathers steam.

Headline inflation is set to remain within target, but authorities should remain vigilant. Food prices have stabilized, inflation remained anchored in 2024 and should remain stable at 3.5 percent over 2025-26 below target of 4.5-5 percent for 2025. Despite continued conflicts in Ukraine and the Middle East, oil and commodity price inflation is projected to continue easing. The planned payment packages linked to the reduction in the number of public servants as part of ministerial streamlining

is expected to have a marginal impact on headline inflation given the limited size of the public sector in overall employment (3.8 percent of total employment[21]).

Foreign investment and trade turnover are expected to remain important drivers of growth over 2025–26, but with heightened uncertainty. The current account is projected to maintain a surplus, primarily driven by the merchandise trade balance. FDI inflows are expected to remain stable in the short- to medium-terms, reflecting foreign investors' sustained interest in Viet Nam.

After tightening in 2024, the fiscal account is expected to return to a deficit is in 2025-26 due to planned increases in expenditures. Fiscal deficit is estimated to reach 1.4 percent of GDP in 2025 and to narrow to 1.0 percent in 2026, while the government planned a continued reduction in debt stock as growth is expected to outpace interest rate. Expenditure in 2025 is planned to increase by 20 percent compared to 2024 due to planned investment in several national infrastructure projects and increased public sector salaries and severance payments as part of the state re-organization. Improved domestic revenue collection is expected to mitigate the fiscal deficit in 2025 and help with the fiscal consolidation anticipated in 2026. Planned revenue measures include expansion of the tax revenue base, reduction of tax revenue losses—particularly in e-commerce—and enhanced use of digital transformation in budget management.

Table 1.1. Selected economic indicators, Viet Nam 2021–26

Indicator	2021	2022	2023	2024e	2025f	2026f
GDP growth (%)	2.6	8.0	5.0	7.1	6.8	6.5
Growth of expenditure components						
Private consumption	2.0	7.8	3.5	6.6	7.1	7.3
Public consumption	4.7	3.6	4.9	4.5	4.5	4.4
Investment	3.7	5.8	4.1	7.3	8.4	8.1
Exports	13.9	4.9	-2.5	15.5	12.1	5.5
Imports	15.8	2.2	-4.3	16.1	12.7	6.3
Consumer Price Index (average, %)	1.8	3.1	3.3	3.5	3.5	3.5
Current account balance (% of GDP)	-2.2	0.3	6.1	1.9	1.8	1.7
Fiscal balance (*) (% of GDP)	-1.4	0.7	-2.4	1.8	-1.4	-1.0
Public & publicly guaranteed debt (**) (% of GDP)	42.5	37.1	36.0	35.6	34.2	32.4

Source: GSO; MoF; SBV; IMF; and World Bank staff calculations.

Note: e = estimate; f = forecast,*: excluding unallocated expenditures and following Government Finance Statistics (GFS), **: calculated based on the approved fiscal plan for 2025 and three-year fiscal plan for 2025–27.

[21] MOLISA, 2023 labor data.

This outlook is subject to external and domestic downside risks. Given Viet Nam's openness to the global economy, the main uncertainty stems from slower-than-expected global growth and trade disruptions, particularly among major trading partners such as the United States, European Union, and China. Such developments, including heightened uncertainties from trade policy shifts and deepening trade fragmentation, could impact Viet Nam's manufacturing exports, industrial production, and growth. Domestically, the real estate market recovery could take longer than expected, adversely impacting private sector investment, an important contributor to economic growth. If the financial sector's asset quality were to weaken further, bank lending capacity could be undermined. As one of the world's most vulnerable countries to climate change, intensifying natural disasters pose additional downside risks.

There are also upside signs to the outlook. Higher growth in the United States and European Union, particularly in consumption, could lead to stronger demand for Vietnamese exports than forecasted. The easing of international interest rates would close the interest rate differential and ease pressure on the US/VND exchange rate. Increased public investments could further support demand and contribute to growth. An accelerated recovery in the real estate market thanks to faster project clearance could further boost domestic demand.

Policy Implications

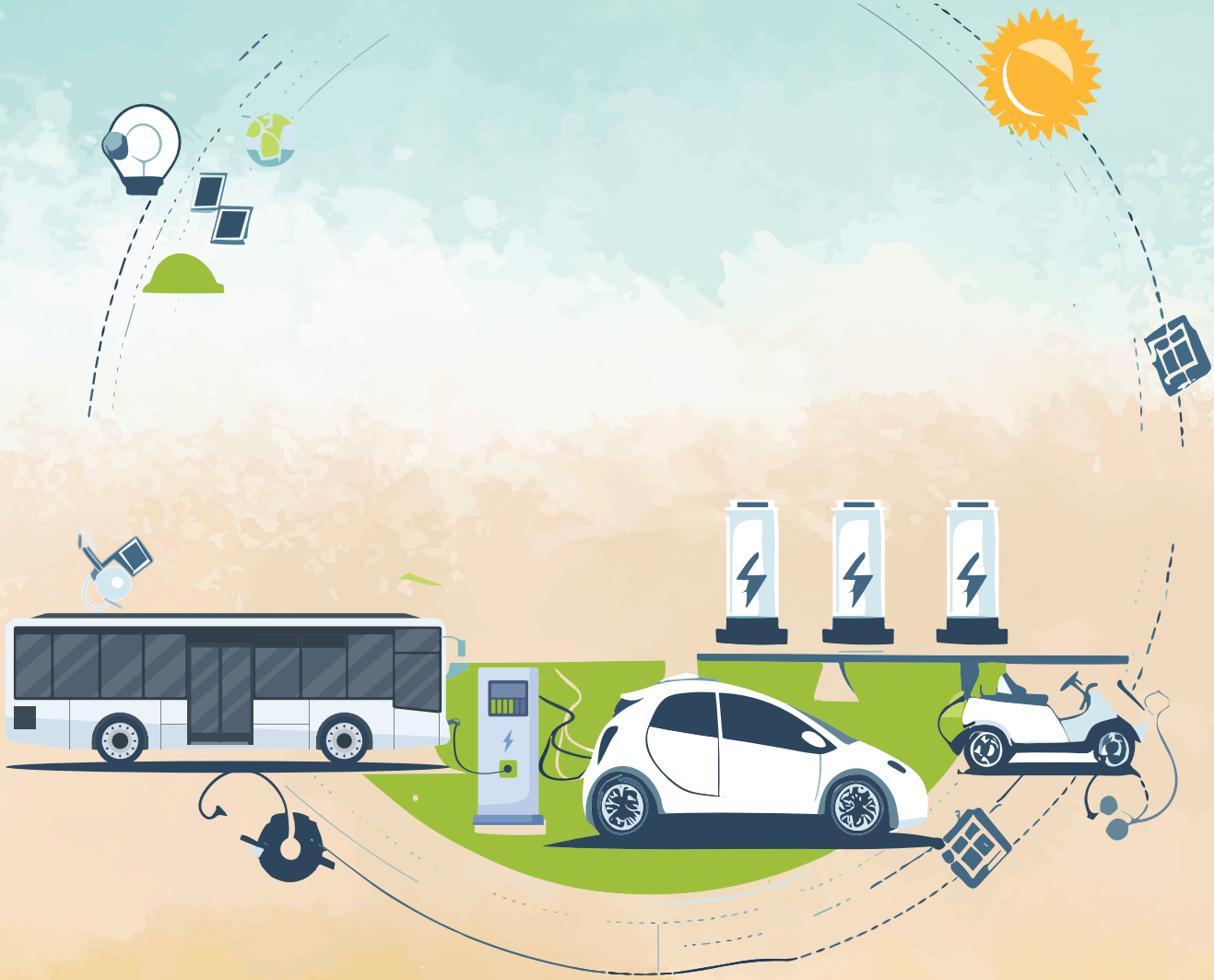
While space for monetary policy intervention remains restrained, fiscal policy could still support growth in the medium to long term. Monetary authorities will continue facing limited room for additional interest rate cuts in the event of continued strengthening of the US dollar and the pressure it could bear on the exchange rate. While the economy is projected to register robust growth in 2025-2026, existing infrastructure gaps call for greater investments. Existing fiscal space could provide resources essential for these projects to secure sustainable growth dynamics for the medium to long term. Optimized public investment management should go hand in hand with increased investment - in sectors in energy, logistics and transport – to ensure prioritized, well planned and efficient investment roll-out.

Building on recent reforms, further steps to mitigate financial sector risks and vulnerabilities remain crucial. The authorities could encourage banks to improve capital adequacy ratios and strengthen the institutional framework for prudential supervision (including to detect and address issues arising from affiliation of banks with business groups) and early interventions (early identification of problems and crisis prevention). While the Law on Credit Institutions was enhanced with a recent amendment, gaps remain in some areas including consolidated supervision on a group basis, particularly of banks affiliated with the real sector. Other areas requiring attention include bank resolution and crisis management, as well as legal protection of supervisors. For example, the SBV does not have a full range of resolution powers and tools to deal with non-viable banks. Strengthening the SBV's mandate in these areas should be a priority in upcoming financial sector legal reforms, including through amendment of the Law on State Bank of Viet Nam.

Building energy resilience can mitigate supply risks constraining growth. Strengthening the targets set out by the National Energy Efficiency Plan (VNEEP 3) of 8-10 percent by 2030 would improve industry productivity and reduce energy intensity. The authorities should consider implementing mandatory targets and implementing monitoring instruments. Avoiding delays in the development of planned generation capacity and licensing will be key for ensuring energy security and supporting the next phase of socio-economic growth. Electricity demand is projected to increase in the next decades, including from new demand segments such as electric mobility and digitalization. Further, to meet the planned increase of renewable generation capacity, pricing, procurement frameworks, bankable commercial arrangements, clarity on the full transition to the Viet Nam Wholesale Electricity Market, planning and regulatory certainty will all be needed for investor's confidence.

Finally, structural reforms are crucial to sustain long-term growth. The authorities are encouraged to accelerate structural reforms to strengthen the regulatory environment in critical backbone services (information and communication technology, electricity, transport), to green the economy, build human capital and improve the business environment. Further trade diversification (destination and products) and deepening regional trade integration and connectivity will also reduce exposure to global trade fragmentation and ensure more resilient growth. In addition, a greater integration of the domestic private ecosystem into global supply chains, increasing the share of domestic suppliers by FDI firms, would ensure greater contributions from trade integration in Viet Nam.

CHAPTER 2 E-MOBILITY TRANSITION

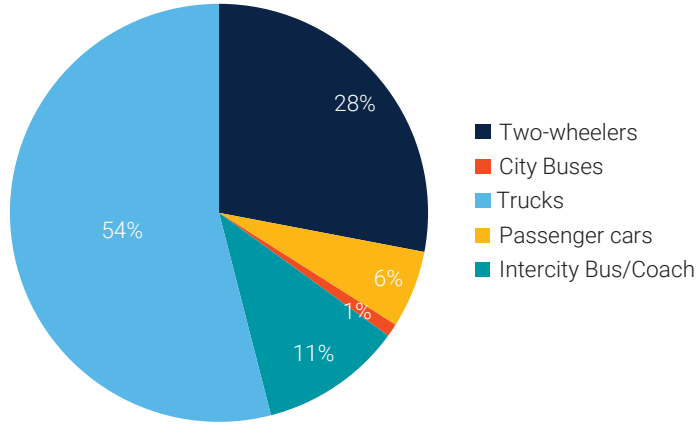


2.1 Context[22]

Viet Nam has set ambitious goals to decarbonize its economy by 2050. The prime minister of Viet Nam's pledge at COP26[23] in 2021 to achieve economy-wide net-zero emissions by 2050 has set into motion plans to decarbonize the transport sector.

The energy sector is the biggest contributor to GHG emissions, of which transport is a main driver. Without decarbonation, this share would rise significantly with the rapid increase in car use. The transport sector accounted for 32.9 million tons of carbon dioxide equivalent (MtCO2eq) in 2021, or 7.2 percent of total economy-wide GHG emissions in Viet Nam, the majority of which were generated from road transport, with the most emitting road vehicle segment from freight trucks (Figure 2.1). Although car ownership remains a luxury for many Vietnamese today, a growing middle class has been fueling auto sales at an annual rate of 15 percent since 2010, among the fastest in the region. Without decarbonization of the sector, transport-related emissions are set to rise significantly, reaching about 334 MtCO2eq by 2050 under the business-as-usual (BAU) scenario.

Figure 2.1. Share of GHG emissions by vehicle segments in Viet Nam, 2020



Source: Ministry of Transport, Viet Nam, and World Bank calculations

Moving towards electric mobility also represents significant economic opportunities across the value chain. To achieve electric vehicle (EV) uptake targets set by the government, sales in Viet Nam will need to increase from 500,000 units in 2022 to about 1.5 million units by 2030, and 7.3 million by 2050. Cumulatively, this represents a market demand for EVs of more than seven million between

[22] This section is based on findings from the World Bank report "Viet Nam: Recommendations to the National Roadmap and Action Plan for the Electric Mobility Transition."

[23] United Nation's Climate Change Conference held in Glasgow, Scotland in 2021.

2024–30, and 71 million between 2031–50. Addressed in a timely and coherent manner, this will lead to growth in the entire EV value chain from vehicle and battery production and maintenance, to charging infrastructure and recycling. Such growth has the potential to generate employment opportunities in all associated sub-sectors.

Responding to environmental and economic imperatives, the government has set targets for electric mobility (-mobility) by 2050 related to electrification of vehicle stocks, production, and charging infrastructure. In July 2022, the prime minister approved Decision No.876/QD-TTg setting targets to transition the road transportation sector towards e-mobility through use of EVs, namely 50 percent of urban vehicles and 100 percent of urban buses and taxis to be powered by electricity or green energy by 2030 and subsequently 100 percent of all road vehicles by 2050. The decision also sets targets on charging infrastructure network development and EV production and assembly (Table 2.1).

Table 2.1. Measures and targets for electrifying the road transport sector in Government Decision 876/QD-TTg

Transport Modes	Targets	Type	Timeline
Urban Transport	At least 50% of urban vehicles use electricity and green energy.	Target	By 2030
	100% of replaced and newly invested urban buses will use electricity and green energy.	Target	2025 - 2030
	100% of replaced and newly invested taxis will use electricity and green energy.	Target	2031 - 2050
	100% of urban buses and taxi will use electricity and green energy.	Target	By 2050
General Road	Promote the production, assembly, import and use of electric motorized road vehicles.	Measure	By 2030
	Develop charging infrastructure networks.	Measure	By 2030
	Limit the production, assembly and import of cars, motorbikes and mopeds using fossil fuel for domestic use.	Measure	By 2040
	100% of road motorized vehicles will use electricity and green energy.	Target	By 2050
	Complete charging infrastructure and provide green energy nationwide.	Target	By 2050

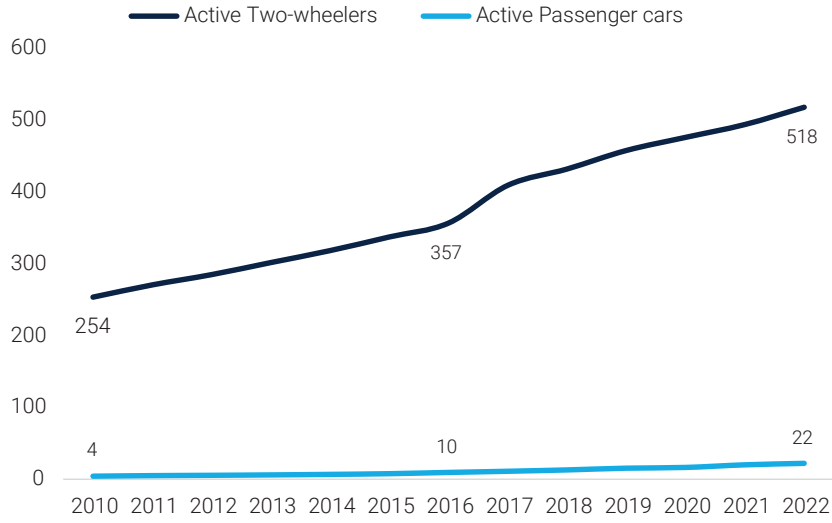
Source: Decision 876/QD-TTg, 2022

2.2 What does the e-mobility transition entail?

Transitioning into electric motorbikes and leapfrogging into EV cars

Between 2024 and 2035, Viet Nam's e-mobility transition will primarily be driven by the transition of the two-wheeler (2W) segment to electric 2Ws (e-2Ws) given they will remain the dominant vehicle choice until 2035. In 2022, registered 2Ws in Viet Nam totaled 72.16 million (94 percent of total registered vehicles stock). This represents a motorization rate of close to 518 units of 2Ws per 1,000 population – in sharp contrast to the rate for passenger cars (PCs) at 22 units per 1,000 population (Figure 2.2). As such, the e-mobility transition will be driven by the uptake of e-2Ws, as it has been historically since 2014.

Figure 2.2. Motorization rate for two-wheelers and passenger cars 2010–2022

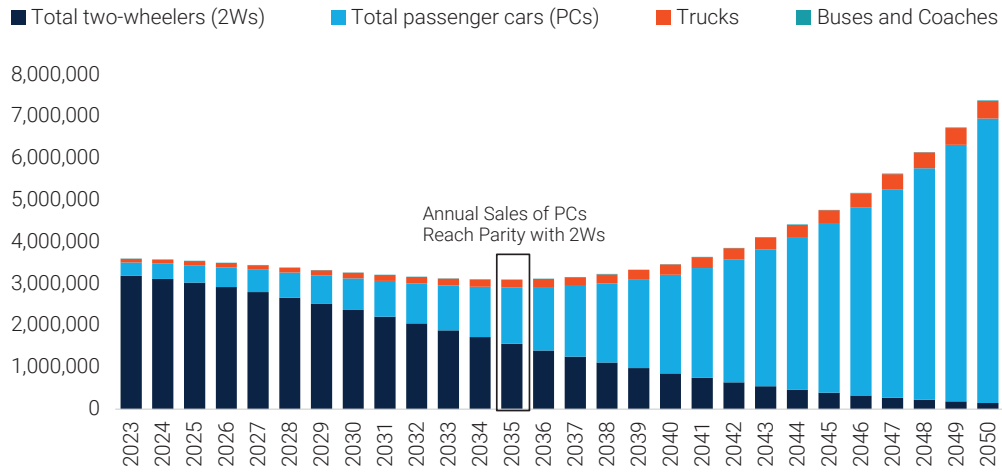


Source: World Bank calculations

The market for electric 2Ws could account for more than half (56 percent) of total 2W sales by 2035. Viet Nam is already the world's second largest market for e-2Ws following China, accounting for a 12 percent market share in overall 2W sales in 2022. Viet Nam is ready for a rapid acceleration of e-2Ws with more than 37 suppliers competing on quality and price, a sufficient travel range and high consumer acceptance levels, especially in cities. In several e-2W segments, purchase prices are competitive against gasoline 2Ws. By 2035, the share of e-2Ws is estimated to reach 42-56 percent of total 2Ws sales depending on the pace, scale, and relevance of policies to be rolled out.

E-mobility represents an enormous opportunity to bypass purchases of traditionally-fuelled cars with internal combustion engines (ICE) to leapfrog into EVs. As domestic GDP per capita grows, ownership constraints of affordability will gradually lift and drive a shift from 2Ws to passenger cars, with sales parity reached by 2035 (Figure 2.3). Post-2035, demand for passenger cars will surge to nearly 54 million on a cumulative basis leading to a motorization rate of 312 units per 1,000 population, up from 22 in 2023. Using existing battery rental scheme[24] for Vietnamese who can afford ICE passenger cars today, switching to an EV is already a viable alternative in terms of costs.

Figure 2.3. Projected vehicle annual sales by segments 2023–50 (units)



Source: World Bank calculations

Building the EV charging network and decarbonizing the power grid

During 2025–35, the government can accelerate development of a public charging network – a major obstacle to increasing the appeal of electric passenger cars. The biggest challenge to realizing an enabling environment for electric passenger cars is ensuring a cost-efficient roll out of a public charging station network given the overall low motorization rate for passenger cars at present.

While the phased decarbonization of the power grid is critical, a green light for the e-mobility transition will deliver more immediate emission reduction impacts due to the higher efficiency of EVs relative to traditional vehicles. While Viet Nam's power generation is heavily dominated by fossil fuels,[25] mainly coal and gas, its latest Power Development Plan (PDP8[26]) sets out ambitious targets

[24] This means purchasing electric passenger cars without batteries.

[25] In 2022, coal, oil and gas collectively accounted for 43 percent of Viet Nam's installed power capacity and 64 percent of electricity production.

[26] Eighth Power Sector Development Plan 2021–30 with a vision to 2045.

to scale-up renewable energy. This involves pivoting away from coal to gas and eventually phasing out both via ammonia, biomass and hydrogen fuel substitution as well as non-fuel substitutes such as solar and wind. However, this phased technological shift means grid emission reductions will not be immediate.

Promoting a passenger shift from private vehicles to public transport

Promoting a passenger shift from private vehicles to electrified public bus systems realizes the highest externality benefits in terms of GHG emission and local air pollution reductions, road safety and decreased traffic congestion. Given the dominance of 2Ws, public city buses have a small share in terms of total fleet number and passenger distances.[27] Despite the majority of urban public buses operating with diesel, with the exception of piloted green buses in Ha Noi and Ho Chi Minh City, the small public city bus stock means its GHG emissions are less than 1 percent of total road transport emissions. Given the costly endeavor of converting old fleets into electrical buses (e-buses), for the switch to be financially viable, it must be pursued in parallel with shifting passenger mobility demand from private vehicles.

Uptake of public transport will need strong policy interventions to address current roadblocks. For Ha Noi and Ho Chi Minh City to achieve their respective mode share targets under Decision No.876, they will need 6,000 and 4,500 more e-buses, respectively by 2030. Key obstacles to achieving these targets include high upfront purchase costs of e-buses vis-à-vis diesel and compressed natural gas ones, the lack of technical and operational frameworks among city governments for battery electric buses and risks of low ridership due to infrastructure and policy gaps.

[27] In Ha Noi and HCMC, the mode share of public city buses is less than 10 percent while other major cities such as Da Nang, Hai Phong and Can Tho have a lower share at less than 5 percent.

2.3 E-mobility scenarios

Three e-mobility transition pathways were developed to better understand EV uptake scenarios and accompanying policy. Based on the pathways – Business-as-Usual (BAU) Scenario, Stated Policy Scenario (SPS) and Accelerated Decarbonization Scenario (ADS) – the analysis included modelling different levels of EV uptake for 18 specific vehicle use categories in Viet Nam. Table 2.2 highlights key assumptions across all scenarios.

Table 2.2. Definitions and key components of three transition pathways

Business-as-Usual Scenario	• The government does not provide any supportive programmes, policies and investments for EV uptake or public charging network development. • BAU mirrors the situation during 2014–20 in Viet Nam, when the uptake of EVs was purely driven by market forces due to capex reductions of EVs versus ICE counterparts. • BAU forms a baseline to evaluate the level and scale of efforts required to realize an e-mobility transition to achieve targets under Decision No.876.
Stated Policy Scenario	• Simulates pathways through which all stated EV uptake targets under Decision No.876 in 2022 are achieved. • Using the BAU scenario as a baseline, SPS provides quantified estimates to assist in understanding the scale of EV demand across all vehicle segments, and subsequent policy and investment requirements to ensure EV supply, provision of charging networks and electricity.
Accelerated Decarbonization Scenario	• Assumes more accelerated penetration of EVs, beyond SPS to maximize decarbonization impacts from the e-mobility transition. • More aggressive penetration rates are assumed across: - 2W segments in the short-term (to 2035). - Inter-city commercial buses/coaches and small/medium trucks (65 percent of GHG emissions from domestic road transport). • For EV charging, policy interventions go beyond infrastructure development and include electricity tariff reforms and smart charging to incentivize EV charging during off-peak hours, and behind-the-meter (BTM) off-grid solar for public charging facilities. These interventions reduce the impacts of EV charging on the power system, particularly peak loads.

Each pathway rests on different policy choices to support EV uptake, production, and its charging network. Variations across the three pathways are further split into the following parameters: (i) levels of EV uptake, (ii) levels of EV production and supply and (iii) availability of EV charging (Table 2.3). In terms of timelines, ADS is based on policy levers activated from 2025, compared to 2030 under the SPS.

Table 2.3. Comparative views of key factors affecting EV charging profiles (BAU, SPS, and ADS)

E-Mobility Ecosystem Element and Policy Levers		BAU	SPS	ADS
EV Uptake	EV Uptake Targets and Target Coverage	No	Yes	Yes
			By 2030: urban vehicles, public buses and taxis. By 2050: all road vehicles.	Targets with 5-year intervals starting 2025, covering 2Ws, 4Ws, buses/ coaches, and trucks.
	Government Support and Incentives for EV Update	No	Yes, covering mainly public buses and taxies.	Yes, covering all vehicle segments.
	Policies to Limits ICE Vehicle Use	No	Yes, starting 2040.	Yes, starting 2025 for cost-competitive EV segments.
	Targeted Support for Hard-to-Transit Vehicle Segments	No	No	Yes, targeted supporting programs for intercity buses/coaches and small trucks.
EV Production & Supply	Rolling Out National Standards for EV Manufacturing and Charging	No	Yes	Yes
	Rolling Out EV Safety Test Protocol	No	Yes	Yes
	Incentives for Li-ion Battery Adoption	No	No	Yes
	Incentives for Production of Electric Mini-bus and Small-Trucks	No	No	Yes
EV Charging	Government Support Program for Public Charging Network Development	No	Yes, rapidly expanding through 2030 and fully completed by 2050.	Yes, rapidly expanding through 2030 and fully completed by 2050.
	Electricity Tariff Reform for EV Charging to Incentivize Off-Peak Charging	No	No	Yes
	Rolling Out Smart Charging Devices	No	No	Yes
	Rolling Out BTM Solar at Public Charging Facilities	No	No	Yes

Despite no specific adoption target, uptake of e-2Ws is set to drive forward due its current level of market readiness with significant room for policy stimulation. Within the BAU pathway, in the absence of supportive policies, e-2W sales will peak in 2030 at 515,000 units (21.7 percent of total 2W sales), while cumulative demand for e-2Ws will be nine million units between 2024–50, accounting for 23 percent of cumulative demand for 2Ws during this period (Table 2.4). Under the BAU, e-2W uptake will concentrate in urban areas, but capped below 40 percent due to price premiums against ICE 2Ws and concerns over battery safety. In the absence of public charging facilities, supported by ADS and SPS scenarios, e-2Ws will not meaningfully penetrate in non-urban areas, with lead-battery e-moped modals dominating the market, despite their limited power and range.

Table 2.4. Projected annual sales of 2Ws and e-2Ws under the three transition pathways (vehicle units)

	2022 (Historical)	2025	2030	2035	2040	2045	2050
Total 2Ws Sales	3,003,000	3,028,000	2,373,000	1,563,000	860,000	395,000	151,000
BAU	407,550	390,000	515,000	463,000	340,000	163,000	69,000
SPS		635,000	1,163,000	1,159,000	764,000	377,000	148,000
ADS		982,000	1,560,000	1,350,000	818,000	389,000	151,000

Source: World Bank calculations.
Note: e-2Ws sales are captured in rows BAU, SPS, ADS.

The ADS pathway for e-2Ws allows for a faster e-mobility transition and decarbonization than under SPS, achieved by the same policy interventions – but implemented at a faster pace by the former. While the SPS pathway assumes 50 percent e-2Ws uptake in urban areas and 100 percent uptake by 2050, Viet Nam has great potential to achieve the ADS pathway, whereby annual demand for e-2Ws in 2025 will be 1.5 times greater than under SPS and peak at 1.6 million in 2030. The ADS pathway fully leverages the impact of e-2Ws for road transport decarbonization by driving the transition, while 2Ws are still the dominant choice in the vehicle sales market.

2.4 Impact on electricity demand

Despite EV adoption creating additional demand for electricity and increasing system peak loads, critically this has not been factored in PDP8. Approved in May 2023, PDP8 does not incorporate loads stemming from the e-mobility transition within BAU demand scenarios. As a result, the 90.5TW system peak load forecast for 2030 and even the 2050 'high-case' system peak load of 209TW do not incorporate e-mobility needs. Given how imperative it is to inform peak load estimates and subsequently planning for electricity generation and network requirements, the study estimated electricity demand for EV charging up to 2050 based on: (i) numbers of EVs in circulation, (ii) transport activity (vehicle-km-travelled) by EVs and (iii) energy efficiency of EV batteries and effectiveness of transmission and distribution networks.

While EV charging is not expected to impose major pressure on Viet Nam's power sector before 2030, its impact will subsequently intensify. To 2030, EV charging demand even under the more ambitious ADS pathway will require only 2.1 percent of generation supply in addition to PDP8 targets which can be accommodated by increasing planned generation surplus margins. This is because EV uptake during this period will be mainly dominated by e-2Ws, which operate on small batteries and cover short distances in general. From 2035 onwards, EVs will penetrate the passenger car and intercity commercial vehicle segments,[28] with a consequent surge in EV charging demand. By 2045, incremental demand for EV charging will be 13.5–16 percent on top of the PDP8 high-case outlook under the SPS or ADS pathways, which will further climb to 22–28 percent by 2050 (Table 2.5).

Table 2.5. EV charging demand under different EV uptake scenarios incremental to the PDP8 generation outlook (GWh)

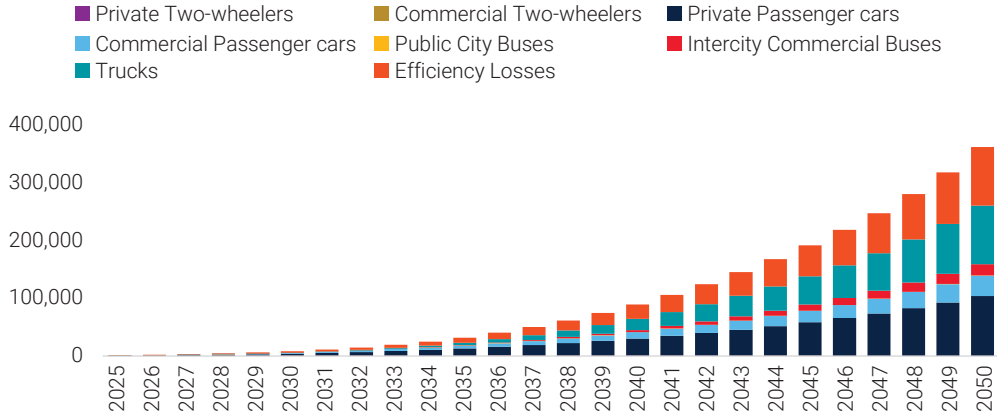
	2025	2030	2035	2040	2045	2050
PDP8 High Case Generation Outlook	**378,320**	**566,990**	**800,870**	**1,022,740**	**1,208,050**	**1,378,520**
SPS EV Charing Demand incremental over BAU	670	6,040	26,140	76,270	164,240	303,090
% addition to PDP8 High Case Outlook	0.2%	1.1%	3.3%	7.5%	13.6%	22.0%
ADS EV Charging Demand incremental over BAU	1,980	12,100	42,190	99,860	190,730	391,390
% addition to PDP8 High Case Outlook	0.5%	2.1%	5.3%	9.8%	15.8%	28.4%

[28] Intercity bus/coach, and small trucks, pickups and vans.

The incremental demand for EV charging translates into estimated grid generation supply growth of 4.9 percent (CAGR 2035–50) compared to 3.7 percent currently planned in PDP8. To accommodate this level of demand, the sector will need additional network capacity on top of PDP8 at an average of 3–5 and 12–20 percent during 2030–45 and 2045–50, respectively. Subsequently, up to 15 percent of additional transmission capacity will be needed by 2050 to allow for 100 percent electrification of road transport.

To reduce e-mobility impacts on the power sector, network and battery efficiency enhancements are critical, while simultaneously promoting passenger and freight transport modal shifts in the long run. The ADS pathway requires 16 percent incremental generation above the PDP8 outlook by 2045, of which 4 percent covers efficiency losses during power distribution, transmission and battery charging. By 2050, efficiency losses will account for 7 percent of the additional 28 percent increase in generation required (Figure 2.4). In response, policies and investments are needed to address these losses during power distribution and transmission as well as for battery charging.

Figure 2.4. Aggregated EV charging demand under SPS by vehicle segments (GWh)



Source: World Bank calculations

Additional power sector investment to accommodate EV charging demand will focus on increasing supply, with a further outlay to boost grid capacity needed between 2045–50.[29] To enable the targeted EV uptake, between 2024–30 Viet Nam will need to invest US$6–9 billion in the power sector. In contrast, it spent US$9 billion on importing petroleum products in 2022 alone, of which 85 percent (US$7.65 billion) was consumed by the transport sector. Under the ADS pathway, between 2031–50, the government will need to invest a cumulative US$280 billion with incremental investments in grid capacity amounting to US$9 billion due to the higher roll-out of charging infrastructure. This demand arises from

[29] The modelling carried out to identify the optimal electricity supply mix and subsequently the investments required was based on the least-cost principle. In terms of technology, the new generation entrants to cover the excess demand were limited to grid-connected SPV and onshore wind together with BESS and ICE that add flexibility and fill evening and overnight period gaps with dispatchable electricity.

chargers needed to support targeted EV uptake estimated at 800,000 units by 2030, 2.7 million by 2040 and 6.3 million by 2050. Smart grid development will become critical under the e-mobility transition to enable better load monitoring and vehicle-to-grid power transfers in the future (Table 2.6).

Table 2.6. Cumulative investment needed to meet EV charging demand under SPS and ADS (US$ billion)

Period	SPS				ADS			
	GEN	TX+DX	Total	LCOE $/MWh	GEN	TX+DX	Total	LCOE $/MWh
2024-2030	6	0	**6**	101	8	1	**9**	79
2031-2040	59	0	**59**	90	63	0	**63**	77
2041-2050	200	0	**200**	81	209	9	**218**	71

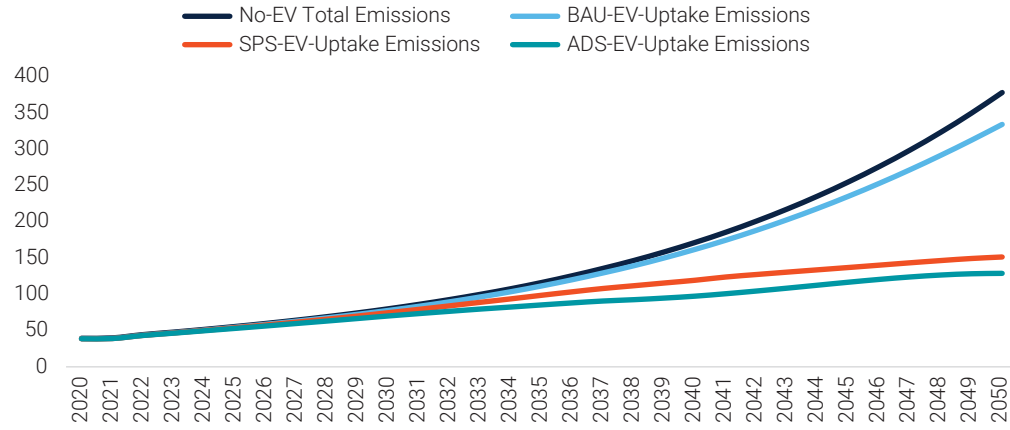
Source: World Bank calculations.
Note: EN = Generation; TX= Transmission; DX = Distribution; SPV = Solar Photovoltaic Technology; LCOE - Levelized Cost of Electricity; BESS = battery energy storage system.

Promoting transport modal shifts for passenger and freight transport will substantially reduce overall EV charging demands. With around half (53 percent) of total EV charging demand over 2035–50 expected to come from private electric passenger cars and small trucks for intercity freight transport, these segments have larger batteries and travel longer distances than e-2Ws, leading to substantially larger charging requirements vis-à-vis e-2Ws. To preserve transport sector decarbonization efforts, the government will need to actively shift demand in cities from private passenger cars to electrified public transit and e-truck usage to railway or waterway transport for freight. A modal shift among these segments at a scale of 35 percent by 2050 could reduce the required additional generation supply by 9–11 percent across the SPS and ADS pathways.

2.5 Impact on GHG emissions

While the e-mobility transition will be critical for achieving the 2050 net-zero target, it will play a limited role in achieving the 2030 NDC goals.[30] The level of GHG reductions from e-mobility until 2030 is modest at 5.3 MtCO2eq under the SPS scenario, contributing around 8 and 15 percent to unconditional NDC emission reduction targets set for the overall energy-related sector under the SPS and ADS scenarios, respectively. This limited impact is due to the majority of electrified vehicles being e-2Ws by 2030 (Figure 2.5).

Figure 2.5. Road transport emissions through 2050 under three transition pathways (Mt CO_2eq)



Source: World Bank calculations

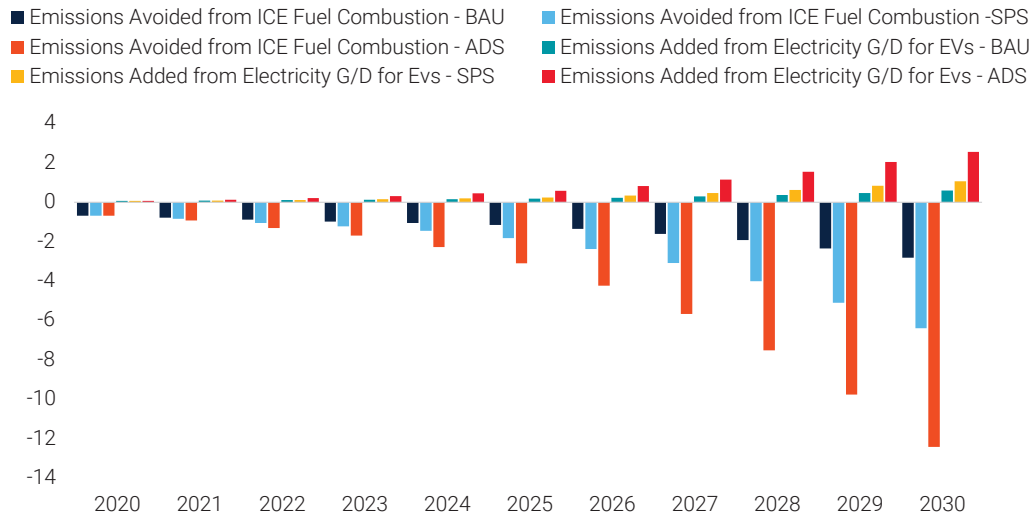
Beyond 2030 and particularly from 2035, emission reduction impacts will rapidly scale-up as the e-mobility transition shifts from 2Ws to passenger cars, trucks, and intercity buses. Assuming all stated EV uptake targets included in Decision 876 materialize, total GHG emission reductions achieved by the transition would total around 226 MtCO2eq by 2050, representing a 60 percent reduction from the Nationally Determined Contribution (NDC) baseline scenario for transport emissions. Under ADS, total emission reductions could be slightly higher at 249 MtCO2eq, representing a 66 percent reduction from the baseline.

Switching from ICE to electric vehicles could generate significant emissions reductions, even with the current power grid mix, due to the latter's much higher energy efficiency. If the grid mix remained unchanged from 2022's level, the e-mobility transition alone would still generate a net emissions reduction of 2.2 million tons CO2eq by 2050 thanks to EVs' higher energy efficiency. In addition, if

[30] Viet Nam's 2022 updated NDCs do not set specific emission reduction targets for the transport sector, whose emissions reductions are captured under the energy-related sector. The 2030 GHG emission targets sit at 64.8 MtCO2eq on an unconditional basis and 227.0 MtCO2eq on a conditional basis versus a 2014 baseline (a year in which EV adoption was nil).

greening of the power grid is fully achieved as per PDP8, net emission reductions from the transition would be 5.3 million tons CO_2eq by 2050 (Figure 2.6). Hence, emissions from generating, transmitting, and distributing electricity from the power system for EV charging could be easily offset by avoided fossil fuel combustion from ICE vehicles.

Figure 2.6. Emissions in e-mobility transition through to 2030 under BAU, SPS, and ADS (MtCO2eq)

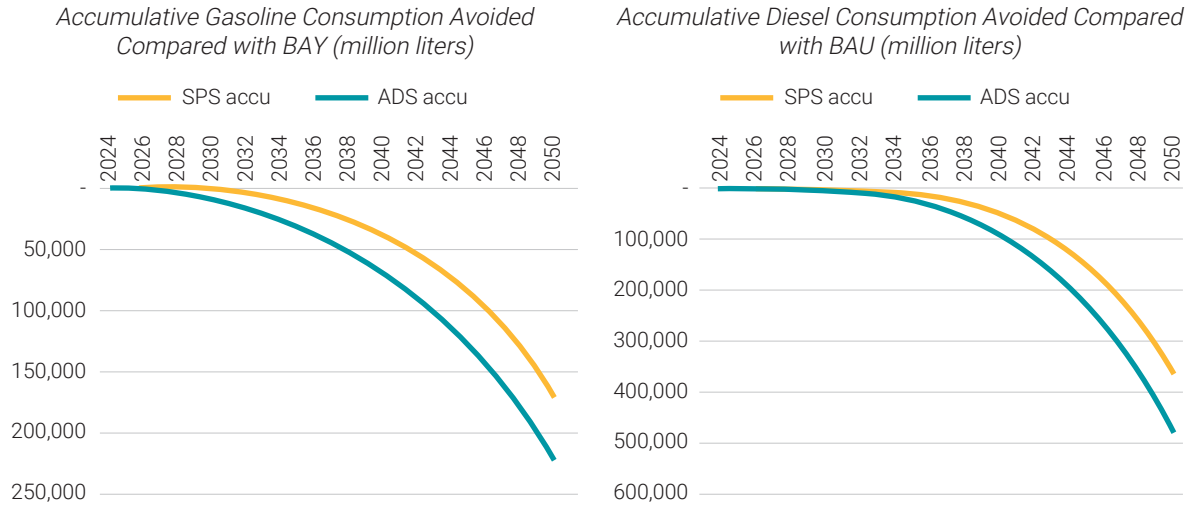


Source: World Bank calculations

2.6 Economic impact

The e-mobility transition could yield multiple economic benefits. They include savings on fuel imports and job creation in associated industries, while enhancing Viet Nam's energy security and resilience to external shocks. In addition to environmental conservation, a switch to EVs will de-facto reduce consumption of gasoline and diesel – both largely imported into Viet Nam. In the 2W segment alone, the current level of EV penetration had already yielded about 390 million liters of avoided gasoline consumption in 2022. By 2050, in oil barrel equivalent terms, this is expected to reach a cumulative 4,502 million or 6,224 million barrels of oil under the SPS and ADS scenarios, respectively. With the current international oil price set at US$80 per barrel, this translates into avoided accumulative expenses of US$360 billion under SPS and US$498 billion under ADS, with subsequently enhanced economic resilience (Figure 2.7).

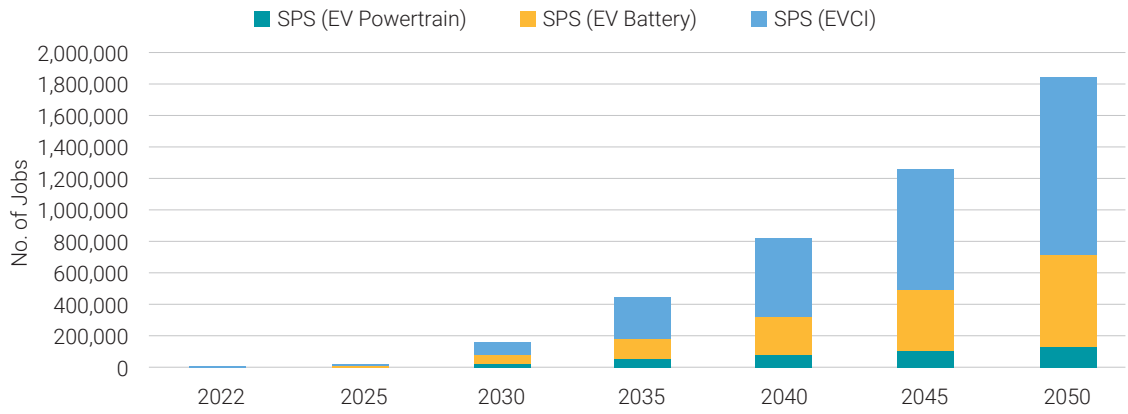
Figure 2.7. Avoided cumulative demands for gasoline and diesel under SPS and ADS versus BAU



Source: World Bank calculations

Job creation is a high-potential benefit of the e-mobility transition. Up to 6.5 million new manufacturing jobs cumulatively could be created through to 2050 across the EV value chain, particularly in the EV charging infrastructure (EVCI). The domestic EV market evolution is expected to yield significant growth in the entire EV value chain, including vehicle and battery production as well as charging infrastructure. Additional demand is expected for EV maintenance and recycling, opening up the labor market to new positions. Under the SPS scenario alone, 1.8 million jobs would be created across the EV value chain by 2050, of which about 61 percent are expected to be generated from the EV charging infrastructure industry (Figure 2.8).

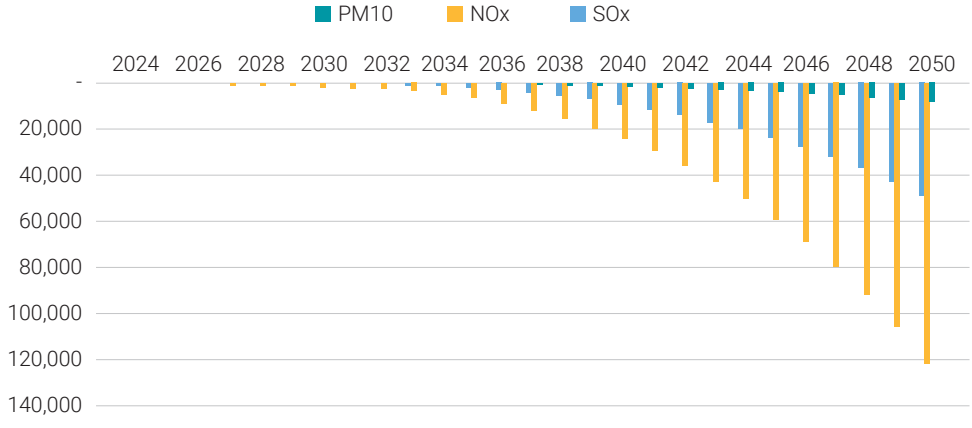
Figure 2.8. Jobs created in the e-mobility transition under SPS



Source: World Bank calculations

Tackling air pollution, with subsequent reductions in environmental damage costs by US$30 million by 2030 and US$6.4 billion by 2050, could be realized by the transition. Viet Nam's GHG emissions are associated with toxic and severe air pollution especially in urban centers, which according to the World Health Organization, exceed safety thresholds and are estimated to contribute to 60,000 deaths annually. Transportation is a key contributor to this threat, with a World Bank study[31] estimating that transportation contributed to about a quarter of PM2.5 pollution in the capital. Replacing internal combustion engine vehicles with electric variants will help reduce significant pollutants. By achieving the SPS pathway EV uptake scenario by 2030 (2050), Viet Nam could avoid about 302 (48,842) tons of sulfur oxide (SOx), 1,857 (122,079) tons of nitrogen oxide (NOx), and 181 (8,607[32]) tons of particulate matter (PM) emissions (Figure 2.9).

Figure 2.9. Avoided pollution from SPS EV uptake (tons)



Source: World Bank calculations

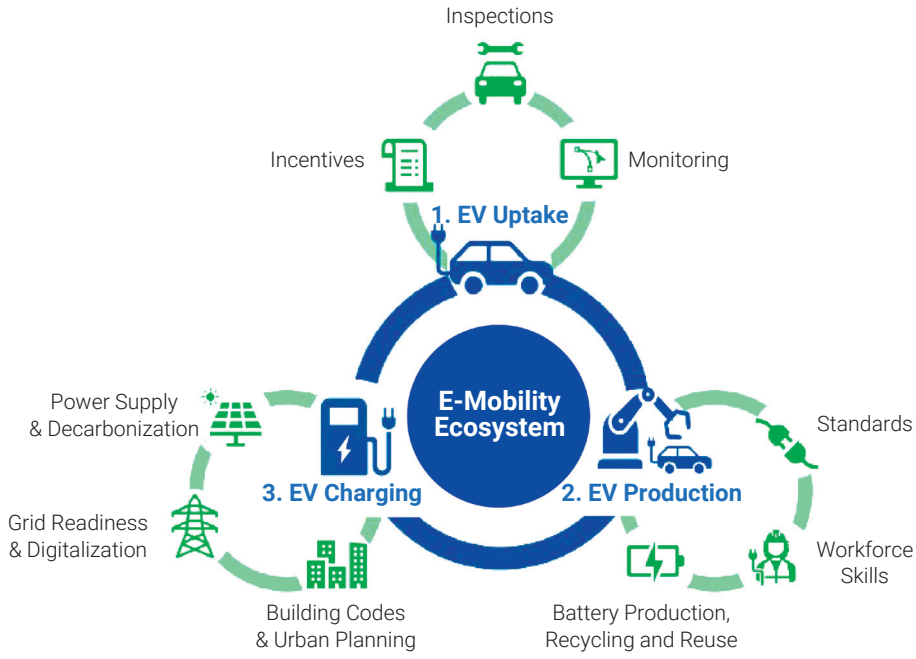
[31] World Bank. 2022. "Clean Air for Ha Noi: What Will It Take?".

[32] The 2050 avoided particulate matter emissions pertain to PM10.

2.7 Policy recommendations

Achieving the e-mobility transition requires a profound structural shift in Viet Nam's vehicle market. This encompasses mobility patterns and energy consumption, with implications for stakeholders and segments of the economy. Preparing and stimulating the multifaceted e-mobility ecosystem requires boosting EV supply and production, incentivizing uptake, preparing the power sector and rolling out a charging network. Subsequently, this will also require establishment of emerging skillsets for the future employee base (Figure 2.10).

Figure 2.10. E-mobility transition ecosystem



Source: World Bank calculations

Regulatory environment architecture

The e-mobility transition is a complex, multi-sectoral process requiring the establishment of a cross-ministerial governing body as a first step to lead and coordinate efforts across the ecosystem. While a structural shift of this scale necessitates engagement of the public and private sectors, financial institutions and individual consumers, the onus is on the government to coordinate and optimize synergies across stakeholders and the economy throughout the transition period.

A cross-ministerial steering committee could be established and directly under the Prime Minister's Office, led by up to two ministries. Based on the components of the e-mobility ecosystem and their mandates, the ministries of Transport (MoT), Industry and Trade (MoIT), Finance (MoF), Planning and Investment (MPI) and of Science and Technology (MoST) have been identified as critical ministries to drive the transition, with Viet Nam Electricity an additional key stakeholder.[33] To ensure effective implementation, key sub-national governments responsible for deployment of e-mobility programs should also be included in planning and decision-making. Important stakeholders – such as research centers, industry associations, and academia – should be consulted during the shaping of policy.

Transport sector reforms related to e-mobility transition

Further to the technical analysis, a set of comprehensive policy recommendations were developed for each major transport segment with associated charging infrastructure for vehicle categories. Key points for addressing obstacles in each category are summarized as follows:

- **E-2Ws:** 1) Address safety concerns through setting up technical codes and standards for charging batteries and product tests, protocols and inspection standards for e-2Ws and their batteries. Align battery charging standards with building and construction standards for home-based charging. 2) Create demand for e-2Ws by banning new ICE mopeds from 2027 and motorcycles from 2030, mandatory e-2W uptake by government-owned and taxi 2Ws, mandatory e-2W sales targets of 40 and 80 percent by 2025 and 2030, respectively in urban areas and 20 and 50 percent by 2025 and 2030, respectively in non-urban areas. 3) Reduce the cost premium of e-2Ws versus ICE variants via preferential loans and non-fiscal measures including reserved road rights, priority parking and registration privileges. To achieve the ADS pathway for e-2Ws, the key lever is implementing SPS pathway policy actions faster and more decisively, particularly rolling out demand incentives and accelerating development of charging and battery swapping facilities.

- **E-PCs:** 1) Address concerns over safety and quality of e-PCs by establishing technical codes and standards for charging and batteries as well as product test protocols and annual inspection standards. 2) Maintain e-PC cost competitiveness against ICE competitors via introducing non-fiscal and financial incentives, such as tax breaks, for original equipment manufacturer suppliers and consumers, subsidized preferential loan rates, reserved road rights, priority parking and registration privileges. 3) Create demand for e-PCs via banning new ICE PC sales by 2040, mandatory e-PC uptake by government and introducing stringent fuel economy standards.

- **Public city e-buses:** Accelerate uptake of city e-bus services by: 1) Reverse declining urban bus ridership via introduction of performance-based contracting to improve services, optimize bus route designs, reserve road space for bus operations and restrict e-2Ws along bus corridors. 2) Set up

[33] This recommendation was made prior to the ongoing government restructuring.

clear policies for e-bus mainstreaming, including banning new diesel buses, developing contractual procurement frameworks that include batteries and warranties and introducing operational frameworks that address operation and maintenance. 3) Adopt new financial models that boost the viability of e-city bus services, such as introducing leasing and exploring guarantee options.

- **Intercity commercial vehicles:** During 2025–30, establish technical specifications for small-sized e-buses, coaches, trucks, assess passenger and freight transport demand on intercity bus, coach and trucking services to identify priority routes and corridors for charging network development, pilot small e-truck operations in government-owned freight services. Beyond 2030, emphasize the introduction of government subsidies to provide preferrable interest rates for commercial loans for e-trucks and min e-bus purchases.

- **Charging infrastructure:** During 2025–35, the government is encouraged to accelerate development of the public charging network. Between 2025–27, public charging networks should be prioritized in the five special class cities (Ha Noi, Hai Phong, Da Nang, Ho Chi Minh City, and Can Tho). Between 2027–30, expanding the public charging network to non-urban areas should be a key focus, with increased density post-2030 in urban and non-urban areas in preparation for anticipated large e-PC uptake after 2035.

Power sector reforms related to e-mobility transition

A key feature of this chapter is a set of power sector-focused policy recommendations, critical given uncertainty around inclusion of load sources from e-mobility in PDP8. To ensure the power system's preparedness for EV charging, several steps need to be taken (Table 2.7) not only for generation supply, but also for network requirements. Smart-grid together with off-grid solutions, including installing rooftop solar at public charging facilities to take EV charging load off grid, could be utilized.

E-mobility supply chain development

Additional government support is needed to ensure an efficient e-mobility transition, including creating a policy environment that maximizes private sector potential in associated industries. Achieving the transition will require predominantly private sector investments in: 1) scaling-up EV manufacturing, 2) setting up charging networks and 3) battery recycling. All segments will require significant government support in the form of non-fiscal and fiscal incentives as well as transparent and supportive policies and regulations to ensure private investors access financing. This is particularly important for charging infrastructure, for which international experience has shown that government subsidies can be up to six-fold more effective than those for vehicle purchase. Finally, the novelty of the battery recycling sector in Viet Nam means the government will need to play a critical role to leverage existing market players in solid waste management. These actions will also be crucial to reduce the cost of electric vehicles comparative to fossil-fueled alternatives.

Table 2.7. Recommended policy actions for Viet Nam's power sector preparedness

	2024 - 2025	2025 - 2030	2030 - 2040	2040 - 2050
Integrate EV Demand in Power System Planning			**Lead: MoIT | Support: EVN**	
Integrating projected EV charging impact to the power system in the next iteration of PDP update.				
Rolling Out Policies to Enable Smart Charging			**Lead: MoIT | Support: EVN**	
Introducing differentiated electricity tariff to incentivize charging at public charging network and off-peak charging.				
Rolling out policy incentives to encourage installation of smart chargers to enable delayed/off-peak charging.				
Introducing supportive policies to encourage the development of behind-the-meter rooftop solar at public charging stations to provide generation supply support for EV charging.				
Preparing the Power Sector for Upcoming EV Charging Impact			**Lead: MoIT | Support: EVN and MoF**	
Rolling out electricity tariff reforms to fully capture the investment costs required for EV-induced power system upgrading.				
Increasing the investment planned for power generation supply incorporating EV charging demand.				
Increasing the investment planned for power network capacity for transmission and distribution to accommodate additional system peak load from EV charging.				
Continously investing in improving the efficiency of the power network to reduce the transmission and distribution losses.				
Explore Alternatives to Reduces EV Charging Demand Surge after 2035			**Lead: MoIT | Support: MoPI, MoF**	
Promoting transport demand modal shift (i) from PCs to public mass transit in cities and from intercity commercial buses to railways; and (ii) from trucks to railways and waterway transport to intercity freight transport.				

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